

Rare Plants of South Florida:

Their History, Conservation, and Restoration



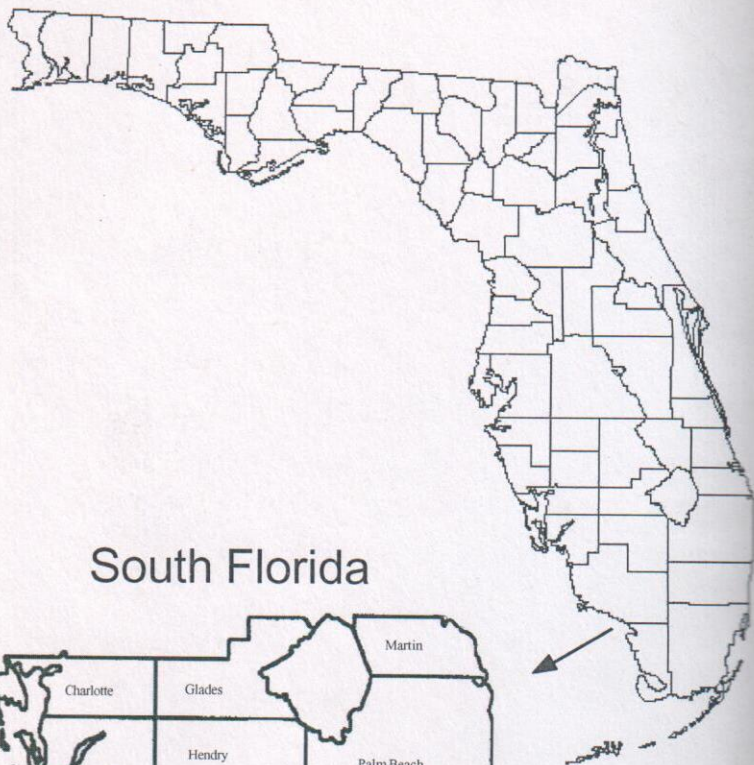
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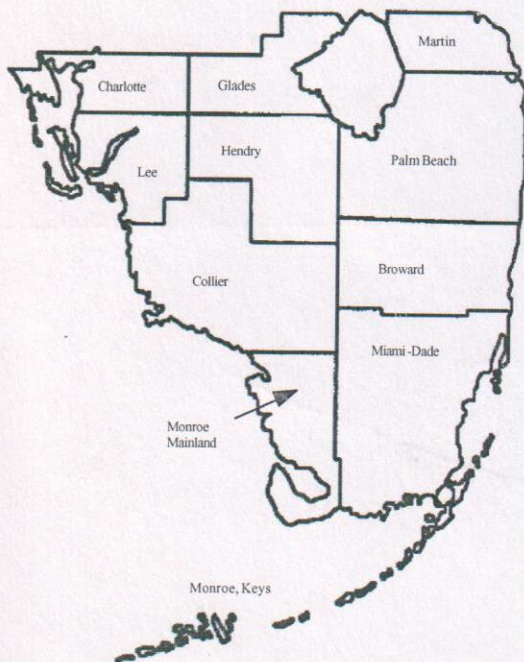
The Institute for Regional Conservation



Florida



South Florida



May 6, 2016

This electronic version of Rare Plants of South Florida contains the entire document published as a print book in 2002. The front and back covers were scanned, while the remainder of the contents were converted from the final electronic document to PDF so that it is fully searchable. Other than some minor layout changes in the index the contents are the same as in the printed book.

Thanks to all who have continued on the journey with IRC since 2002 and the many new colleagues and supporters who have joined us since that time. If you think our work is important, please consider supporting our efforts. We are entirely funded by donations and program income.

Best wishes and happy botanizing!

A handwritten signature in black ink, consisting of a stylized initial 'G' followed by a long, sweeping horizontal line that ends in a small upward curve.

Georg Gann

Founder and Chief Conservation Strategist
The Institute for Regional Conservation
www.regionalconservation.org

**Rare Plants of South Florida:
Their History, Conservation, and Restoration**

By

**George D. Gann, Keith A. Bradley,
and Steven W. Woodmansee**

The Institute for Regional Conservation
Miami, Florida

www.regionalconservation.org

George D. Gann, Executive Director

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Cover photos by George D. Gann: Top: mahogany mistletoe (*Phoradendron rubrum*), a tropical species that grows only on Key Largo, and one of South Florida's rarest species. Mahogany poachers and habitat loss in the 1970s brought this species to near extinction in South Florida. Bottom: fuzzywuzzy airplant (*Tillandsia pruinosa*), a tropical epiphyte that grows in several conservation areas in and around the Big Cypress Swamp. This and other rare epiphytes are threatened by poaching, hydrological change, and exotic pest plant invasions.

Funding for *Rare Plants of South Florida* was provided by The Elizabeth Ordway Dunn Foundation, National Fish and Wildlife Foundation, and the Steve Arrowsmith Fund.

Major funding for the *Floristic Inventory of South Florida*, the research program upon which this manual is based, was provided by the National Fish and Wildlife Foundation and the Steve Arrowsmith Fund.

In memory of
Steve Arrowsmith, visionary and philanthropist
and
George Avery, botanist and friend

Executive Summary

South Florida is one of the most biologically diverse regions in North America, harboring over 1,400 species of native plants. Unfortunately, habitat destruction, collecting, hydrological modifications, fire suppression, and other human activities have heavily disturbed, if not critically imperiled, many of South Florida's ecosystems, thus threatening many native plant species. In response to what appeared to be an alarming loss of species, The Institute for Regional Conservation (IRC) launched the Floristic Inventory of South Florida (FISF) in 1994.

The FISF catalogs and assesses the conservation status of the native and naturalized plants of South Florida. The study area includes the ten southernmost counties in Florida, extending from the northern shores of Lake Okeechobee to the Florida Keys. IRC's efforts, while independent, benefited from the expertise of many botanists, field ecologists, and governmental and non-governmental land managers, all of whom share considerable knowledge of and concern for the ecological integrity of South Florida. This manual, created from the FISF, provides a regional view of rare plants in South Florida, their status in conservation areas, and the management efforts that will ensure their survival. Our intention is that this and subsequent publications will assist all who are charged with the task of managing the fragile and increasingly fragmented ecosystems of South Florida. The major goals of the FISF are:

- To determine the status of the South Florida flora.
- To determine how effectively the existing conservation area system and management practices protect rare plants.
- To determine the importance of small conservation areas in the protection of rare plants.
- To improve the conservation of rare plants.
- To identify opportunities to restore rare plant populations and their habitats.

The major findings of the FISF, elaborated in Chapter 2, are:

- There are over 2200 species of native and naturalized plants in South Florida.

- About 1/3 of the South Florida flora is comprised of escaped non-native plants.
- Over 100 species of native plants (8%) are apparently extirpated in the region.
- Another 244 species (17%) are critically imperiled using Natural Heritage Program criteria.
- Of these, nearly 100 species are protected in South Florida in a single conservation area.
- Small conservation areas are very important to the protection of the rarest plants in the region, protecting 205 of the 244 critically imperiled plants in South Florida.
- The largest conservation areas (Big Cypress National Preserve, Everglades National Park, and Everglades and Francis R. Taylor Wildlife Management Area) provide protection to only two out of every three native plant species.

Other pertinent findings of conservation concern are:

- Habitat destruction has been the major cause of plant extirpations, but other factors such as poaching and drainage also have been important.
- Plants have been extirpated from conservation areas (including Everglades National Park) due to poaching, management error, and other causes.
- Plants of tropical origin are more likely to be extirpated than plants of temperate origin.
- Epiphytes, including rare tropical orchids, ferns, and bromeliads, are more likely to be extirpated or critically imperiled than terrestrial plants.
- Ferns and their allies are more likely to be extirpated or critically imperiled than more advanced groups of plants.

In response to these findings, IRC embarked on the preparation of this manual, the first of several anticipated publications, which includes data on all of the regionally extinct and critically imperiled plant species in South Florida. For each of these species, information is provided on its history in South Florida and its conservation status. In addition, each conservation area for which floristic data are available is reviewed in terms of the rare plants that are present, or that have been historically recorded, at or near the site. In an effort to stop further losses of plant diversity in South Florida, as well as to restore the ecological diversity of the

region, a strategic framework has been developed to guide local, regional, and federal land managers, and private land owners in plant conservation and restoration efforts. These strategies, detailed in Chapter 3, include:

- Continuing floristic research.
- Protecting all critically imperiled native plant populations and preventing additional extirpations.
- Conducting research on the biology and management needs of rare plants.
- Restoring native plant populations and habitats.
- Improving the legal protection of rare plants.
- Creating awareness about rare plants, their conservation, and restoration.

In order to successfully implement these strategies, IRC has developed a series of specific actions needed to stop the loss of native plant species as well as to restore populations of rare plants in South Florida. These specific actions are presented in Chapter 3 and include:

- Conducting floristic inventories on conservation lands with little or no plant data.
- Conducting rare plant surveys on conservation lands and on private lands when access is granted.
- Mapping and monitoring rare plants.
- Acquiring sites with populations of critically imperiled plants.
- Developing conservation agreements with private landowners.
- Stopping avoidable losses of rare plant populations in conservation areas.
- Preventing poaching.
- Controlling exotic pest plants and feral animals.
- Developing and managing off-site collections of rare plants.
- Restoring key habitats for rare plants in South Florida.
- Restoring viable populations of critically imperiled plants.
- Educating the public and key policy makers about the importance of native plants and rare plant conservation.
- Improving funding for rare plant conservation and restoration.

What is clear from our work is that immediate action is needed if the people of South Florida want to continue living in one of the most biologically unique regions of North America. And we have a

lot to lose. Where else can you go to witness the commingling of tropical and temperate plants, alligators and crocodiles, freshwater and saltwater swamps? Nowhere on Earth. This is why the restoration of the Everglades is appealing to so many, but without a serious and sustained effort, one of the most unique features of the South Florida landscape will be lost forever.

Acknowledgments

We would like to thank the many individuals and organizations that have contributed to this project over the last seven years. We especially are grateful for the support of The Institute for Regional Conservation's board members Robert Heinzman and Jena Matzen, who have contributed to the project since its inception. Kellie Westervelt has provided continuous encouragement and assistance with the administration and funding of the project. Doria Gordon provided key guidance in the early design phases.

The backbone of this project, the Floristic Inventory of South Florida, was made possible by a generous, unencumbered donation from the Steve Arrowsmith Fund. Additional funding for specific elements of the inventory, and for database development, was received from the South Florida Water Management District, U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, and Florida Department of Environmental Protection. A recent agreement with Fairchild Tropical Garden has allowed IRC to assist the Garden with its rare plant program while conducting research essential to our own project. The preparation and publishing of this manual was made possible by a grant from the Elizabeth Ordway Dunn Foundation.

Many others have contributed in important ways. Most especially, we would like to thank those who contributed time and resources to help us conduct floristic inventories and rare plant surveys on conservation lands: Janice Duquesnel, J.B. Miller, R. "Bobby" Hattaway, Jim Duquesnel, Mike Owen, Elizabeth Golden, Sally Braem, Renate Skinner, and Erik Johnson of the Florida Park Service; Sandra Vardaman of Martin County; Joy Klein of Miami-Dade County, Roger Clark, Rob Irving, and Rick Joyce of Lee County; Mike Bodle, Amy Ferriter, and Dan Thayer of the South Florida Water Management District; Tony Pernas, Toby Obenauer, and Matt Patterson of the National Park Service; Tom Wilmers, Brian Lockwood, and Dawn Jennings of the U.S. Fish and Wildlife Service; Robert Guerra of the Florida Fish and Wildlife Conservation Commission; Dena Garvue, Cynthia Lane, Meghan Fellows, and Jennifer Possley of Fairchild Tropical Garden; Juan Fernandez of the City of Miami; Dick Workman of Coastplan, Inc; Misty Nabers of Gasparilla Island Conservation and Improvement

Association; and Dee Serage of Sanibel-Captiva Conservation Foundation.

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We must acknowledge the support of the staff of many herbaria, without whose support this project would not have been possible. Fairchild Tropical Garden provided us almost unlimited access to their herbarium and library, and we especially thank Lynka Woodbury for her assistance. Fairchild Keeper of the Herbarium, Gerald "Stinger" Guala, used our data to produce a searchable database of plants in conservation areas for the Internet, which was a precursor to the Floristic Inventory of South Florida Database that is now available at www.regionalconservation.org. Mary Collins provided us with much needed information on the Garden's accessioned plants. We wish to thank the staff of The Institute for Systematic Botany at the University of South Florida, in particular Richard Wunderlin and Bruce Hansen, for providing us with access to the herbarium, as well as for a continuous exchange of information on the flora of South Florida. Dan Austin at Florida Atlantic University provided us with access to the FAU herbarium and much needed information on the flora of South Florida. We also would like to thank Kent Perkins from the University of Florida, Loran Anderson from Florida State University, Rusty Russell from the Smithsonian Institution, Jackie Kallunki and Sarah Hunkins from the New York Botanical Garden, Sharon Yelton and Emily Wood from Harvard University, and the staff of numerous other herbaria who provided us with access, label data, and other information. Maika Hoffmann assisted with data collection at the New York Botanical Garden and Alice Warren-Bradley assisted us at the Smithsonian Institution.

Joyce and Donald Gann, Roger Hammer, and Tiffany Troxler Gann all provided major reviews of this manual. Robert Heinzman, Kellie Westervelt, Doria Gordon, Alice Warren-Bradley, Andy Clewell, Linda Chafin, and Dena Garvue reviewed select sections. Chuck McCartney and Don Keller reviewed the Orchidaceae accounts, David Hall and Gerald “Stinger” Guala reviewed the Poaceae accounts, Dan Austin reviewed the *Cuscuta* accounts, and Don Keller and Gil Nelson reviewed the pteridophyte accounts. Ann Williams and Janice Duquesnel reviewed the species accounts of plants from the Florida Keys.

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While we have received tremendous support for the Floristic Inventory of South Florida and this manual, the content and recommendations are entirely our responsibility. We realize there may be errors and omissions, and we can only hope that the readers will bring these to our attention so that we can amend the manual in future editions.

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Introduction

South Florida long has been renowned for its abundant plant life, being the only place in the United States where the temperate flora intermingles with the subtropical and tropical flora of the Caribbean. With over 2,200 native and naturalized taxa, South Florida contains over 50 percent of the plants found in the state. Unfortunately, habitat destruction, collecting, hydrological modifications, fire suppression, and other human activities have severely disturbed, if not critically imperiled, many of South Florida's ecosystems, thus threatening many native plant species. Of approximately 1,400 kinds of plants native to South Florida, nearly 25 percent have been wiped out already, or are on the brink of regional extinction.

Regional Conservation

While it is easy to point a finger at extinctions in the tropics as a main cause of the global loss of biological diversity, small-scale regional extinctions are occurring worldwide in both tropical and temperate regions.

Regional conservation is the strategy to protect, restore, and manage the native ecosystems and biota of a specific geographical area. Certainly endemic species must be afforded higher levels of protection within a region, but conservation should not be based solely, or even primarily, upon the protection of those species. Regional conservation is concerned with the conservation and restoration of all native species, whether rare or common.

In South Florida, many wide-ranging tropical plant species reach the northern ends of their ranges. Local land managers and conservationists have a direct responsibility to protect these tropical species from extinction in South Florida, even though other populations may persist in other parts of the world. Similarly, many temperate plants have the southern limits of their ranges in South Florida, and these populations also warrant protection.

The Institute for Regional Conservation (IRC) is dedicated to the protection, restoration, and long-term management of biodiversity

on a regional basis, and to the prevention of regional extinctions of rare plants, animals, and natural communities. It is our view that the people of every region have a responsibility to protect all of the native species that historically occurred there – whether the region is a country, a group of states, a state, a county, a city, a watershed, or the southern tip of a large peninsula. IRC is not the first organization to propose that both globally rare and regionally rare species be protected within a region (New England Wild Flower Society, Inc., 1992; City of New York, Parks & Recreation, Natural Resources Group, 2001). In fact, this is the same basic philosophy promoted by the Natural Heritage Program, which was originally established by The Nature Conservancy and is now managed by NatureServe (www.abi.org).

Purpose of the Manual

IRC initiated the Floristic Inventory of South Florida in 1994 in an effort to create a model of regional conservation. IRC selected vascular plants for the study because of staff expertise and the availability of data on the historical distributions of plants in South Florida. This study is the foundation of IRC's Restoring South Florida's Native Plant Heritage program, of which this manual is a part.

The purpose of this manual is to assist land managers and restoration practitioners in conserving and restoring rare native plants and their habitats in South Florida. It is also an important tool for decision makers who are charged with developing protection policies (see Chapter 3). In addition, the document identifies areas needing further study and should provide direction for students and scientists focusing on South Florida ecosystems. Native plant enthusiasts also will find this manual helpful in understanding the history and conservation needs of South Florida's rarest plants.

This manual is the second of two resources IRC has prepared as part of its Restoring South Florida's Native Plant Heritage program. The first is the Institute's website at www.regionalconservation.org, which contains, among other resources, the Floristic Inventory of South Florida Database. This database provides information on plant distributions in South Florida's system of conservation areas and includes a sophisticated search engine.

Organization of the Manual

This manual is organized specifically to facilitate the conservation and restoration of the rare flora of South Florida. The manual is organized into six chapters. The first two chapters present the background and the results of the Floristic Inventory of South Florida. Chapter 3 presents strategies, actions, and implementation guidelines for restoring South Florida's rare plant populations and their habitats. Chapters 4 and 5 present data summaries of the extinct, extirpated, historical, and critically imperiled plants of South Florida. Chapter 6 provides a summary of rare plants found in South Florida's conservation areas. An index is provided for ease of use.

Floristic Work in South Florida

Botanists have long been interested in the plant life of South Florida. Our present knowledge of the flora is a result of the work of explorers like Bernard Romans who surveyed the Florida coastline in the late 1700s. He was followed by hundreds of field botanists and collectors, beginning around 1824 when Titian Ramsey Peale collected a few specimens in the Florida Keys. An excellent account of the history of botanical exploration in Florida is provided by Wunderlin et al. (2000).

A number of published floras and guides discuss the flora of South Florida. The most important include the *Flora of the Southern United States* by Alva Wentworth Chapman (1883), and two books by John Kunkel Small: *Manual of the Southeastern Flora* (1933a) and *Ferns of the Southeastern States* (1938). In 1971, Robert W. Long and Olga Lakela published their *Flora of Tropical Florida* (1971, 1976) that covered Collier, Miami-Dade, and Monroe counties. In 1982, Richard P. Wunderlin published the *Guide to the Vascular Plants of Central Florida*, covering the remaining seven counties in South Florida, as defined herein. This was followed, in 1998, by Wunderlin's *Guide to the Vascular Plants of Florida*, the first statewide treatment of Florida's flora. Wunderlin joined with Bruce F. Hansen to prepare the much-anticipated *Flora of Florida*, the first volume of which (pteridophytes and gymnosperms) was published in 2000.

New floristic resources also have become available on CD-ROM and on the Internet, particularly the *Atlas of the Florida Vascular*

Flora at www.plantatlas.usf.edu (Wunderlin et al., 1996; Wunderlin & Hansen, 2001). The atlas has proven to be an invaluable resource for this project, and is recommended highly for those interested in the flora of Florida. Other internet resources include Fairchild Tropical Garden's *Virtual Herbarium* at www.virtualherbarium.org, which has both label data and photographs of many herbarium sheets.

Taxonomic Concepts

For the most part, the taxonomy in this guide follows Wunderlin (1998). For gymnosperms and pteridophytes, it follows Wunderlin & Hansen (2000). In some cases, it diverges from these two texts. For species covered in Chapters 4 and 5, these differences are indicated in the species accounts.

Chapter 1

The Floristic Inventory of South Florida

The Floristic Inventory of South Florida (FISF) was initiated in 1994 to provide baseline data on the flora of South Florida that can be used to improve plant conservation efforts and ecological restoration programs in the region.

FISF Goals

The goals of the inventory are:

- To determine the status of the South Florida flora.
- To determine how effectively the conservation area system protects rare plants.
- To determine the importance of small conservation areas in the protection of rare plants.
- To improve the conservation of rare plants.
- To identify opportunities to restore rare plant populations and their habitats.

Study Area

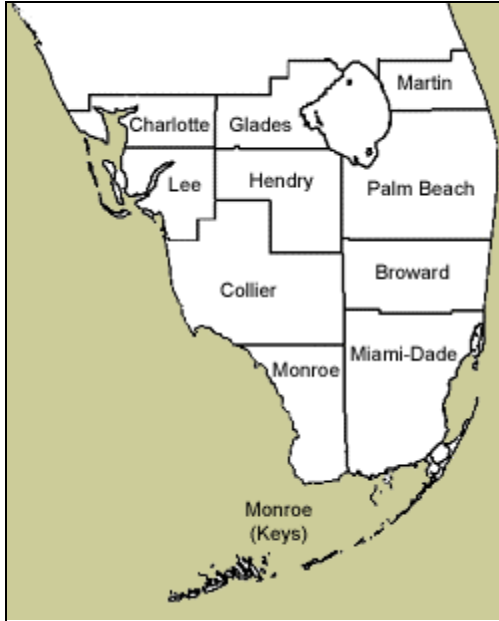
In this study, South Florida is defined as the ten southernmost counties of Florida: Broward, Charlotte, Collier, Glades, Hendry, Lee, Martin, Miami-Dade, Monroe, and Palm Beach (Figure 1.1). This encompasses the southern tip of peninsular Florida, from the northern rim of Lake Okeechobee, south through the Florida Keys, an area of 13,950 square miles, or almost nine million acres. South Florida, as defined here, comprises 24% of Florida and contains about half of the native plants species in the state.

Preliminary Plant List

The FISF began with the development of a preliminary species list for the region. This list was based upon a draft of what was published as the *Atlas of Florida Vascular Plants* (Wunderlin et al., 1996; Wunderlin & Hansen, 2001). Data derived from the atlas were amended using observations of the authors and other sources. This list of species has changed, over time, with the

addition of species not included in the atlas, and the deletion of species erroneously reported for South Florida.

Figure 1.1. South Florida as defined by the FISF.



Data Sources for Conservation Areas

Published and unpublished plant lists were obtained when they existed for conservation lands in South Florida. Some sites, such as Everglades National Park, had fairly complete plant lists, while others either had none available, or very preliminary ones.

When no plant list was available or when it was incomplete, IRC staff has attempted to conduct a floristic inventory. Inventories were initiated in 1996, and continue at sites ranging from Big Cypress National Preserve, where new acquisitions necessitate additional inventory work, to small county and city parks. In each case, we have attempted to visit all of the major plant communities occurring within each site before considering a preliminary inventory complete. In some cases, IRC staff worked alone. In others, agency staff collaborated on the inventories. While preliminary inventories have been completed for most large

conservation areas, many small sites still need to be inventoried. This is especially true for county- and city-owned conservation areas. In general, inventory methods used by IRC follow the recommended methods described in the Floristic Inventories section of Chapter 3.

Wherever possible, IRC staff vouchered plant specimens from conservation areas. In particular, we attempted to voucher new county records, unusual occurrences, and rare species if they had not been vouchered already for a specific station. Permits were secured from conservation managers prior to collecting and, in the case of state-listed species, a permit was obtained from the Florida Department of Agriculture and Consumer Services, Division of Plant Industry. Vouchers were deposited at the Fairchild Tropical Garden Herbarium (FTG), while some duplicates were sent to the University of South Florida Herbarium (USF) and other herbaria.

Development of the FISF Database

The Floristic Inventory of South Florida Database was developed to manage the data compiled as part of the FISF. The initial database was designed in Paradox in 1995, and was moved into Microsoft Access in 1999.

This relational database is based upon an Accepted Names Table, used to normalize all taxonomic names. All plant records in the database must correspond to an accepted name, or the information is not used. In general, accepted names follow Wunderlin (1998), or Wunderlin & Hansen (2000), although there are some exceptions. The Accepted Names Table also contains supplemental information on each taxon, including origin, habit (plant form), and substrate (e.g. terrestrial, epiphytic). Small (1933), Long & Lakela (1976), Wunderlin (1998), Wunderlin & Hansen (2000), and other resources have been used to determine native status.

A Site Table was developed for conservation areas and other sites in South Florida. Blanchard and Jue (1997), Blanchard et al. (1998), and Jue et al. (2001) were used as resources for conservation areas in South Florida, although additional data were collected directly from conservation agencies. The Site Table

includes information on whether or not the site is a conservation area, the county or counties where the site is located, and its size.

All plant data collected or compiled were entered into an Occurrences Table using the plant name as described in the reference material. Where possible, these occurrence data were linked to a site by using an accepted name. In some cases, no link was possible because of incomplete data (such as *Rynchospora* spp.), or the name could not be linked through synonymy to an accepted name (in the case of some rejected names).

The Accepted Occurrences Table merges data from the Occurrences Table and Site Table, so that there is a single occurrence record for each taxon at each site. An accepted occurrence record may have multiple references in the Locations Table, for instance, if a plant is recorded for a site on a list and also as a herbarium specimen. The Accepted Occurrences Table also contains other information about each site record. In general, the fields in the table conform to the Plant Occurrence and Status Scheme developed by the International Working Group on Taxonomic Databases (www.tdwg.org), and compiled by the World Conservation Monitoring Center (www.unep-wcmc.org).

Preliminary Analysis of the Flora

Once the preliminary data were entered into the database table, all native species were ranked. This manual uses an IRC ranking system. IRC ranking definitions follow the Florida Natural Areas Inventory (FNAI) system (www.fnai.org), with some modifications as described in Table 1.1. The FNAI system was developed by The Nature Conservancy for the Natural Heritage Program. In the FNAI system global ranks are preceded by G and state ranks by S. These prefixes have been replaced in the IRC ranking by SF, denoting South Florida.

Additional Data Collection

For all taxa ranked as extirpated, historical, or critically imperiled, additional data were collected from the literature and herbaria, and by personal communications with monographers, herbarium managers, and field botanists. Herbaria visited included Fairchild

Table 1.1. The IRC ranking system.

SFX	Extirpated or Extinct. Believed to be extirpated or extinct in South Florida. The IRC rank requires that botanists have searched for the taxon without success within appropriate habitats in its historical range, or that there is some documented reason that the species is thought to be extirpated or extinct. In most cases, a plant is not considered to be extirpated or extinct unless at least 20 years has passed since it was last observed in South Florida.
SFH	Historical. Occurred historically in South Florida, but has not been observed for many years. The IRC rank is used when the species has not been observed for ten or more years, and there is a basis for believing that the species may not be present, although there is a reasonable possibility that additional searches could locate plants.
SF1	Critically imperiled. Critically imperiled in South Florida because of extreme rarity (five or fewer occurrences, or fewer than 1,000 individuals), or because of extreme vulnerability to extinction due to some natural or human factor. For taxa with two to five occurrences, IRC ranks as critically imperiled those taxa with 3,000 or fewer individuals. For taxa with a single occurrence, IRC ranks as critically imperiled those taxa with 10,000 or fewer individuals.
SF2	Imperiled. Imperiled in South Florida because of rarity (6-20 occurrences, or less than 3,000 individuals) or because of vulnerability to extinction due to some natural or human factor. IRC only ranks as imperiled those taxa with fewer than 10,000 individuals.
SF3	Rare. Either very rare and local throughout its range in South Florida (21-100 occurrences, or less than 10,000 individuals), or found locally in a restricted range. IRC only ranks as rare those taxa with fewer than 100,000 individuals.

Table 1.1. The IRC ranking system (cont.):

- | | |
|------------|---|
| SF4 | Apparently secure. Apparently secure in South Florida (may be rare in parts of range). IRC ranks all taxa with more than 100,000 individuals as apparently secure. |
| SF5 | Demonstrably secure. Demonstrably secure in South Florida. IRC ranks all taxa with more than 1,000,000 individuals as demonstrably secure. |

Tropical Garden, University of South Florida, University of Florida, Florida State University, New York Botanical Garden, and the Smithsonian Institution. Where possible, field surveys were conducted to verify historical collections and observations. A significant amount of data were also obtained from the unpublished botanical notes of George N. Avery and, to a lesser extent, from the unpublished botanical notes of Frank C. Craighead. These data are summarized for each species in Chapters 4 and 5.

Limitations of the Data

Plant data constantly change. New native taxa continue to be discovered, and new exotics established. In addition, species will be added or deleted as herbarium specimens are re-examined and taxonomic treatments change. Plants discussed in this manual were identified before or during visits to regional and national herbaria. In the course of the FISF, additional taxa have been identified that should be discussed, but these will be covered in future editions of this manual following historical research. Also, it is important to note that there is not agreement on the nativity of all species, and that some that we have designated as native may later be determined to be exotic and visa-versa.

A number of conservation areas have little or no floristic data. In most cases, these are small county- or city-owned conservation areas. In some cases, the conservation areas are of significant size (e.g. Picayune Strand State Forest at 65,435 acres [Jue et al., 2001]). Other conservation areas have data, but they are of poor quality. Also, it is difficult to keep data current in view of the on-going additions of conservation areas throughout South Florida.

Even when preliminary inventory work has been completed, regular updates are necessary.

Finally, native plant species were certainly lost from South Florida before being discovered by botanists. Other species that we now believe are gone may be rediscovered. Therefore, extirpation estimates must be considered a work in progress.

Chapter 2

Status of the South Florida Flora

This chapter summarizes the status of the South Florida flora and describes the role of existing conservation areas in protecting plant diversity. All of the data presented here are the result of the FISF study and represent a synthesis of literature review, field inventories, and the findings of dozens of individuals who work in diverse capacities with the plants of South Florida.

Floristic Summary

More than 2,200 taxa of terrestrial and freshwater aquatic plants have been recorded growing without the aid of cultivation in South Florida. Of these, about 64% are native to the study area, while 36% are not. Of the native taxa, 3% are endemic to the region. An additional 5% are endemic to peninsular Florida, while 3% are subtropical near-endemics with populations only in South Florida and the Bahamas or Cuba. Of the remainder, 38% are of temperate origin, 25% are of tropical or subtropical origin, and 26% are of widespread origin—occurring in both temperate and tropical regions.

About 74% of the natives are herbs, while 19% are trees or shrubs and 7% are vines. Most of these plants are perennial, with annuals representing only 13% of the flora. Of the natives, 90% are terrestrial, while 5% are epiphytes, and 2% are submerged or floating freshwater aquatics. In addition, 16 taxa are lithophytes, 11 are parasites, seven are marine aquatics, and four are saprophytes. Of the natives, 61% are dicotyledons, while 33% are monocotyledons and 6% are pteridophytes. Only six native species are gymnosperms.

Conservation Status of Native Plants

Fifty-one kinds of native plants are regionally extinct, while 60 are historical. Together these represent about 8% of the native flora (Figure 2.1). Of the remaining taxa, about 17% are critically imperiled, 27% are imperiled, and 25% are rare. Only 23% of the flora can be considered secure or apparently secure in South

Figure 2.1. Native plant ranks in South Florida.

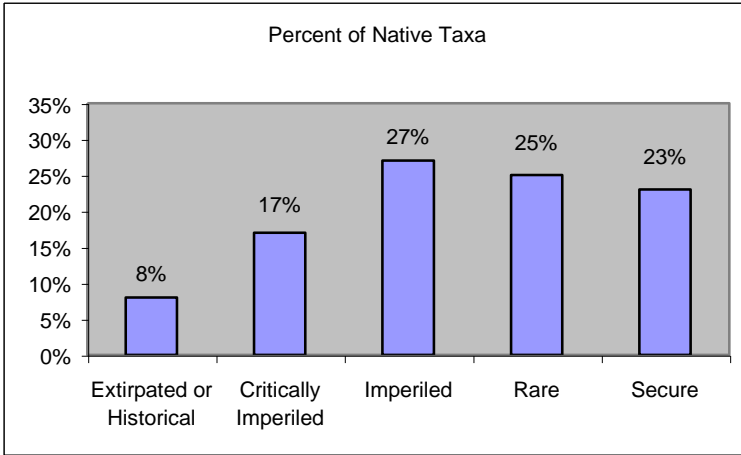
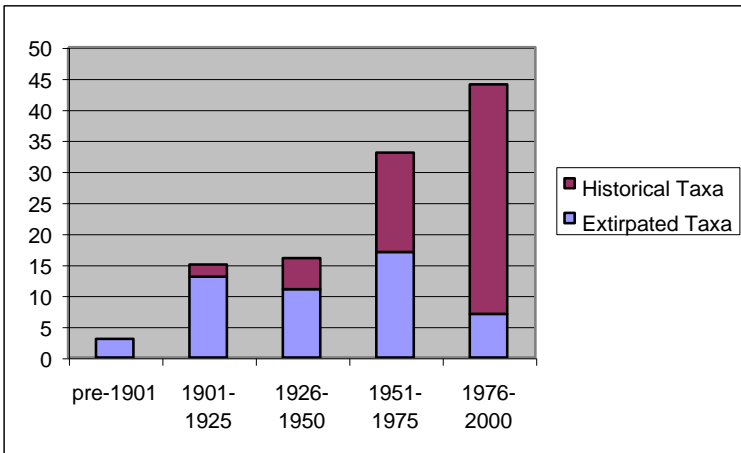


Figure 2.2. Number of apparent extirpations by quarter century based upon last known observations.



Florida. Most apparent extirpations have occurred in the last fifty years (Figure 2.2). All taxa that are extinct, extirpated, historical, or critically imperiled are discussed at length in Chapters 4 and 5.

Extinctions and Extirpations

Of the fifty-one taxa of regionally extinct plants, one (*Tephrosia angustissima* var. *angustissima*) is globally extinct. Two other extirpated plants are endemic hybrids: *Quercus xsucculenta*, *Tectaria xamesiana*. No endemic South Florida species is known to be extinct. One extirpated species (*Glandularia tampensis*) is a Florida endemic. Two species are subtropical near-endemics: *Acacia choriophylla*, *Cordia bahamensis*. Of the remaining extirpated plants, 57% are of tropical or subtropical origin, 22% are of temperate origin, and 10% are widespread species.

Tropical taxa are more than twice as likely to be extirpated than would be expected, while temperate taxa are under-represented as extirpated taxa. Other findings indicate that epiphytes and ferns (pteridophytes) are more than three times as likely to be extirpated than would be expected when compared to each group's proportion of the native flora.

Historical Plants

Of the 60 taxa of historical plants, one is an endemic species (*Lechea lakelae*), and one is an endemic variety of a temperate species (*Eriochloa michauxii* var. *simpsonii*). Seven taxa are peninsular Florida endemics: *Amaranthus floridanus*, *Asclepias feayi*, *Chrysopsis linearifolia* subsp. *dressii*, *Chrysopsis subulata*, *Harrisia fragrans*, *Lobelia homophylla*, and *Warea carteri*. Two species are subtropical near-endemics: *Bucida spinosa*, *Ponthieva brittoniae*. Of the remainder, 43% are temperate taxa, 23% are tropical or subtropical taxa, and 15% are widespread taxa.

Peninsular Florida endemics are more than twice as likely to be historical than would be expected when compared to that group's proportion of the native flora.

Critically Imperiled Plants

About 17%, or 244 taxa, of South Florida's native flora is critically imperiled (see Chapter 5). Of those, 14 are endemic to South Florida, 17 are peninsular Florida endemics, and 15 are subtropical near endemics (Table 2.1). Of the remainder, 38% are temperate, 32% are tropical or subtropical, and 11% are widespread.

Tropical species are almost 30% more likely to be critically imperiled than would be expected. Other findings indicate that epiphytes and pteridophytes are about twice as likely to be critically imperiled than would be expected.

The Role of Conservation Areas

There are almost 400 conservation areas in South Florida (Gann et al., 2001; Jue et al., 2001). Over the last six years, IRC has collected or obtained substantial data on over 200 sites (Figure 2.3). Of the sites without adequate data, most are smaller city- and county-owned conservation areas, although many larger sites need a considerable amount of additional work. County agencies manage more than half of all of the conservation areas in South Florida (Figure 2.4).

Table 2.1. Endemic taxa that are critically imperiled.

Amorpha herbacea var. *crenulata*
Asimina tetramera
Asplenium xbiscaynianum
Chamaesyce deltoidea subsp. *adhaerens*
Chamaesyce deltoidea subsp. *serpyllum*
Chromolaena frustrata
Dalea carthagenensis var. *floridana*
Digitaria pauciflora
Indigofera mucronata var. *keyensis*
Jacquemontia reclinata
Linum carteri var. *carteri*
Opuntia corallicola
Schizachyrium sericatum
Sideroxylon reclinatum var. *austrofloridense*

The conservation system is comprised of about five million acres, or more than 55% of the area of South Florida. Sixty-two percent of the protected lands are found in three large conservation areas: Everglades National Park, Big Cypress National Preserve, and Everglades and Francis S. Taylor Wildlife Management Area (Figure 2.5). Substantial data have been collected for all three conservation areas. Of the remaining conservation areas, about 83% of the area has been inventoried.

Figure 2.3. Number of conservation areas in South Florida by size class (in acres).

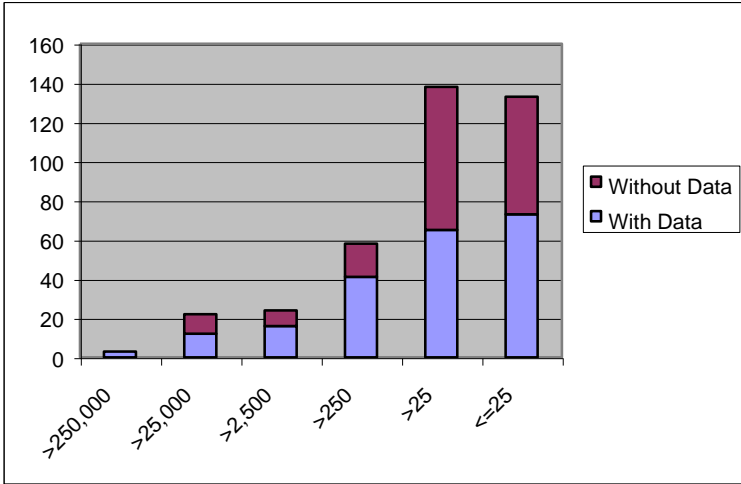
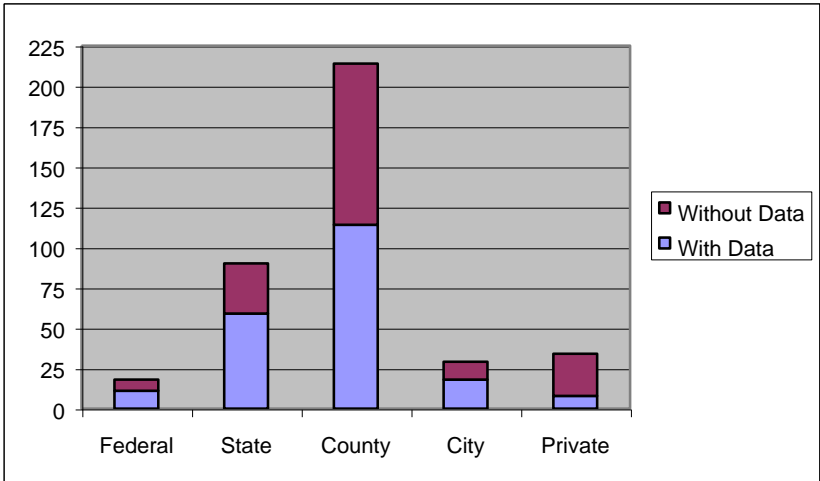


Figure 2.4. Number of conservation areas by managing agency.



The three largest conservation areas contain about two-thirds of the native plant taxa found in South Florida (Figure 2.6). Only when all of the conservation areas are added together do most native species receive some degree of protection. Furthermore,

despite a much smaller total area, relatively small conservation areas are rich in species and out-perform the largest conservation areas in capturing native plant diversity (Figure 2.7).

Most taxa that are extirpated or historical have never been found in what is now a conservation area (Figure 2.8). This suggests that habitat loss and modification is the primary cause of plant extirpation in South Florida – unprotected lands have seen the greatest diminishment of plant diversity. However, 38 of the extirpated or historical taxa are known to have occurred within the boundaries of what are now conservation areas, including Everglades National Park. While most of these taxa were collected last or observed before these areas were designated for conservation, four species were documented within conservation areas and subsequently were extirpated (Appendix 1). One of these (*Amyris balsamifera*) was apparently lost when a pipeline was constructed and one (*Cissampelos pareira*) was lost when it was mistaken for a non-native vine by a restoration crew. Two (*Brassia caudata*, *Macradenia lutescens*) were extirpated primarily by poaching. Fifteen of the historical taxa were recorded at least one time after the site was designated for conservation (Appendix 2).

Of the critically imperiled species 16 are not known from any conservation area (Appendix 3), and an additional 85 are known only from a single conservation area (Appendix 4). These two groups of plants make up the most vulnerable of the critically imperiled species in South Florida. Of the 16 taxa not currently protected by any conservation areas in South Florida, four are found in Lake Okeechobee, which currently is not being managed for plant conservation. A number of taxa are protected in only one conservation area in South Florida. Fakahatchee Strand Preserve State Park protects more of these taxa than any other conservation area (Appendix 5), and the conservation system managed by the state of Florida protects more of these taxa than that of any other agency (Appendix 6).

Relatively small conservation areas are extremely important to the conservation of critically imperiled species in South Florida. The largest conservation areas provide protection to only about 21% of all critically imperiled taxa (Figure 2.9). Furthermore, relatively small conservation areas provide protection to more occurrences

Figure 2.5. Conservation area in South Florida by conservation area size class (in acres).

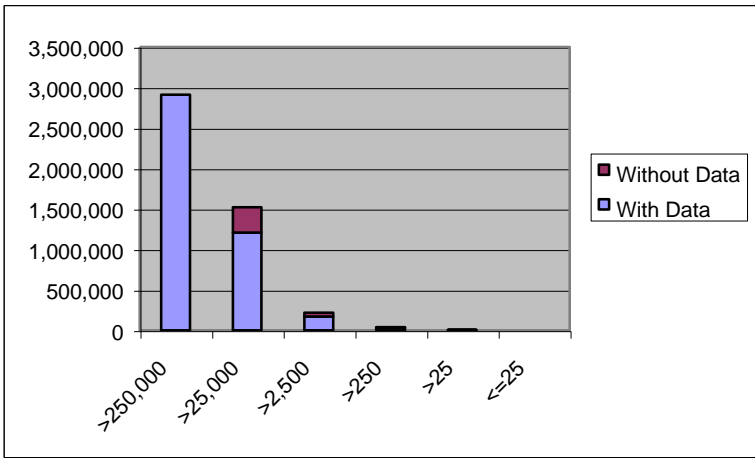


Figure 2.6. Cumulative number of taxa in conservation areas by size class – largest to smallest (in acres).

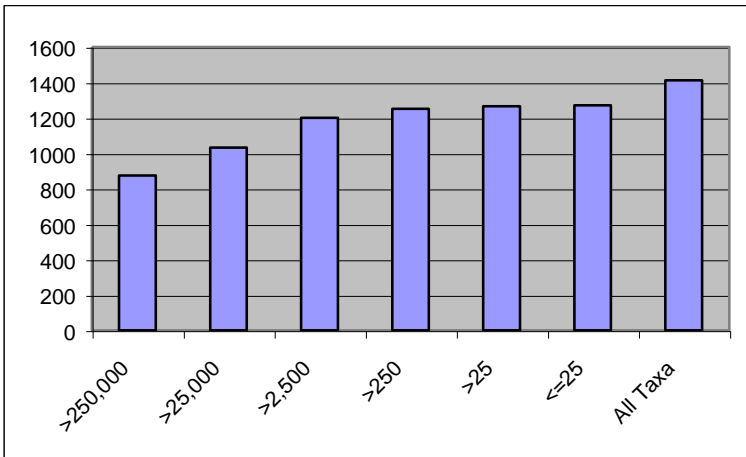


Figure 2.7. Total number of native taxa by conservation area size class (in acres).

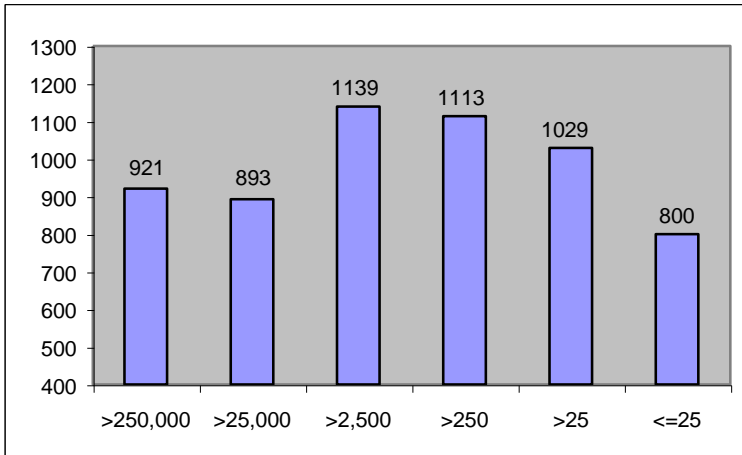
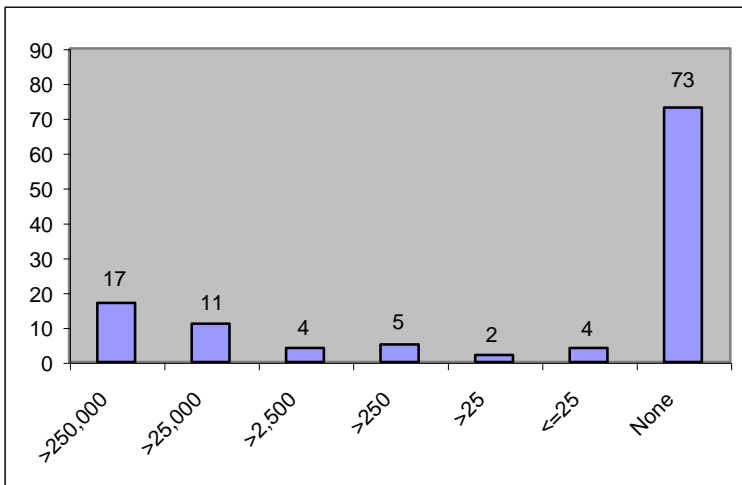


Figure 2.8. Number of historical and extirpated taxa by former presence in conservation areas by size class (in acres).



of critically imperiled taxa than the larger conservation areas (Figure 2.10).

Non-Native (Exotic) Plants

More than one-third of the South Florida flora, or approximately 800 species, is comprised of non-native plants growing without the aid of cultivation. Many of these species are weeds of roadsides, agricultural fields, and developed land. However, 272 taxa of exotic plants are invasive in relatively undisturbed natural areas. Of the invasive taxa, about 50% are trees or shrubs, 35% are herbs, and 15% are vines. Eighty-nine percent of the invasive taxa are perennials, while 10% are annuals. Ninety-seven percent are terrestrial, while only six taxa are floating or submerged freshwater wetlands plants. Four species of exotics (*Tectaria incisa* and three species of *Adiantum*) are lithophytic, and one species (*Peperomia amplexicaulis*) is an epiphyte. Of the invasive species, 67% are dicotyledons, 25% are monocotyledons, 7% are pteridophytes, and two species are gymnosperms (*Cycas circinalis*, *Zamia furfuracea*).

About 75% of all exotic plants naturalized in South Florida have been recorded in at least one conservation area. The most frequent exotic found in South Florida conservation areas is Brazilian-pepper (*Schinus terebinthifolius*), which has been recorded at more than 200 sites. In contrast, 130 taxa of naturalized exotics have been recorded in only a single conservation area. Everglades National Park, the largest conservation area in South Florida at approximately 1.5 million acres, has the largest number of exotic plant taxa (240), followed by Hugh Taylor Birch State Park (209), a conservation area with about 0.01% of the area of Everglades National Park.

Summary of Major Findings

The major findings of the FISF are:

- There are over 2200 species of native and naturalized plants in South Florida.
- About 1/3 of the South Florida flora is comprised of escaped non-native plants.

Figure 2.9. Cumulative number of critically imperiled taxa by presence in largest conservation area size class (in acres) – largest to smallest.

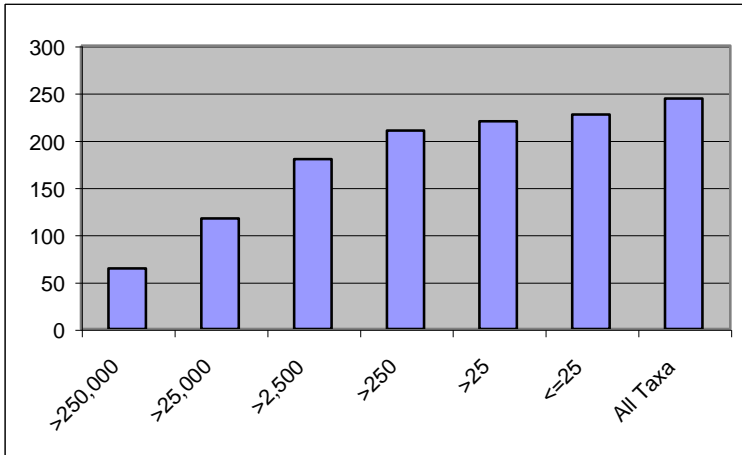
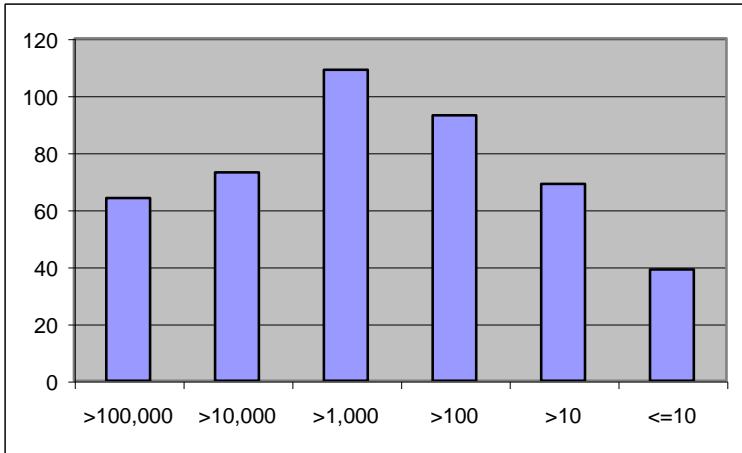


Figure 2.10. Total number of critically imperiled plant occurrences in conservation areas of different size classes (in acres).



- Over 100 species of native plants (8%) are apparently extirpated in the region.
- Another 244 species (17%) are critically imperiled using Natural Heritage Program criteria.
- Of these, nearly 100 species are protected in South Florida in a single conservation area.
- Small conservation areas are very important to the protection of the rarest plants in the region, protecting 205 of the 244 critically imperiled plants in South Florida.
- The three largest conservation areas (Big Cypress National Preserve, Everglades National Park, and Everglades and Francis R. Taylor Wildlife Management Area) provide protection to only two out of every three native plant species.

Other pertinent findings of conservation concern are:

- Habitat destruction has been the major cause of plant extirpations, but other factors such as poaching and drainage also have been important.
- Plants have been extirpated from conservation areas (including Everglades National Park) due to poaching, management error, and other causes.
- Plants of tropical origin are more likely to be extirpated than plants of temperate origin.
- Epiphytes, including rare tropical orchids, ferns, and bromeliads, are more likely to be extirpated or critically imperiled than terrestrial plants.
- Ferns and their allies are more likely to be extirpated or critically imperiled than more advanced groups of plants.

Discussion

Over the past 100 years, the native plant diversity of South Florida has been severely impacted by human activities. Not only have species and natural areas been lost, but the remaining ecosystems have been plundered by poachers, drained for water projects, and invaded by exotic pest plants. At present, South Florida is home to an impoverished flora persisting within highly stressed ecosystems.

Among the most effected groups of plants are tropical species located at the northern end of their ranges. These tropical species

include orchids, lithophytic ferns, lianas, and trees. To a large degree, these tropical species define our perception of South Florida. However, this group of native plants is suffering from regional extinctions at an alarming rate. In essence, we are losing the very species that define our biotic environment. The loss of a tropical plant is worsened by the fact that South Florida is isolated from the Caribbean flora by up to 90 miles of open water. Tropical species that are lost cannot readily re-colonize South Florida.

Epiphytes have been wiped out in large numbers. Most epiphytes native to South Florida are tropical in origin and include orchids, bromeliads, and ferns. Epiphytes have suffered catastrophic declines due to collecting pressure, including poaching in conservation areas. They also have been impacted by the lowering of the freshwater table which has dried out their niches in prime habitats such as rockland hammocks and freshwater swamps. The fern flora also has suffered declines as a result of many of the same factors. Drainage of limestone habitats on the Miami Rock Ridge, in particular, has taken a heavy toll on fern diversity in South Florida.

Finally, South Florida's ecosystems are awash in non-native plants, including highly invasive species that have the ability to modify ecosystem functions and destroy populations of rare plants. Unless immediate action is taken, the native plant heritage of South Florida will suffer irreparable damage.

Chapter 3

Restoring South Florida's Rare Plant Diversity

In 1929, renowned botanist John Kunkel Small emphatically called attention to the disappearance of South Florida's rare plants and the degradation of their environment (Small, 1929). Nevertheless, in South Florida awareness of native plants and their conservation has lagged behind other environmental initiatives. Despite educational efforts, land acquisition programs, and exotic species control campaigns, we still are losing rare plant populations.

As discussed in Chapter 2, the causes of native plant extirpations are many, but habitat loss is by far the major culprit. Because of the rapid development of the South Florida landscape, it is imperative that viable populations of each native species be protected in at least one publicly-owned conservation area. These populations can be augmented by native plant conservation and restoration projects on private lands. Unfortunately, damage to rare plant populations is occurring even within conservation areas. Factors include poor planning, poaching, drainage, exotic pest plant invasions, and fire suppression, not to mention a lack of funding for rare plant conservation work.

The restoration of rare plant populations in South Florida is best viewed as an element of the larger effort to restore South Florida's damaged ecosystems. The loss of native plant diversity in South Florida is a form of ecosystem degradation, and ecosystems can be considered truly restored only when native plant diversity has recovered. **Yet, ecological restoration cannot succeed unless the causes of ecosystem degradation and rare plant extirpations are identified and managed, and proactive steps are taken to restore viable rare plant populations to the landscape.** These are complex issues, and the effort to restore South Florida's rare plant diversity will be a multi-faceted process requiring the efforts and cooperation of numerous individuals, agencies, and institutions. Our intention in this chapter is to provide both a strategic context and a series of implementation guidelines for the restoration of rare plant populations and their habitats in South Florida. This, we hope, will contribute to the larger effort to restore South Florida's beleaguered ecosystems.

Part 1. Strategies and Recommended Actions.

Eight strategies have been developed that, if implemented, are meant to prevent the continuing extirpation of rare plants, and to restore to the extent possible rare plant populations and habitats in South Florida. Within each strategy actions are identified to accomplish the overarching goal of restoring South Florida's native plant heritage.

Strategy 1. Continue floristic research.

Recommended actions:

- Continue review of scientific literature.
- Continue review of herbarium specimens.
- Continue floristic inventories.
- Voucher rare plant occurrences.
- Survey for rare plants.
- Systematically map and monitor rare plant populations.

Strategy 2. Protect all critically imperiled native plant populations and prevent additional extirpations.

Recommended actions:

- Ensure that each critically imperiled species is protected in at least one conservation area.
- Acquire privately owned sites that contain populations of critically imperiled plants; ideally, protect several species at each site.
- Designate areas with populations of critically imperiled plants within publicly-owned sites as conservation areas.
- Develop conservation agreements with private landowners and non-conservation agencies that own or manage lands containing critically imperiled plants, and provide technical assistance.
- Prevent extirpations of rare plants in conservation areas.
- Prevent poaching of rare plants.
- Control exotic pest plants that threaten rare plants and their habitats.
- Control feral animals that damage rare plants and their habitats.
- Establish and implement fire management programs in fire maintained habitats.

Strategy 3. Develop and manage *ex situ* (off-site) collections of germplasm of critically imperiled plants.

Recommended actions:

- Manage existing *ex situ* collections of germplasm of critically imperiled plants at Fairchild Tropical Garden and other botanical institutions.
- Determine additional critically imperiled species that would benefit from *ex situ* collections of germplasm.

Strategy 4. Determine life history and management needs of rare plants.

Recommended actions:

- Determine the ecological requirements of critically imperiled plants.
- Conduct conservation horticulture studies.
- Determine the effects of fragmentation on rare plant pollination, dispersal, and genetic integrity.
- Conduct research on regional and global changes that may impact rare plant populations including drainage, global warming, sea-level rise, and nutrient enrichment to identify management responses.

Strategy 5. Restore degraded South Florida ecosystems including habitats for rare plants.

Recommended actions:

- Restore key habitats of critically imperiled and extirpated plants.
- Ensure that ecological restoration projects do not unnecessarily harm rare plant populations.

Strategy 6. Restore native plant populations while maintaining natural patterns of genetic variation.

Recommended actions:

- Restore viable populations of critically imperiled taxa in conservation areas.
- Augment populations of critically imperiled plants if necessary to prevent extirpations.

- Reintroduce viable populations of rare plants to conservation areas from which they have been extirpated.
- Restore viable populations of native plant species that have been extirpated from South Florida.
- Consider genetic differentiation and patterns when determining propagule sources for all restoration efforts involving translocation.

Strategy 7. Improve the legal protection of rare plants.

Recommended actions:

- Provide current information on rare plants to listing agencies.
- Improve the listing process so that rare plants that warrant protection can be listed.

Strategy 8. Create awareness about rare plants, their conservation, and restoration.

Recommended actions:

- Create training opportunities for land managers and restoration practitioners, in both the public and private sectors.
- Provide key information to policy makers.
- Educate the public.
- Improve funding for research and management of rare plants in South Florida.

Part 2. Implementation Guidelines

The following guidelines are intended to assist policy makers, land managers, and restoration practitioners in improving rare plant conservation and restoration in South Florida. These guidelines are not meant to be all-inclusive or complete. In most cases, additional resources are needed to implement a particular element of a conservation or restoration program. Where applicable, these resources are identified.

Floristic Inventories

Current vascular plant inventories are needed for all conservation areas in South Florida. Inventories are also extremely valuable on lands being considered for acquisition and conservation easements and agreements. Inventories are best when all of the natural communities at the site are sampled, as well as disturbed areas such as roadsides and picnic areas, and the site is sampled during all of the major seasons of the year.

In general, we recommend that a vascular plant inventory be completed every ten years. For sites with staff botanists, a working flora can be updated on a constant basis. While a previous list can be used as a reference, we discourage simply adding newly observed taxa to a previously compiled flora. A flora (that is a list of plants at a site) is most helpful if it clearly indicates those taxa known to be present at the time of the inventory. Taxa not found during the current inventory can be included, but are best annotated to indicate that they were not found. For instance, the most recent observer of a species can be noted. Taxa that were not observed during the current inventory can be indicated as extinct, extirpated, historical, doubtfully present, recorded in error, or assumed to be present.

For all species, it is useful to indicate some measurement of abundance. While some floras use qualitative terms, such as “common,” “rare,” etc. we prefer quantitative estimates of abundance using a Log_{10} scale (e.g. 1, 2-10, 11-100, 101-1000, and so on). Furthermore, if 10 or fewer individuals occur, then it is best to count all individuals. If 100 or fewer individuals are present, then it would be beneficial to estimate the number of plants by tens (11-20, 21-30, etc.). In all cases, abundance measurements are based upon numbers of reproductive

individuals. In the case of annuals, the estimate is based upon the number of sexually reproductive individuals present within a period of a year.

If species abundance trends are obvious, they can be indicated. For instance, if managers are intentionally eliminating an exotic species, then the trend could be indicated as declining. Trends are best based upon some relatively long-term time scale, such as five years, to avoid focusing upon short-term changes in population numbers due to weather phenomena or other factors. We usually indicate trends as increasing, decreasing, or stable. We define stable as a population that undergoes a net demographic change of less than 10% during the time period used to indicate trends.

Information on presence by plant community or habitat is very helpful. It is preferable to use the Florida Natural Areas Inventory (FNAI) system whenever possible. In addition to indicating which plants are found in natural habitats, it also is important to indicate if a species is present in disturbed areas. If the plant is cultivated, then it is best to note if it is cultivated only, augmented (native to the site but also cultivated), or introduced (naturalized on the site). Naturalized plants can be indicated as ruderal (confined to disturbed areas and dependent upon disturbance), not invasive (naturalized, but not invading a natural area), invasive (a non-native plant invading a natural area), or potentially invasive (an invasive non-native plant present at the site but not yet established within a natural area). Some authors provide additional information, such as why a species has been cultivated (for instance for ornament or food) or whether it was accidentally introduced.

Ideally, site floras indicate: which taxonomic authority or authorities were used (e.g., Wunderlin, 1998); the author or authors of the plant list; the date the list was completed; the date or dates the data were recorded; the botanists who recorded the data; other individuals present, if pertinent; and contact information. If previous lists, herbarium specimens, or other resources were used as references, then these should be cited clearly on the plant list. If plants are vouchered during the inventory, then it is helpful if the specimens are cited.

The more historical research that is completed as part of the inventory process, the more useful the plant list for the site. Herbaria can be consulted to find herbarium specimens that may have been collected at or near the site. In some cases, herbarium specimens may need to be sent to a specialist for determination. If authors of previous lists for the site are available, then they can be consulted for additional information about species that cannot be located during the current inventory. Field biologists conducting floristic inventories should also be cognizant of species that may be present at the site, but for which no prior record exists. Whenever possible, herbarium vouchers should be collected (see Vouchering in this chapter).

Summary of general recommendations:

- Inventory all conservation areas.
- Sample all habitats, including disturbed sites.
- Sample at different times of year.
- Conduct intensive inventories at a minimum of every 10 years.
- Indicate if a plant is present, or only recorded in the past.
- Indicate if a plant is cultivated, or if a native population has been augmented.
- Indicate if an exotic is invasive, or only a weed of disturbed areas.
- Estimate population abundance (e.g. Log scale).
- Date all inventories and indicate authors.
- Conduct as much historical and taxonomic research as possible.
- Voucher all species when possible.

Resources: The International Working Group on Taxonomic Databases has prepared a Plant Occurrence and Status Scheme, which can be accessed on the Internet at www.tdwg.org.

Vouchering

Vouchering the occurrence of rare plant taxa at each site is extremely important. Without vouchering, reports of historical presence cannot be verified. Preferably, all stations within a large conservation area are vouchered but, at a minimum, at least one station per conservation area should be vouchered. Herbarium specimens are most useful when deposited at a registered herbarium. Many herbaria now require the collection of a

geographic coordinate with the specimen, a good practice even when not required.

All herbarium specimens must be collected with the appropriate permits, and without causing harm to the rare plant populations being vouchered. In some cases, photographic vouchers may have to suffice, such as when permits cannot be secured, or when a population is too small to collect a herbarium specimen. In other cases, vouchers can consist of a plant fragment, such as a single fertile frond or flower.

In the past, some taxa have been over-collected for herbarium specimens. In the extreme, these collections may have led to the extirpation of the species in South Florida (see ribbon fern [*Nevrodium lanceolatum*] in Chapter 4). Over-collecting may not only have a negative impact upon rare species, but also may waste resources and limited herbarium space. Therefore, we recommend that plants not be re-vouchered at a site unless the most recent collection is at least 10 years old. For most taxa, vouchering every 20 years would be sufficient to ensure a long-term record of a plant's presence at a site. In a few special cases (see lobed croton [*Croton lobatus*] in Chapter 5), a species is ephemeral and is present only in special situations. In these cases, it may be important to collect a voucher each time plants are present.

Summary of general recommendations:

- Collect fertile specimens.
- Ensure that the collection of the specimen does not harm the population.
- Record collector name(s), date, taxon name, habitat and/or associated species, specific location, and geographical coordinate (GPS point).
- Secure permit before vouchering.
- Deposit specimen at a registered herbarium.

Resources: Fairchild Tropical Garden has guidelines for collecting herbarium specimens on their website at www.virtualherbarium.org, and links to other resource sites. The New York Botanical Garden has a list of registered herbaria on their website at www.nybg.org/bsci/ih/.

Rare Plant Surveys

Rare plant surveys are conducted when a historical record exists, but the presence of a species has not been recently verified at the site. Even though decades have passed since a voucher was collected or a species was observed, plants still may persist. Although it may be difficult to obtain precise locality data from herbarium specimens, especially older specimens, an effort must be made to determine the appropriate habitat for the species and conduct reasonable searches before the plant is considered extirpated at a site. Often a plant list for a site will include a species that is within its historical range, but for which there is no herbarium voucher for the county or immediate area. In these cases, surveys are conducted to determine if the species is present.

Surveys are conducted so as to maximize the probability of encountering the target species. Potential habitat is determined and maps of the area reviewed to determine where the appropriate habitat is located. Some species are annuals or may develop aboveground parts for only part of the year. Other species may be difficult or impossible to identify when not in flower. In either case, it is extremely important to establish the time of year when identification can be made and a voucher collected.

Habitats for rare plants are best surveyed on a regular basis. Many species have relatively mobile populations, especially over longer periods of time. These populations may shift in response to fire, hydrological changes, and successional processes. Plants may have gone undetected in prior surveys. In other cases, a site may be largely unexplored.

In some cases reports of rare plants refer to cultivated plants, often planted outside of their historical range. Cultivated populations should be noted and nativity status indicated.

Surveys on private land must be conducted with the permission of the landowner to avoid criminal prosecution for trespass.

Summary of general recommendations:

- Identify which taxa are rare.
- Utilize historical records to determine location and habitats.

- Survey all potential habitats and sites.
- Survey when plants are flowering or otherwise can be identified.
- Re-survey historical localities, if warranted. Survey new localities, if time permits.
- Voucher, map, and estimate abundance of any newly-discovered population.

Rare Plant Mapping

At a minimum, centers of rare plant populations should be mapped, preferably with GPS equipment. Where possible, an outline of plants at each station can be mapped. If warranted, individual plants can be tagged and mapped. Distribution maps can be prepared from GIS data and provided to land managers, park planners, and researchers. For most species covered in this manual, we recommend mapping every three years, although in some cases more frequent mapping may be warranted.

For mapping a centroid, a GPS unit with 10-meter accuracy will suffice, but finer resolution is preferred when mapping boundaries of populations. When mapping individual plants, the use of a GPS recorder with sub-meter accuracy is essential.

Summary of general recommendations:

- At a minimum, map a centroid for each new station.
- If possible, map an outline of plants at each station.
- If warranted, tag and map individual plants.
- Re-map at least every three years.
- If possible, use a GPS recorder with sub-meter accuracy.
- Create GIS coverages and share with agencies and other researchers.

Rare Plant Monitoring

Monitoring rare plant populations is essential to ensure their proper management. In many cases, an annual estimate of population size and population trends is sufficient. In other cases, counting individual plants and recording physical site conditions may be needed. Menges & Gordon (1996) provides a three-level monitoring scheme that can be nested, depending upon the specific needs of a species at the site level. Monitoring varies

from Level 1 (population distribution), to Level 2 (quantitative monitoring of population size/condition), to Level 3 (demographic monitoring of individuals). Each level provides more information, but increases the time and resources needed. Philippi et al. (2001) recommends a multistage approach to the monitoring of rare plant populations, in which demographic monitoring of a subset of each known population is completed in addition to extensive enumeration of all populations. Regardless of which system is used, the key is to design a monitoring program that yields the information needed to properly manage a rare plant population without expending excess resources.

At a minimum, all rare plant populations should be monitored on an annual basis, and mapped every three years. As with floristic inventories, it is useful when population sizes are estimated.

Summary of general recommendations:

- Monitor each station on an annual basis, at a minimum.
- Estimate population sizes (e.g. Log scale).
- If under 100, estimate by 10s; if under 10, count individuals.
- Indicate general health of plants and any threats.
- Determine if more frequent or intensive monitoring is needed.
- Monitor following natural disturbances.
- Monitor before and after management events.

Resources: Menges & Gordon (1996) and Philippi et al. (2001) provide rare plant monitoring guidelines.

Land Acquisition

There are many ongoing acquisition projects in South Florida, from federal programs to state and local initiatives. Despite the fact that more than 50% of South Florida is protected, 16 species of critically imperiled plants are absent from all conservation areas (Appendix 3). Some of these species could possibly be protected through the acquisition of private lands.

Other critically imperiled species are present in one or more conservation areas, but additional populations are found on non-conservation lands. Where possible, these sites should be acquired. Other sites may be considered for acquisition if they contain potential habitat for extirpated, historical, or critically

imperiled species. All sites should be thoroughly surveyed during the acquisition process to determine if they contain any historical or critically imperiled species. Furthermore, sites that are partially degraded may be considered for acquisition if habitat for extirpated or inadequately protected critically imperiled species can be restored. Altogether, 40 sites have been identified for acquisition in South Florida (Appendix 7).

Summary of general recommendations:

Prioritize sites for acquisition as follows:

- Sites that contain critically imperiled plants not known from any conservation area.
- Sites that contain critically imperiled plants known from only one conservation area.
- Sites that contain critically imperiled plants.
- Sites that contain habitat for critically imperiled, historical, or extirpated plants.
- Sites where habitat for critically imperiled, historical, or extirpated plants can be restored.

Resources: Information on State acquisition projects can be obtained on the Internet from the Florida Natural Areas Inventory at www.fnai.org.

Designation and Management of Public Lands as Conservation Areas

Some publicly-owned lands contain populations of rare plants, but are not designated or managed as conservation areas. In some cases, a site is currently designated as a conservation area, but is not managed as such. Nine publicly-owned sites have been identified for designation and management as conservation areas (Appendix 8).

Summary of general recommendations:

- Designate all, or sections of, publicly-owned sites with populations of critically imperiled plants as conservation areas.
- Manage these sites as conservation areas.

Conservation Easements and Agreements

In some cases, it may be impossible, impractical, or inappropriate to acquire a site or to designate a publicly-owned site as a conservation area. In such cases, it may be beneficial to obtain a conservation easement or develop a conservation agreement. In cases where conservation agreements can be developed, technical assistance from a land managing agency should be provided to help manage and monitor populations of rare plants. Incentives may be provided to the landowner to encourage participation in such a program. Twenty-one sites have been identified that would benefit from the development of a conservation agreement and from technical assistance to manage rare plants (Appendix 9).

Summary of general recommendations:

- Obtain conservation easements or develop conservation agreements for sites that are not appropriate for acquisition or designation as conservation areas.
- Identify a source of technical assistance to help with rare plant conservation and restoration efforts.
- Develop a work plan and monitoring schedule.

Preventing Avoidable Extirpations

Unfortunately, rare plant populations are still being extirpated from conservation areas. In some cases, these losses are completely avoidable. In particular, park planners and superintendents need to be informed about populations of rare plants so that park improvements or management activities do not needlessly threaten or destroy rare plant populations. Management plans should include clearly marked maps of rare plant distributions, and articulate methods of monitoring and managing rare plant populations. It is extremely helpful if mapped locations of rare plants are distributed to land stewards who are responsible for implementing management programs. Recreational activities such as off-road vehicle use and equestrian activities must be restricted to avoid impacts to rare plant populations.

Summary of general recommendations:

- Provide land managers, park planners, and superintendents with mapped locations of rare plants.

- Include maps of rare plant populations in management plans.
- Articulate methods of monitoring and managing rare plants populations in management plans.
- Ensure that park improvements do not needlessly extirpate populations of rare plants.
- Prevent off-target damage to rare plant populations from management programs.
- Design recreational activities to avoid impacts to rare plants.

Poaching

Over-collecting and poaching have contributed to the extirpation of numerous rare plants, especially epiphytic orchids and tropical ferns. The State of Florida Department of Agriculture and Consumer Services, Division of Plant Industry (DPI) regulates the collecting of listed plants in the state. Collecting of listed plants without a permit is illegal. Unfortunately, few conservation areas have the resources necessary to combat rare plant poaching. For the survival of many rare plants, it is critical that illegal collecting is halted and that poachers are prosecuted.

Summary of general recommendations:

- Prevent illegal poaching of rare plants.
- Prosecute poachers to the fullest extent of the law.

Resources: The rule regulating the collection of plants in Florida can be obtained at the DPI website at <http://doacs.state.fl.us/~pi/5b-40.htm>

Exotic (Non-Native) Pest Plants

Exotic pest plants directly and indirectly threaten rare plant populations in South Florida. The Florida Exotic Pest Plant Council (FLEPPC) has identified invasive and potentially invasive exotic pest plants in Florida (FLEPPC, 2001). Every conservation area needs an active exotic pest plant control program to eradicate species identified by FLEPPC. In some cases, exotic pest plants pose a specific threat to critically imperiled plants. In these cases, special eradication programs need to be implemented. In other cases, exotic plants that are not identified by FLEPPC pose a threat to rare species on a site. If a species is documented as being invasive, then it should be eradicated.

The control of exotic pest plants must be implemented without harming rare plants. Control efforts need to be as specific as possible and avoid off-target damage to native vegetation. Maps of rare plant locations may be provided to exotic plant control crews along with photographs of rare plants and their identifying characteristics. In some cases, rare plant populations can be demarcated in the field prior to the initiation of exotic plant control programs. Supervisors of control efforts should understand both the control methods and the identity of the invasive and native species of concern. Once initial exotic species control efforts are concluded, a long-term monitoring and management program is needed to control new infestations of exotic plants. Where possible, invasive exotic pest plants should be extirpated from conservation areas in South Florida.

Some species of exotic pest plants have small populations that could be extirpated from South Florida before they become major regional problems. Land managers can work with local governments, industry, and others to ensure that these species are eliminated from the landscape before they invade further.

Summary of general recommendations:

- Implement an ongoing exotic pest plant control program at every conservation area.
- Provide maps of rare plant locations to control crews.
- Provide educational materials to control crews and train them to avoid impacts to rare plants.
- Establish long-term monitoring and management programs after initial control efforts are concluded.
- Eliminate invasive exotic pest plants from conservation areas in South Florida.
- Extirpate exotic pest plant species from South Florida whenever possible.

Resources: A current FLEPPC list can be obtained at www.fleppc.org.

Feral Animals

Feral hogs, and possibly other feral animals, threaten populations of rare plants. Wild hogs are aggressive rooters of tubers and

other litter and belowground sources of food. Wild hogs are especially damaging to rare plant habitats such as hydric hammocks and the edges of depression marshes. In some cases, wild hogs can completely destroy the aboveground vegetation and disturb all the soil in an area where they are feeding.

Unfortunately, populations of wild hogs are tolerated or even promoted on some conservation lands as game species. Hogs also travel freely from one site to another, making them difficult to control even when control efforts are implemented on conservation lands. Furthermore, there is often public resistance to control efforts from those concerned about either hunting or animal rights. If wild hogs are not eradicated, all other management efforts to protect rare plant species may meet with failure in conservation areas affected by wild hog activity.

Summary of general recommendations:

- Control wild hogs.
- Educate the public about the effects of wild hog damage.
- Document the effects of wild hogs on rare plants.

Fire

Many plant communities in South Florida are fire adapted (Myers & Ewel, 1990), and the use of natural and prescribed fire as a management tool is extremely critical for the protection of many rare plants. Some conservation areas, such as Everglades National Park, have sophisticated fire management programs; others still need to develop and implement such programs. An important issue is the difficulty of using prescribed fire in smaller, fragmented conservation areas in urban and suburban communities. Health and property concerns and public misunderstanding can lead to political pressure to reduce or suppress the use of fire in conservation areas. In some cases, managers have attempted to mimic the effects of fire using mechanical treatments, but there are scarce data on the long-term effects of these practices on rare plants. Without the proper use of fire, many species of critically imperiled plants will be lost from South Florida.

Prescribed fire is important for the maintenance of many native plant habitats, and the application of prescribed fire is best conducted in such a way that it mimics the historical ecological

role of fire in the ecosystem being burned. Sites are best divided so that the entire site is not burned during the same year. The effects of fire on rare plant populations should be monitored following a prescribed burn.

The Florida Department of Agriculture and Consumer Services, Division of Forestry regulates the use of prescribed fire in Florida. County and municipal fire departments also have regulatory authority, and permits are required for any prescribed burn in Florida. Prescribed fire training is provided by the Florida Division of Forestry. The Florida Prescribed Burn Law releases burners from liability in case unintended damage occurs if the appropriate training, planning, permits, and equipment are obtained, and the fire is conducted within the prescription of the permit.

Summary of general recommendations:

- Establish and implement fire management programs at conservation areas with fire maintained habitats.
- Ensure that each conservation area has at least two burn units.
- Monitor effects of prescribed fire on rare plants.
- Provide fire training to land managers.

Resources: The University of Florida Cooperative Extension Service has a web page on prescribed burning regulations in Florida at http://edis.ufl.edu/BODY_FRO55.

***Ex Situ* Collections**

The establishment and management of *ex situ* collections of rare plants is an expensive and resource intensive process. However, in some cases, the development of an *ex situ* collection of plant germplasm may be necessary to prevent the loss of a species or the loss of important genetic material (Falk & Holsinger, 1991). *Ex situ* collections can be comprised of seeds or clonal material (Eberhart et al., 1991). Except in special situations, *ex situ* collections are best managed by institutions affiliated with the Center for Plant Conservation, such as Fairchild Tropical Garden. Fairchild Tropical Garden already maintains *ex situ* collections of several species discussed in this manual (e.g. semaphore cactus [*Opuntia corallicola*] in Chapter 5).

Falk & Holsinger (1991) provides background on rare plant genetics and the use of *ex situ* collections of rare plants as a conservation strategy. One important consideration is that the initial cost of collecting germplasm may be eclipsed by the long-term cost of management of the collection (Falk & Holsinger, 1991). Because of limited resources, *ex situ* collections should be limited to critically imperiled endemic species or species with disjunct populations in South Florida. In some cases, *ex situ* collections have been established for species that are now known to be more common than was originally thought. In these cases, it may be worthwhile to end the management of these collections to free up resources for rarer species. Conversely, some species could easily be extirpated from South Florida, and would be better protected by the establishment of an *ex situ* collection of germplasm (e.g. fragrant maidenhair [*Adiantum melanoleucum*] in Chapter 5).

Summary of general recommendations:

- Manage existing *ex situ* collections at Fairchild Tropical Garden and other botanical institutions unless species are now known to be more common than was originally thought.
- Consider development of *ex situ* collections of germplasm of critically imperiled plants threatened with immediate extirpation.

Resources: Falk and Holsinger (1991) provides sampling guidelines for the conservation of endangered plants. The Center for Plant Conservation maintains a list of participating institutions and other information on the internet at www.cpc.org

Rare Plant Research

Little is known about the basic biology of most rare plants in South Florida. Because of limited resources, researchers at Fairchild Tropical Garden, Florida International University, and other institutions have conducted research on a relatively small suite of species. Most research has been conducted on species listed by the U.S. Fish and Wildlife Service (see USFWS, 2000) and a few tropical species at the northern end of their ranges (e.g. Sargent's cherry palm [*Pseudophoenix sargentii*] in Chapter 5). More recently, the Florida Department of Agriculture and Consumer Services, Division of Plant Industry has provided funding to Fairchild Tropical Garden for work on more species.

Nevertheless, limited funding for rare plant research is a major obstacle to rare plant conservation in South Florida.

Abundant research questions on the biology and ecology of rare plants in South Florida can be identified. Basic questions about pollination, dispersal, and ecological tolerances are just a few of the issues that need to be addressed. Genetic studies on most rare species are just beginning. Information is also needed on rare plant responses to management activities, such as prescribed fire. Horticulture studies are needed to determine how to propagate rare plants and the best methods of out-planting them in restoration project sites.

Summary of general recommendations:

- Improve funding for rare plant research.
- Conduct research to determine the basic biology of rare plants, including reproduction and ecological tolerances.
- Conduct genetic studies.
- Conduct studies on rare plant propagation.
- Conduct studies on best methods of out-planting rare plants.

Fragmentation

Many rare plants in South Florida are contained within small conservation areas located in a matrix of urban and rural landscapes. The effects of fragmentation on organisms and ecosystems have been much discussed (Davies et al., 2001) and fragmentation is considered a major research priority of conservation biology for the next decade (Soulé and Orians, 2001). Effects of fragmentation on rare plants are complex, but potentially include genetic isolation, loss of pollinators, and reduced dispersal ability in response to climatic change or sea-level rise. While there has been much speculation about these effects over the long-term, research on minimum viable populations (Menges, 1991), pollination, and dispersal is needed before we will better understand the management of fragmented populations of rare plants.

Summary of general recommendations:

- Determine the minimum viable population sizes of the rarest plants in South Florida.

- Study the effects of fragmentation on pollination, dispersal, and other natural processes critical to the viability of rare plant populations.
- Develop management strategies to minimize the effects of fragmentation on rare plants.

Regional and Global Impacts

While some impacts to rare plants are localized, others are of a regional or global nature. We have already discussed regional impacts caused by invasive species, fire suppression, and fragmentation. Additional impacts include the historical lowering of the freshwater table and the current plans to restore the Everglades. Global impacts include climate change and sea-level rise. In some cases, rare plant populations cannot be managed successfully or restored unless current conditions are changed. This may be the case for many lithophytic ferns that need moist conditions and have declined due to the lowering of the freshwater table in southeastern Florida. However, we cannot assume that regional change from projects such as the Everglades restoration will automatically benefit rare plants. The Everglades restoration could cause a decline in some species that already have been reduced in range and numbers. Continuing coastal erosion and nutrient enrichment from contaminated water and atmospheric deposition are other regional impacts that may complicate efforts to manage and restore rare plant populations.

Climate change is likely to have important impacts on rare plants in the future, and Florida is one of the states that may be most impacted (Kutner & Morse, 1996). A large number of native species are at the southernmost limit of their ranges in Florida (Kutner & Morse, 1996; Crumpacker et al., 2001a; Crumpacker et al., 2001b). South Florida is isolated from natural sources of tropical plant species by open water. Because of this, tropical plants cannot easily fill niches vacated by temperate species retreating to the north and South Florida may suffer a net loss of native plant species. These losses are expected to be exacerbated by sea-level rise that threatens many tropical species confined to low-elevation coastal habitats such as beaches and coastal berms.

Summary of general recommendations:

- Determine those rare plants most likely to have been impacted by regional drainage and examine management options.
- Evaluate the potential effects of the Everglades restoration on rare plants.
- Monitor the effects of the Everglades restoration on rare plants.
- Continue studies on the effects of climatic change on native plants in South Florida.
- Identify those South Florida plants likely to be impacted by climate change.

Habitat Restoration

The restoration of rare plant habitats is a critical component of the overarching goal of restoring South Florida's degraded ecosystems. For purposes of this manual, we have concentrated on identifying key habitats for critically imperiled, historical, and extirpated plants in South Florida. These habitats were identified by reviewing all of the known historical localities for this group of species. In some cases, such as in the Fort Myers area, numerous species have been collected, but they occupied myriad habitats and no clear restoration objective could be determined. In other cases, clear groupings of species in areas of potential restoration were found. As a result, ten ecological restoration areas have been identified (Appendix 10).

From a floristic standpoint, several elements are critical for the successful restoration of rare plant habitats, or for any ecological restoration project that involves the translocation of native plants: (1) identify a reference ecosystem; (2) use species (taxa) of plants native to the immediate locality of the project area, and to the ecosystem being restored; (3) utilize propagules (seeds, cuttings, etc.) collected as close as possible to the restoration site and from the ecosystem being restored; (4) use propagules from many individual plants. Depending upon the circumstances, rare plants may be planted out during the initial stages of the project, or at later stages after some degree of ecosystem maturity has been attained. Clewell et al. (2000) provides guidelines for conceiving, organizing, conducting, and assessing ecological restoration projects. Falk et al. (1996) provides guidelines for the

reintroduction of rare plants (see also Translocations in this chapter).

Another consideration is the integration of rare plant conservation and floristic elements into existing ecological restoration projects. Unfortunately, many restoration projects fail to incorporate rare plant conservation into their designs and, in some cases, rare plants may be harmed. Other projects have loose criteria for the selection of plant species or genetic stock, and these projects may ultimately contaminate conservation areas already stressed by exotic pest plants and other anthropogenic disturbances. Large ecological restoration projects such as the Everglades restoration need protocols for the monitoring of rare plant populations to ensure that the restoration does not inadvertently harm rare plant populations.

Summary of general recommendations:

- Identify and restore key habitat areas for critically imperiled, historical, and extirpated plants.
- Restore populations of rare plants.
- Follow good principles of floristic design in restoration projects.
- Integrate rare plant conservation and restoration into existing and future ecological restoration projects.
- Monitor the effects of large restoration projects on rare plants.
- Develop a strategy to ameliorate damage to rare plants caused by climate change, sea-level rise, and other phenomena.

Resources: The Society for Ecological Restoration website (www.ser.org) has an Adobe Acrobat version of the restoration guidelines by Clewell et al. (2000). The IRC website (www.regionalconservation.org) has floristic data from conservation areas that will assist in the compilation of floristic reference data. Egan & Howell (2001) provides a guide to reference ecosystems.

Increasing Population Sizes of Rare Plants

In many cases, rare plant populations have been reduced within a conservation area due to collecting, exotic pest plant invasions, fire exclusion, and so on. In some cases, these populations can

be restored by eliminating the causes of decline. Poaching can be prevented, exotics plants can be controlled, and fire can be reintroduced. In such cases, a monitoring program should be developed to ensure that restoration activities do not harm critically imperiled plants, and that the populations of critically imperiled plants respond in a favorable way.

Summary of general recommendations:

- Identify and remove stressors from populations of critically imperiled plants
- Ensure that management activities do not negatively impact rare plant populations.
- Monitor long-term management effects to determine whether or not populations of critically imperiled plants respond by increasing abundance and reproductive success.

Translocations

Translocations include the augmentation, reintroduction, and introduction of rare plants (Gordon, 1994; Falk et al., 1996). The translocation of a rare plant into a conservation area is a management strategy that must be approached cautiously. Issues of concern include whether or not a translocation is appropriate, the genetic composition of the propagules, the establishment of a monitoring protocol, and long-term management of the population. Falk et al. (1996) suggests that all translocations be treated as experiments.

In some cases, the population of a rare plant has become so small in a conservation area that the risk of local extinction is extremely high (see mahogany mistletoe [*Phoradendron rubrum*] in Chapter 5). In such cases, augmentation of populations must be considered. In other cases, rare plant populations have been lost from conservation areas in South Florida due to poaching, exotic pest plant invasions, or other factors. These conservation areas may be considered candidate sites for rare species reintroduction. Introductions of rare plants may also be considered if a rare plant was collected in the vicinity of a site. When introducing a rare plant into a conservation area, one must be careful to ensure that the introduced population does not have a negative impact upon other native species present at the site. As such, introductions might be best considered at sites where previous disturbance necessitates the restoration of rare plant habitats. We discourage

the translocation of any species, rare or not, to a conservation area outside of that species' historical range.

Summary of general recommendations:

- Document historical presence at or within the vicinity of the recipient site.
- Determine that the causes of population loss or extirpation have been removed.
- Determine that the appropriate habitat is present and that management will facilitate the success of the project.
- Establish if translocation is appropriate.
- Implement augmentation or reintroduction if these actions will not threaten other native plants or their habitats.
- Use local germplasm from the same habitat as the recipient site.
- Collect germplasm according to rigorous scientific standards.
- Treat the translocation project as a scientific experiment.
- Map all translocated plants and develop GIS coverages.
- Develop a monitoring protocol that will determine success of the project.
- Develop a long-term management plan.

Resources: Gordon (1994) provides guidelines for rare plant translocations into conservation areas. Falk et al. (1996) provides guidelines for rare plant reintroductions.

Reintroducing Populations of Extirpated Plants

Over 100 species of native plants apparently have been lost from South Florida due to human actions in the last 100 years. To the extent possible, populations of these species should be reintroduced to South Florida. Generally, we have recommended consideration of reintroductions to South Florida when sufficient information is present to document: (1) that the plant was a persistent element in the flora, (2) its habitat(s), and (3) a specific historical location.

For extirpated or historical plants with widespread historical records, we have generally limited our reintroduction recommendations to those species in those areas where more than one record exists. For those historical or extirpated plants with a single historical record, we have generally not

recommended reintroduction at this time. The exception would be those plants that would be reintroduced into restored areas in urban or suburban habitats, where risks of contamination to nearby conservation areas are low (Gordon, 1994). This would also apply to intensive agricultural areas, such as in the Everglades Agricultural Area. In some of these cases, we have recommended consideration of reintroduction. We also have not recommended reintroduction of an extirpated or historical species if it appears that the plant was extirpated due to natural causes (see purple tiger orchid [*Maxillaria parviflora*] in Chapter 4).

The main concern about the reintroduction of a plant that has been extirpated from South Florida is where to obtain the genetic material to be used in the restoration. In a few cases, the original genetic material from South Florida plants still exists, and propagules could be obtained from living plants (see spiny black olive [*Bucida spinosa*] in Chapter 4). In some cases, the genetic material is comprised of a single living tree. In other cases, no South Florida material exists whatsoever. If the extirpated species is present to the north of our area, this may not be a stumbling block. But if the plant is a tropical species at the northern limit of its range, this can be a major problem. This is the case for many tropical ferns and orchids that have been extirpated from South Florida. These tropical species almost certainly arrived in South Florida from the Bahamas and Cuba (there are a few South Florida plants that apparently arrived from southern Texas or Mexico), and Bahamian or Cuban germplasm would have to be considered as sources of propagules.

Another consideration is the potential weediness of some extirpated species if reintroduced (see slimbristle sandbur [*Cenchrus brownii*] in Chapter 4). Some of these species could become pests given the extreme disturbance in today's South Florida landscape. In this case, caution is advised, and perhaps no action should be taken at the present time.

Summary of general recommendations:

- Document historical presence in South Florida.
- Document presence at or in the vicinity of the recipient site.
- Determine source(s) of germplasm.
- Follow guidelines for translocations.

Legal Protection of Rare Plants

The Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FDACS) and the U.S. Fish and Wildlife Service (USFWS) both list rare plant species found in South Florida. FDACS lists plants as endangered, threatened, or commercially exploited in Florida. FDACS does not list hybrids or infraspecific taxa (subspecies or varieties). The USFWS lists only those species that are endangered or threatened with endangerment within all or a significant portion of their ranges. In some cases, lack of information about rare plants in Cuba or the Bahamas may slow or stop the listing of species that warrant protection under the Endangered Species Act. In addition, political and legal processes have encumbered the USFWS listing process for many years, and many species that warrant federal protection remain unlisted. Finally, the Florida Natural Areas Inventory tracks rare plants in Florida, but this listing does not provide any legal protection.

Although the listing of plants does not provide the same legal weight as the listing of animals, listing is important because it focuses attention to the plight of rare plants, provides a legal and administrative basis for requiring the protection of rare species on public lands, and, in some cases, secures funding for surveys, mapping, monitoring, or scientific research. Several plants covered in this manual are in need of review for listing by one or more agency, or the current listing is in need of revision. These needs are indicated in the species accounts in Chapter 4 and Chapter 5.

Summary of general recommendations:

- Ensure that the most current information is available to listing agencies.
- Conduct research on the status of rare plants found only in South Florida, Cuba, and the Bahamas that may influence listings by the USFWS.
- Encourage the USFWS to develop and implement objective, biologically-based listing procedures and speed the listing process.
- Encourage FDACS to develop and implement listing procedures to include subspecies, varieties, and hybrids.

Creating Awareness

Awareness of the need for rare plant conservation and restoration lags behind other environmental initiatives. Yet communicating the needs of rare plants and their habitats is critical to their restoration. At the top of the list is the education of land managers and restoration practitioners, so that restoration projects and management efforts can benefit rare plants. IRC initiated this process with a rare plant workshop convened at Fairchild Tropical Garden in 2001, and has another six workshops planned for 2002. Fairchild Tropical Garden has organized state-wide rare plant meetings from time to time, including one at Archbold Biological Station in 2001.

It is important to build awareness within the research community, as there is far more work to do than those currently conducting rare plant research can manage. In particular, graduate students should be encouraged to work on rare plant biology. Funding sources need to be augmented and improved as discussed in Rare Plant Research in this chapter.

Many critical people need more information about the conservation needs of rare plants. These include policy makers, park superintendents, park planners, acquisition specialists, and those responsible for funding conservation programs. Unfortunately, native plants play a minor role in society's thinking about conservation, and have suffered from administrative and political neglect. Finally, without the support of the public, rare plant conservation and restoration will continue to lag behind other environmental activities in South Florida. The Florida Native Plant Society and its local chapters have done an exemplary job in educating the public, but public advocacy for rare plant conservation is critical if we are to move forward with the restoration of South Florida's native plant heritage.

Summary of general recommendations:

- Create training opportunities for land managers and restoration practitioners in the identification, conservation, and restoration of rare plants.
- Encourage graduate student studies on rare plants.
- Provide information to policy makers, park superintendents, park planners, acquisition specialists, and other key people.

- Educate the public and gain support for rare plant conservation and restoration.

Resources: The Florida Native Plant Society website (www.fnps.org) is an excellent resource. The IRC website (www.regionalconservation.org) has information on rare plants, including most of the contents of this manual.

Chapter 4

The Extinct, Extirpated, and Historical Plants of South Florida

This chapter provides accounts of 111 species that have been ranked by IRC as extinct, extirpated, or historical in South Florida. These rankings are discussed in Table 1.1 in Chapter 1. Each account provides a detailed history of the plant in South Florida, obtained through the study of herbarium specimens, literature, correspondence with other botanists, and additional sources. Herbarium citations (e.g. USF) are provided (Appendix 11). In some cases we had to make difficult decisions concerning reported but undocumented occurrences. We welcome any additional information on any of these taxa for incorporation into future editions of this manual.

The South Florida conservation status of each plant is indicated at the beginning of its account under “South Florida Status,” and includes the IRC ranking as well as when and where the taxon was last documented. Additional data is provided for the convenience of users. “Taxonomy” indicates the group of plants to which the taxon belongs (dicotyledon, monocotyledon, or pteridophyte), and its family, primarily following Wunderlin (1998). “Habit” indicates the form of the taxon (tree, herb, epiphyte, etc.). “Distribution” indicates the global range of the taxon, and “South Florida Distribution” gives the specifics of its range in the region. “South Florida Habitats” indicates from which South Florida habitats the species is known. “Protection Status” indicates if the taxon is listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS), the Florida Department of Consumer Services, Division of Plant Industry (FDACS), or the Florida Natural Areas Inventory (FNAI). “Identification” supplies references to photographs, illustrations, and other tools. “References” are given for additional useful literature. “Synonyms” are from Wunderlin (1998) and other publications cited in the manual.

This chapter is divided into three parts. The first part treats only a single taxon, now believed to be extinct. The second part treats taxa believed to be extirpated in South Florida; generally these are

plants not seen for at least 20 years. The third part treats taxa believed to be historical in South Florida; in general these taxa have not been observed for at least 10 years, but may be found during additional searches.

The history of each taxon was used to make conservation and restoration recommendations. In this chapter, recommendations are primarily concerned with surveys and reintroductions, following guidelines from Chapter 3.

The IRC Website (www.regionalconservation.org) has additional data on the plants covered in this chapter, including photographs of some species.

Part 1. The Extinct Plant

***Tephrosia angustissima* Shuttlew. ex Chapm.
var. *angustissima*
Narrowleaf Hoarypea**

South Florida Status: Extinct. The last verifiable collection of a native population was made in 1947 in Miami.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS (as *T. angustissima*) and as historical by FNAI.

Identification: The variety can be distinguished from other varieties of *T. angustissima* in being minutely strigose instead of finely villous or canescent, and having leaves 10-20 times longer than wide instead of 2-8 times longer than wide (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Shinners, 1962b; Long & Lakela, 1976; Avery & Loope, 1980a; Isely, 1990; Wunderlin, 1998, Chafin, 2000, Coile, 2000.

Synonyms: *Cracca angustissima* (Shuttlew. ex Chapm.) Kuntze; *Cracca purpurea* L., misapplied.

Historical Context in South Florida: Narrowleaf hoarypea was collected first by Ferdinand Rugel (Chapman, 1860), who collected in South Florida in 1846 (Wunderlin & Hansen, 2001). This specimen was presumably collected in pine rocklands near the Miami River. It was subsequently collected numerous times from near downtown Miami (Garber 4394, NY) south to pinelands near the Silver Palm School (Small 2232, NY; Small & Carter 2575, NY). Carroll E. Wood, Jr. and I.D. Clement made the last verifiable collection of a native population in 1947 in a pineland at Dixie Highway (US 1) and S.W. 31st Street (7492, US). Nearly all of the historical pine rocklands within the range of this species have been destroyed.

Ann Buckley and Ted Hendrickson made an additional collection in 1985 (86, FAU), in a disturbed lot across the street from Greynolds Park in extreme northeastern Miami-Dade County.

This collection is well outside of the known range of narrowleaf hoarypea, and may represent a population that established on railroad fill or was established following road building activities. Bradley surveyed this station in 2000, but no plants were found.

Comments: *This is the only endemic South Florida taxon that now appears to be extinct.*

Preliminary recommendations:

- Continue surveys in pine rocklands in Miami-Dade County.
- Review FNAI rank.

Part 2. The Extirpated Plants

Acacia choriophylla Benth. Cinnecord

South Florida Status: Extirpated within natural range. Last verifiable native population vouchered in 1968 on North Key Largo.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Tree.

Distribution: Native to South Florida, the Bahamas, and Cuba.

South Florida Distribution: Native to the Monroe County Keys, specifically to North Key Largo. Apparently naturalized from cultivated plants elsewhere in the Florida Keys and on the South Florida mainland.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Scurlock (1987) has color photos; Nelson (1994) has a color photo; Nelson (1996) has an illustration; the IRC Website has a color photo.

References: Alexander, 1969; Long & Lakela, 1976; Little, 1978; Correll & Correll, 1982; Scurlock, 1987; Isely, 1990; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Taylor Alexander first collected cinnecord in 1967 in Oak Trail Hammock on North Key Largo (s.n., NY, USF), in what is now Dagny Johnson Key Largo Hammocks Botanical State Park. Alexander (1969) stated that it was found in an undisturbed hammock with no signs of human activity. George N. Avery vouchered this station again in 1968 (449, US). Oak Trail Hammock was heavily impacted by logging, fires, and clearing in the 1970s and early 1980s (Weiner, 1980 as amended), and cinnecord was probably extirpated from North Key Largo during that period. Gann and Florida Park Service biologist Janice A. Duquesnel surveyed this hammock in 2000, but no cinnecord plants were observed.

There have been other reports of cinnecord from the Florida Keys, but none that we have been able to verify as native populations. Cinnecord has been widely cultivated in South Florida since the

1960s and has escaped from cultivation, both in the Florida Keys and on the mainland. It would be difficult to prove that newly discovered stations of cinnecord were not populations naturalized from cultivated plants. As far as we are aware, germplasm from the Florida plants was not conserved.

Preliminary recommendations:

- Consider reintroduction to Oak Trail Hammock in Dagny Johnson Key Largo Hammocks Botanical State Park.
- Review for listing by FNAI.

***Amyris balsamifera* L.
Balsam Torchwood**

South Florida Status: Extirpated. Last observed in 1976 in Matheson Hammock Park in Miami-Dade County. The last plant was probably destroyed around 1980.

Taxonomy: Dicotyledon; Rutaceae.

Habit: Tree.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Reported for coastal hammocks on the eastern Florida peninsula as far north as the "Halifax River" (Small, 1933a), but verified on the mainland only for Miami-Dade County. Also reported, but unverified, for North Key Largo, based upon a sterile specimen collected by John Kunkel Small and others in 1925 (s.n., FLAS).

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as extirpated by FNAI.

Identification: Two native species of *Amyris* are found in South Florida: *A. balsamifera* and the widespread *A. elemifera*. *A. balsamifera* can be distinguished from *A. elemifera* by its puberulent inflorescence and fruit, instead of glabrous inflorescence and fruit (Tomlinson, 1980; Wunderlin, 1998). *A. balsamifera* also has elongated fruit, 9-14 mm long, whereas *A. elemifera* has rounded fruit, 5-8 mm long (Tomlinson, 1980).

References: Small, 1933a; Long & Lakela, 1976; Little, 1978; Tomlinson, 1980; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected balsam torchwood in 1877 in Miami (s.n., FLAS, NY), presumably in Brickell Hammock south of the Miami River. Balsam torchwood was not reported again until 1966, when Conrad D. Byrd reported to George N. Avery that he and Fran C. Young had found plants in nearby Matheson Hammock Park (Avery's Notes, 20 August 1966). Avery subsequently observed a single tree there between September 1966 and September 1976 (Avery's Notes, 1966-1976). Avery vouchered this tree in 1969 (592, FLAS, FTG, USF). John Popenoe collected seeds and accessioned them at Fairchild Tropical Garden that same year. Seeds also were collected and distributed to George Allen of Allen's Hammock Nursery in 1976 (Avery's Notes, 13 September 1976). Avery and Popenoe searched for the tree again in 1981, but were unable to locate it (Avery's Notes, 13 October 1981). A new pipeline had been placed in the vicinity of the tree, and it was thought that a trenching machine might have destroyed it. Balsam torchwood was reported for the Little River area in Miami-Dade County based upon a sterile specimen collected by L. Eleanor Scull in 1937 (s.n., FLAS), but this has never been verified.

Balsam torchwood is cultivated at Fairchild Tropical Garden, and germplasm of the Matheson Hammock tree is maintained as cultivated material (Accession #69-522).

Comments: *Balsam torchwood, like torchwood (A. elemifera), is probably a larval food plant for the federally listed Schaus swallowtail butterfly (Papilio aristodemus subsp. ponceanus).*

Preliminary recommendations:

- Consider reintroduction to Matheson Hammock Park.
- Consider reintroduction to Brickell Hammock at Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.
- Consider introduction to The Barnacle State Historic Park, which is located in Coconut Grove between the two historical stations.
- Consider restoring rockland hammocks in the Brickell Hammock area and reintroducing balsam torchwood.
- Review for listing by FDACS.

***Asclepias connivens* Baldwin**
Largeflower Milkweed

South Florida Status: Extirpated. Last collected in 1956 at the U.S. Forest Service Caloosa Experimental Range in southeastern Charlotte County.

Taxonomy: Dicotyledon; Asclepiadaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to southern Georgia and Florida. Wunderlin (1998) lists it as occasional in Florida in the central and western panhandle and the northern and central peninsula.

South Florida Distribution: Charlotte and Miami-Dade counties.

South Florida Habitats: Flatwoods and pine rocklands.

Protection Status: Not listed by any agency.

Identification: This is a greenish-yellow-flowered milkweed with leaves opposite or whorled, broadly cuneate at the base (Wunderlin, 1998). Taylor (1998) has a color photo. Tobe et al. (1998) has a photo and illustrations.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Acerates connivens* (Baldwin) Decne.; *Anantherix connivens* (Baldwin) Feay.

Historical Context in South Florida: Abram P. Garber first collected largeflower milkweed in 1877 in Miami (s.n., NY), presumably in sandy pine rocklands near the Miami River. William P. Adams made the only other collection in 1956 at the now defunct U.S. Forest Service Caloosa Experimental Range in southeastern Charlotte County (172, FSU). It was “rare in wiregrass-palmetto flatwoods.” Much of southeastern Charlotte County has been developed for agricultural and mining purposes.

Preliminary recommendations:

- Continue surveys in Charlotte County, including at Fred C. Babcock-Cecil M. Webb Wildlife Management Area.
- Consider restoring pine rocklands near the Miami River and reintroducing largeflower milkweed.

***Baccharis dioica* Vahl
Hammock Groundsel**

South Florida Status: Extirpated. Last collected in 1915 in Brickell Hammock.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammock edges.

Protection Status: Listed as endangered by FDACS.

Identification: This is the only species of *Baccharis* in South Florida with entire leaf margins. It has been confused with *B. glomeruliflora* and *B. halimifolia*, which sometimes have only a few obscure teeth.

References: Small, 1933a; Ledin, 1951; Long & Lakela, 1976; Cronquist, 1980; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Nathaniel L. Britton first collected hammock groundsel in 1904 on “rocks south of Miami” (72, NY), presumably on the margins of Brickell Hammock. It was subsequently collected several times by John Kunkel Small and others at Brickell Hammock beginning in 1904 (1651, NY). Small made the last known collection of hammock groundsel at Brickell Hammock in 1915 (5449, NY). The apparent cause of extirpation was habitat destruction.

Preliminary recommendations:

- Consider reintroduction to the edges of Brickell Hammock remnants at Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.
- Consider restoring rockland hammocks in the Brickell Hammock area and reintroducing hammock groundsel.
- Review for listing by FNAI.

Bletia patula Hook.
Flor de Pasma

South Florida Status: Extirpated. Collected once in 1947.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and the West Indies in Cuba, Hispaniola, and Puerto Rico.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Luer (1972) has both color photos and illustrations.

References: Hawkes, 1950d; Luer, 1972; Wunderlin, 1998.

Synonyms: *B. patula* var. *alba* A.D. Hawkes.

Historical Context in South Florida: Flor de pasmo is known from a single collection made by Manly Boss in 1947, from a pine rockland between Black Creek and Goulds in southern Miami-Dade County (Hawkes, 1950d). An unlabeled specimen was deposited at the Buswell herbarium. The apparent cause of extirpation was habitat destruction. There have been a few other reports of flor de pasmo from South Florida, but none that we have been able to verify.

Comments: *The plant collected by Manly Boss was the white-flowered form of this species. Some institutions (e.g. FDACS) consider that the species as not native to South Florida, although there is no significant reason to discount the legitimacy of Boss' collection.*

Preliminary recommendations:

- Continue surveys in pine rocklands in the Goulds area.

Botrychium biternatum (Savigny) Underw.
Southern Grape Fern

South Florida Status: Extirpated. Collected once in 1934 near La Belle.

Taxonomy: Pteridophyte; Ophioglossaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America; disjunct in Arizona. Wunderlin & Hansen (2000) reports it as occasional in Florida in the central panhandle to the northern and central peninsula.

South Florida Distribution: Hendry County.

South Florida Habitats: Floodplain forests.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has two color photos, one of *B. biternatum* and one of *B. dissectum* (see “Comments” below).

References: Small, 1933a; Small, 1938; Lakela & Long, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *B. dissectum* Spreng.; *B. dissectum* var. *tenuifolius* (Underw.) Farw.

Historical Context in South Florida: Gertrude Peterson collected southern grape fern once in 1934 in a cabbage palm hammock near La Belle (s.n., FLAS). The apparent cause of extirpation was habitat destruction.

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida. However, this is one of a suite of species that was apparently extirpated from floodplain forests along the Caloosahatchee River. These forests should be restored along with their constituent rare flora.*

*Most authors have separated *B. biternatum* from *B. dissectum*, but Wunderlin & Hansen (2000) treat these as conspecific. We follow their treatment here. Any reintroduction efforts should seek to obtain germplasm from individuals with morphology similar to the La Belle specimen collected by Peterson.*

Preliminary recommendations:

- Consider introduction to La Belle Nature Park.
- Consider restoring floodplain forest along the Caloosahatchee River and reintroducing southern grape fern.

***Brassia caudata* (L.) Lindl.
Spider Orchid**

South Florida Status: Extirpated from the wild in 1963. The last known plant, which had been translocated earlier from another location, died in 1977 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has both illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Correll, 1950; Craighead, 1963; Luer, 1972; Long & Lakela, 1976; Bell & Taylor, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Charles A. Mosier first collected spider orchid in 1915 in Nixon-Lewis Hammock west of Homestead (s.n., FLAS, NY). Small made additional collections there in 1915 (6848, NY) and 1916 (7412, NY). Nixon-Lewis Hammock has subsequently been fragmented by roads and mostly destroyed by agricultural activities.

In 1916 and 1917, Small collected spider orchid in one or more hammocks on Long Pine Key (7348, NY; 8127, NY), in what is now Everglades National Park. George R. Cooley and others collected a specimen from an unnamed hammock on Long Pine Key in 1962 (9224, FTG, USF). In a memorandum to the Chief Ranger of Everglades National Park on November 18, 1966, Frank C. Craighead noted that spider orchid had been known from Paradise Key (now the location of the Royal Palm Visitors Center), but that the last plants had been poached by 1955. Craighead also reported that he discovered a small colony of spider orchid in Osteen Hammock in February 1959.

Because he noticed human disturbance in Osteen Hammock (including poaching), in April 1959, Craighead relocated specimens of spider orchid to three other hammocks on Long Pine Key: Deer Hammock, Turkey Hammock, and Winkley Hammock (Craighead memorandum of 1966; Botanical Notes of Frank C. Craighead). By October 1960 there was only one plant left in Osteen Hammock, in part due to Hurricane Donna, and in part due to poaching and the movement of plants by Craighead. Craighead collected the remains of the last plant in 1963, stating that rodents had eaten it (s.n., FTG). Craighead also made a collection from Deer Hammock in 1961 (s.n., USF), presumably from a translocated specimen. By 1964, only one plant in Deer Hammock remained of all of the translocated individuals. According to Craighead, this plant was gone by 1969 (Botanical notes of Frank C. Craighead), but Mary Ann Bolla, Maxie Simmons, and O.L. "Sonny" Bass found a single plant in Deer Hammock in 1976 (Avery's Notes, 1 May 1976). George N. Avery and Bass found the dead remains of this plant in February 1977 following the freeze of January 19 and 20, 1977 (Avery's Notes, 25 February 1977). Bass took the two remaining seed pods off the plant to be flaked, but this was unsuccessful (Hammer, 2001).

Craighead had also translocated three cultivated spider orchids from unknown germplasm to Pine Island Hammock in 1962, but the last of these plants died following Hurricane Betsy in 1965. Reports of spider orchid from other stations outside of Everglades National Park have been made, but none that we have been able to verify.

Preliminary recommendations:

- Consider reintroduction to the Long Pine Key/Paradise Key area of Everglades National Park.

***Bulbophyllum pachyrachis* (A. Rich.) Griseb.
Rattail Orchid**

South Florida Status: Extirpated. Last reported in 1972 for the Fakahatchee Strand.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Sloughs in strand swamps.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has both illustrations and color photos.

References: Craighead, 1963; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Fred Fuchs, Jr. discovered and collected rattail orchid in 1956 in the Fakahatchee Strand (s.n., AMES; Luer, 1972), in what is now Fakahatchee Strand Preserve State Park. It grew epiphytically on pond-apple trees in deepwater sloughs. By 1962, the original station had been completely wiped out (Luer, 1972). Carlyle Luer reported that some plants were still present in 1972, "secreted away in some inaccessible niche." It has not been reported as extant since, despite ongoing surveys by Florida Park Service staff and others.

Preliminary recommendations:

- Consider reintroduction to Fakahatchee Strand Preserve State Park.

***Callisia cordifolia* (Sw.) E. S. Anderson & Woodson
Florida Roseling**

South Florida Status: Extirpated. Last collected in 1925 at Deep Lake in Collier County.

Taxonomy: Monocotyledon; Commelinaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida, Georgia, the West Indies, South America, and Mexico. Wunderlin (1998) reports it as occasional in Florida in Alachua County and the central peninsula.

South Florida Distribution: Collier, Lee, and Palm Beach counties.

South Florida Habitats: Hammocks.

Protection Status: Not listed by any agency.

Identification: In addition to *C. cordifolia*, there are two exotic species of *Callisia* in South Florida (*C. fragrans*, *C. repens*). *C. cordifolia* has flowers in cymes on lateral branches, rather than sessile or sub-sessile flowers in dense clusters in the upper leaf axils (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *Phyodina cordifolia* (Sw.) Rohweder; *Tradescantella floridana* (S. Watson) Small; *Tradescantia floridana* S. Watson.

Historical Context in South Florida: Allan H. Curtiss collected Florida roseling once in 1895 in “woods near Palm Beach” (5409, FLAS, NY), presumably on the island of Palm Beach. Albert S. Hitchcock also collected it once in 1900 in Fort Myers (361, NY), presumably in a mesic hammock. John Kunkel Small and Walter M. Buswell made the only other collection in 1925 in the Deep Lake area of Collier County (12711, NY). Most of the Deep Lake area now is protected within Big Cypress National Preserve, but the specimen could have been collected in what is now the Fakahatchee Strand Preserve State Park.

Preliminary recommendations:

- Consider introduction to Big Cypress National Preserve and Fakahatchee Strand Preserve State Park.
- Consider restoring maritime hammocks on the island of Palm Beach and reintroducing Florida roseling.

***Carex godfreyi* Naczi
Godfrey's Sedge**

South Florida Status: Extirpated. Collected once in 1917 in the vicinity of Stuart.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida in the central panhandle to the northern and central peninsula.

South Florida Distribution: Martin County. The Martin County plants are disjunct from the nearest population in Polk County.

South Florida Habitats: Perhaps mesic hammocks. In the rest of Florida it grows in rich, usually calcareous, hammocks (Wunderlin 1998).

Protection Status: Not listed by any agency.

Identification: Very similar to *C. amphibola* which is illustrated in Godfrey & Wooten (1979), but which is absent from Florida. In Florida, it can be distinguished from the similar *C. corrugata* in having purple-red coloration extending 4-7 cm from the base of the plant, versus 1.5-3.5 cm in *C. corrugata*, if the coloration is present (Wunderlin, 1998).

References: Naczi, 1993; Wunderlin, 1998.

Synonyms: *C. amphibola* Steud., misapplied; *C. amphibola* var. *turgida* Fernald, misapplied.

Historical Context in South Florida: "Atwood" collected Godfrey's sedge once in the vicinity of Stuart in 1917 (s.n., NY). No habitat data was given.

Comments: *This is a temperate species known from a single disjunct collection without supporting data. It is possible that this was a waif population, or even a mislabeled specimen. The species was not described until 1993 (Naczi, 1993).*

Preliminary recommendations:

- Continue surveys in the vicinity of Stuart.

***Cenchrus brownii* Roem. & Schult.
Slimbristle Sandbur**

South Florida Status: Extirpated. Last native population vouchered in 1954 on the island of Key West.

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America. Introduced and naturalized in the Old World.

South Florida Distribution: Native to the Monroe County Keys. Apparently briefly naturalized in Miami-Dade County.

South Florida Habitats: Native to dry sandy soil on the margins of hammocks, probably on dry, open, coastal berms. Most collections are from dry, disturbed sites.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration. The spikelets of *C. brownii* most resemble those of *C. echinatus*. The burs of *C. brownii* are narrower (2.7-4.2 mm wide vs. 4-5.3 mm wide), and shorter (4-5.3 mm long vs. 5.3-8 mm long excluding spines) than those of *C. echinatus* (Wunderlin, 1998).

References: Chase, 1920; Small, 1933a; Hitchcock & Chase, 1950; DeLisle, 1963; Long & Lakela, 1976; Hall, 1978; Correll & Correll, 1982; Wunderlin, 1998.

Synonyms: *C. viridis* Spreng.

Historical Context in South Florida: Ferdinand Rugel first collected slimbristle sandbur in 1846 on the island of Key West (120, US). It was not vouchered there again until 1954, when Ellsworth P. Killip collected it in a lawn along South Street (44292, US). This appears to be the last collection of slimbristle sandbur within its natural range in South Florida. Several other collections are known from the Florida Keys. Charles L. Pollard made one collection in 1898 on Upper Matecumbe Key (145, NY, US). In 1902, Albert S. Hitchcock made the first collection on Key Largo (Chase, 1920). Agnes Chase made another collection in 1907 near the village of Planter (3931, US). Chase's label stated "Erect or nearly in a hole in coral rock, cleared spot in brush land." Harold N. Moldenke collected it a third time on Key Largo in 1930 "in dry sandy soil at edge of hammock" (781, NY).

Olga Lakela collected one additional specimen in 1963, from a disturbed road edge in southern Miami-Dade County (26159, US). This appears to have been a short-lived, probably introduced population. Slimbristle sandbur has been reported for Biscayne National Park (Stalter et al., 1999), but there are no specimens to corroborate this report.

Comments: *Due to the fact that slimbristle sandbur is an introduced weed in the Old World and is mostly known from disturbed sites in South Florida, extreme caution should be exercised before proceeding with any reintroductions.*

Preliminary recommendations:

- Consider reintroduction to Key Largo at Crocodile Lake National Wildlife Refuge, Dagny Johnson Key Largo Hammocks Botanical State Park, and Dove Creek Hammocks.
- Review for listing by FDACS and FNAI.

***Chasmanthium laxum* (L.) Yates
Slender Woodoats**

South Florida Status: Extirpated. Collected once in 1932 in Lee County.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Unknown. Wunderlin (1998) reports it for stream banks and moist hammocks in Florida.

Protected Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *Uniola gracilis* Michx.; *Uniola laxa* (L.) Britton et al.

Historical Context in South Florida: Walter M. Buswell collected slender woodoats a single time in Lee County in 1932 (s.n., US). No specific locality or habitat data were recorded.

Comments: *This is a temperate species at the southern end of its range, and it always may have been rare in South Florida.*

Preliminary recommendations:

- Continue surveys in Lee County.

***Chloris elata* Desv.
Tall Windmill Grass**

South Florida Status: Extirpated. Last reported in 1979 on North Key Largo.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, and South America.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Open, dry sand, pine rocklands, and openings in hammocks. Presumably the specific habitat in Miami-Dade was sandy pine rocklands, while the habitat in the Florida Keys was dry, open coastal berms, openings in hammocks, and pine rocklands on Big Pine Key (Swallen 5210, US).

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration. There are now five species of exotic *Chloris* in Florida including some in Miami-Dade and Monroe counties, so the best key to use is Wunderlin (1998).

References: Small, 1933a; Hitchcock & Chase, 1950; Anderson, 1974; Wunderlin, 1998.

Synonyms: *C. dandyana* C. Adams; *C. polydactyla* Sw.

Historical Context in South Florida: Joseph H. Simpson first collected tall windmill grass in 1892 in "Southern Florida" (s.n., NY). Charles I. Pollard and others collected it in 1898 in the village of Newport on Key Largo (152, NY), in the vicinity of what is now John Pennekamp Coral Reef State Park. It was collected several more times on Key Largo between 1909 (Small & Carter 2883, NY) and 1941 (Dean 61009, UC). It was collected last in 1978 by George N. Avery at a disturbed site on the east end of New Card Sound Road on North Key Largo (1936, FLAS), within what is now Dagny Johnson Key Largo Hammocks Botanical State Park. Ten to twelve plants were observed in July 1978 and again in July 1979. No plants have been observed there since that time. Gann and Florida Park Service biologist Janice A. Duquesnel surveyed this area in July 2000, but failed to locate any plants.

A number of one time collections are known from other sites in the Florida Keys: Upper Matecumbe Key (Chase 3914, US), Vaca Key (Swallen 5189, US), Plantation Key Swallen 5210, US), Long Key (Silveus 5329, TEX), and Big Pine Key (Swallen 14461, US). While some of these collections were from roadsides and disturbed areas, others were from undisturbed natural areas. These collections were made from 1907 through 1954.

In 1903, Albert S. Hitchcock made a collection in Miami (186, NY, US), presumably in the sandy pinelands near the Miami River. Several other collections were made in that area in the early 1900s: Tracy 8857, NY; Hitchcock 724, US; and Chase 3864, US. F.W. Hunnewell made the last collection on the mainland in 1921 along a roadside in Miami (7491, NY).

Comments: *Collections of tall windmill grass appear to be mostly from disturbed areas, so considerable care should be exercised before any reintroductions are attempted.*

Preliminary recommendations:

- Consider reintroduction to Dagny Johnson Key Largo Hammocks Botanical State Park.
- Consider introduction to John Pennekamp Coral Reef State Park.
- Consider restoring pine rocklands near the Miami River and reintroducing tall windmill grass.
- Review for listing by FDACS and FNAI.

***Cissampelos pareira* L.
Paireira Brava**

South Florida Status: Extirpated. The last plants were accidentally destroyed around 1993 at Matheson Hammock Park.

Taxonomy: Dicotyledon; Menispermaceae.

Habit: Woody vine.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, South America, Africa, and Australasia.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Long & Lakela (1976) has an illustration.

References: Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: E.C. Marquard first collected *pareira brava* in 1929 in Matheson Hammock (s.n., NY), in or near what is now Matheson Hammock Park. It was subsequently collected there by B. Christman in 1964 (20, FLAS) and by George N. Avery in 1967 (s.n., FLAS). Avery also found plants in the adjacent Hammock Lakes Subdivision along S.W. 93rd Street in 1967 and 1969 (Avery's Notes), which he vouchered in 1969 (299, FTG). Apparently it remained extant at Matheson Hammock Park until after Hurricane Andrew in 1992, when a restoration crew destroyed it after it was mistaken for an exotic vine (R.L. Hammer, personal communication, 17 August 2000). It was last observed in 1993 by a research team from the University of Miami (C. Horvitz, personal communication, 16 August 2001). John Kunkel Small and Charles A. Mosier also collected it in "Snapper Creek Hammock" in 1929 (s.n., NY), as did Charles Torrey Simpson in 1930 (s.n., US). In 1936, Walter M. Buswell made a collection from "Miami" (s.n., FTG). All of these collections probably refer to Matheson Hammock.

As far as we are aware, no germplasm from South Florida plants was conserved.

Preliminary recommendations:

- Consider reintroduction to Matheson Hammock Park.
- Review for listing by FNAI.

***Coelorachis cylindrica* (Michx.) Nash**
Carolina Jointtail Grass

South Florida Status: Extirpated. Collected once in 1877 in Miami.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as rare in Florida in the central panhandle and the peninsula.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Uncertain, but probably sandy pine rocklands or moist hammocks. Wunderlin (1998) lists its habitat in Florida as open hammocks, but Godfrey and Wooten (1979) list moist pine flatwoods, prairie, and pond margins. David W. Hall reports that he observes this species most often in sandhills with hardwood trees (personal communication, 9 March 2001), a habitat relatively similar to sandy pine rocklands interspersed with live oak (*Quercus virginiana*).

Protection Status: Not listed by any agency.

Aids to Identifications: Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Manisuris campestris* (Nutt.) Hitchc.; *Manisuris cylindrica* (Michx.) Kuntze; *Rottboellia cylindrica* (Michx.) Torr.

Historical Context in South Florida: Abram P. Garber collected Carolina jointtail grass once in 1877 in Miami (s.n., FLAS), probably near downtown Miami near the Miami River. No specific habitat data was given, but it was probably growing in sandy pine rocklands near the Miami River, perhaps in an area interspersed with live oak (*Quercus virginiana*).

Comments: *This species is rare in Florida and is known from a total of eight counties including Miami-Dade. The closest stations to Miami-Dade are Manatee and Pasco counties (Wunderlin & Hansen, 2001).*

Preliminary recommendations:

- Consider restoring pine rocklands near the Miami River and reintroducing Carolina jointtail grass.
- Review for listing by FDACS and FNAI.

***Cordia bahamensis* Urb.
Bahama Manjack**

South Florida Status: Extirpated. Collected once in 1979 in a pineland in Florida City.

Taxonomy: Dicotyledon; Boraginaceae.

Habit: Shrub.

Distribution: Native to South Florida, the Bahamas, Cuba, and Anegada.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Correll & Correll (1982) has an illustration.

References: Avery, 1979a; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: A.H. Feher discovered Bahama manjack in 1979 in a pineland near the intersection of S.W. 8th Avenue and 1st Street in Florida City (Avery's Notes, 10 March 1979). George N. Avery vouchered it that same day (2083, FLAS, FTG, USF). A single clump of around 15 stems was recorded. Roger L. Hammer and Avery observed it several more times during 1979 (R.L. Hammer, personal communication, 17 August 2000). Hammer searched for Bahama manjack in 1993 or 1994 but could not find any plants. A portion of the site is now Florida City Pineland, a conservation area managed by Miami-Dade County. Another portion of the site was developed as an office complex for a State of Florida governmental agency. Gann surveyed this area in 2001, but no plants were seen. It seems likely that Bahama manjack was destroyed by the construction of the office buildings.

Comments: *No germplasm of the South Florida plant was preserved, although Bahamian germplasm is maintained at Fairchild Tropical Garden (M. Collins, Fairchild Tropical Garden, personal communication, 17 November 2000). Correll & Correll (1982) states that this is an extremely variable plant with several different forms in the Bahamas alone. If a reintroduction is attempted, care should be taken to choose germplasm from plants that most closely resemble the Florida City plants.*

Preliminary recommendations:

- Consider reintroduction to Florida City Pineland.
- Review for listing by FDACS and FNAI.

***Cranichis muscosa* Sw.**
Cypressknee Helmet Orchid

South Florida Status: Extirpated. Last collected in 1905 at Hattie Bauer Hammock.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, southern Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County and, presumably, Collier County (Luer, 1972).

South Florida Habitats: Hammocks and cypress swamps.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has both illustrations and color photos.

References: Ames, 1904a; Small, 1933a; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: J.E. Layne first collected cypressknee helmet orchid in 1903 (2803, AMES). The plant was growing on a cypress knee, and was probably collected in or near the Fakahatchee Strand. Alvah A. Eaton made another collection in 1903 from Hattie Bauer Hammock in Miami-Dade County (s.n., AMES), most of which is now a Miami-Dade County conservation area. Eaton made another collection in Hattie Bauer Hammock in 1905 (1212, AMES). Although most of Hattie Bauer Hammock is now preserved, a portion of the hammock was cleared for a housing development several decades ago.

A recent collection said to have been from Everglades National Park is treated as a false record, as it cannot be corroborated.

Preliminary recommendations:

- Consider reintroduction to Hattie Bauer Hammock.
- Consider introduction to Fakahatchee Strand Preserve State Park.

***Cuscuta obtusiflora* Kunth var. *glandulosa* Engelm.
Glandular Dodder**

South Florida Status: Extirpated. Last collected in 1926 near Fort Myers.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to the southern United States, the West Indies, and Mexico. Wunderlin (1998) reports it as occasional in Florida in the central and southern peninsula.

South Florida Distribution: Lee County. Also collected on *Acalypha wilkesiana* in a garden in Charlotte County in 1968 (E. Lambke s.n., FLAS).

South Florida Habitats: Pinelands, hammocks, and open disturbed sites.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration.

References: Chapman, 1883; Yuncker, 1932; Small, 1933a; Austin, 1980; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *C. glandulosa* (Engelm.) Small.

Historical Context in South Florida: Albert S. Hitchcock first reported glandular dodder in 1902 from Fort Myers (Hitchcock, 1902). John Kunkel Small and Charles A. Mosier made a collection in a pineland near Fort Myers in 1926 (s.n., USF).

Comments: *Frequently parasitic on Polygonum, although found on other hosts as well (Austin, 1980).*

Preliminary recommendations:

- Continue surveys in the vicinity of Fort Myers.

***Dennstaedtia bipinnata* (Cav.) Maxon
Bipinnate Cuplet Fern**

South Florida Status: Extirpated. Last collected in 1947 near Belle Glade.

Taxonomy: Pteridophyte; Dennstaedtiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. In peninsular Florida, native only to Palm Beach and Seminole counties. Erroneously reported from Duval County by Nelson (2000) and Wunderlin and Hansen (2000).

South Florida Distribution: Palm Beach County.

South Florida Habitats: Moist to wet hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has an illustration; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Tryon, 1960; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *D. adiantoides* T. Moore.

Historical Context in South Florida: John Kunkel Small, Charles A. Mosier, and P.A. Matthaues discovered bipinnate cuplet fern in 1926 in a “Hammock near Indian Mound, Belle Glade” (s.n., NY). E.P. Kearsley collected it one other time in a hammock near Lake Okeechobee in 1947 (s.n., NY). The apparent cause of extirpation was habitat destruction, although collecting or hydrological modifications may have contributed to its demise.

Comments: *Bipinnate cuplet fern is still reported for Seminole County in Central Florida (G. Nelson, personal communication, 17 August 2000). Wunderlin and Hansen (2000) suggest that the Palm Beach County population is probably native while the Seminole population is probably not. If this is true, then the only native population of bipinnate cuplet fern in the continental United States is extirpated.*

Preliminary recommendations:

- Consider restoring hammocks in the vicinity of Belle Glade in Palm Beach County and reintroducing bipinnate cuplet fern.

***Eleocharis microcarpa* Torr.
Smallfruit Spikerush**

South Florida Status: Extirpated. Last collected in 1917 in the vicinity of Fort Myers.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the eastern United States, the West Indies, and South America. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Cypress swamps.

Protected Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Svenson, 1937; Ward & Leigh, 1975; Godfrey & Wooten, 1979; Wunderlin, 1998, Liogier & Martorell, 2000.

Synonyms: *E. torreyana* Boeck.

Historical Context in South Florida: Paul C. Standley collected smallfruit spikerush on two occasions in “Cypress swamps” in the vicinity of Fort Myers, perhaps near what is now Six Mile Cypress Slough Preserve. The first collection was made in 1916 (12553, US) and the second in 1917 (14890, US). It was reported for Sanibel Island (Hitchcock, 1902), but no herbarium specimens have been found to corroborate this report.

Preliminary recommendations:

- Consider introduction to Six Mile Cypress Slough Preserve near Fort Myers.

***Eleocharis rostellata* (Torr.) Torr.
Beaked Spikerush**

South Florida Status: Extirpated. Collected once in 1877 in Miami.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to North America and tropical America. Wunderlin (1998) reports it as rare in Florida in Miami-Dade, Taylor, and Wakulla counties. Wunderlin & Hansen (2001) records it for Miami-Dade, Santa Rosa, Taylor, and Wakulla counties.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Brackish or saline marshes.

Protection Status: Listed as endangered by FDACS and critically imperiled by FNAI.

Identification: Godfrey & Wooten (1979) has an illustration. This is a large spikerush with culms to 80 cm long and a viviparous habit.

References: Chapman, 1883; Small, 1933a; Ward & Leigh, 1975; Ward, 1978; Godfrey & Wooten, 1979; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber made a single collection of beaked spikerush in Miami in 1877 (1329, FLAS, NY), presumably from a coastal marsh near the mouth of the Miami River.

Comments: *Most of the historical habitat for beaked spikerush has been destroyed, and it may not be possible to reintroduce this species to South Florida.*

Preliminary recommendations:

- Consider restoring coastal marshes along the Miami River and reintroducing beaked spikerush.

***Epidendrum blancheanum* Urb.
Acuña's Star Orchid**

South Florida Status: Extirpated. Last collected in 1974 in the Fakahatchee Strand.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, Cuba, Mexico, and Central America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps; epiphytic on pop ash (*Fraxinus caroliniana*) and other hardwoods.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Luer (1972) has both illustrations and color photos.

References: Hawkes, 1963; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: *E. acuña* Dressler; *E. ramosum* Jacq., misapplied.

Historical Context in South Florida: Raleigh Burney discovered Acuña's star orchid in 1962 in the Fakahatchee Strand (Hawkes, 1963; Luer, 1972), in what is now Fakahatchee Strand Preserve State Park. According to Luer, only a few dozen plants were discovered within a very small area of the swamp. Ruben P. Sauleda last vouchered it in 1974 (942, USF). According to Sauleda's label, the plant was dead when found, following the death of the host plant which had fallen into the water. Numerous botanists have searched for more plants to no avail. It is almost certain that collecting contributed to its demise.

Preliminary recommendations:

- Consider reintroduction to Fakahatchee Strand Preserve State Park.
- Review FNAI rank.

***Glandularia tampensis* (Nash) Small
Tampa Mock Vervain**

South Florida Status: Extirpated. Last collected in 1957 northeast of Fort Myers.

Taxonomy: Dicotyledon; Verbenaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in Florida in the central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Wet hammocks and cypress swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a photo.

References: Small, 1933a; Long & Lakela, 1976; Taylor, 1992; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *Verbena tampensis* Nash.

Historical Context in South Florida: Paul C. Standley first collected Tampa mock vervain in 1927 at Pondilla in Lee County (52577, US), an uncertain locality. John Kunkel Small collected it next in 1928 in Punta Rassa, which is located southwest of Fort Myers (s.n., FLAS, FSU, NY, USF). C.L. Dean collected it at three localities, from 1938 to 1941, between 6 and 13 ½ miles northeast of Fort Myers (58711, NY; 58795, NY; 60759, NY), probably in forested wetlands along the Caloosahatchee River. P.O. Schallert collected it near Fort Myers in 1947 (1463, FLAS) and Robert Kral collected it about 10 miles northeast of Fort Myers in 1957 (3923, FSU). One or more of these collections may have been made in or near what is now Caloosahatchee Regional Park.

Preliminary recommendations:

- Consider introduction to Caloosahatchee Regional Park.
- Consider restoring floodplain forests and associated habitats along the Caloosahatchee River and reintroducing Tampa mock vervain.
- Review for listing by USFWS.

***Hypolepis repens* (L.) C. Presl.
Creeping Bramble Fern**

South Florida Status: Extirpated. Collected once in 1964 on Ramrod Key in Monroe County.

Taxonomy: Pteridophyte; Dennstaedtiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) reports it as occasional in peninsular Florida.

South Florida Distribution: Monroe County Keys. Reported in error for Miami-Dade County by Lakela & Long (1976).

South Florida Habitats: Limestone sinkholes.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has color photos and an illustration; Nelson (2000) has color photos; Wunderlin & Hansen (2000) has an illustration; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Flora of North America Editorial Committee, 1993; Lakela & Long, 1976; Long & Lakela, 1976; Wunderlin, 1998; Tobe et al., 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: Derek Burch and George N. Avery collected creeping bramble fern once in 1964 in a shallow sinkhole on Ramrod Key (558, FLAS). This collection appears to be from within what is now Ramrod Hammocks, Florida Keys Wildlife and Environmental Area. Bradley and Woodmansee surveyed this site in 2000, but no plants were found.

Comments: *There is some confusion as to the exact habitat of creeping bramble fern on Ramrod Key. The herbarium specimen says "Frequent at edge of shallow sinkhole, hammock..." but Avery's notes state that the plants were found in a "pineland area."*

Preliminary recommendations:

- Consider reintroduction to Ramrod Hammocks, Florida Keys Wildlife and Environmental Area.

***Leersia monandra* Sw.
Bunch Cutgrass**

South Florida Status: Extirpated. Last collected in 1903 at Buena Vista, just north of present-day downtown Miami.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Texas, and Mexico. Wunderlin (1998) reports it as rare in Florida in Citrus and Miami-Dade counties.

South Florida Distribution: Miami-Dade and Monroe counties.

South Florida Habitats: Shell mounds, open disturbed sites, and presumably, sandy pine rocklands.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Pyrah, 1969; Long & Lakela, 1976; Hall, 1978; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Homalocenchrus monandrus* (Sw.) Kuntze.

Historical Context in South Florida: John Loomis Blodgett first collected bunch cutgrass between 1838 and 1953 on the island of Key West (s.n., NY). Alan H. Curtis made the next collection in 1882 in a cultivated field on Key Largo (3359, F, MO, NY, US). In 1903, Alvah A. Eaton made the last collection in the Florida Keys in the village of Newport on Key Largo (433, F), in the vicinity of what is now John Pennekamp Coral Reef State Park.

In 1891, Joseph H. Simpson made a collection on Lostmans Key (202, US), a shell mound at the mouth of the Lostmans River in what is now Everglades National Park. It has not been reported from this area or from Everglades National Park since that time (cf. Reimus, 1999). Eaton made the last collection in 1903 at Buena Vista (453, US), which was located just north of present day downtown Miami. Bunch cutgrass was presumably collected in sandy pine rocklands.

Comments: *The Citrus County specimen was collected in 1898 by R. Combs at Homosassa (981, NY). This species is apparently extirpated in Florida. Bunch cutgrass flowers in the fall, when surveys should be conducted.*

Preliminary recommendations:

- Consider introduction to John Pennekamp Coral Reef State Park.
- Consider introduction to Little Hamaca Park in Key West.
- Consider restoring rockland hammocks on Key West and reintroducing bunch cutgrass.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing bunch cutgrass.
- Review for listing by FDACS and FNAI.

***Liatrix graminifolia* (Walter) Willd.
Grassleaf Gayfeather**

South Florida Status: Extirpated. Last collected in 1961 in Punta Gorda.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee and Charlotte counties.

South Florida Habitats: Presumably flatwoods.

Protection Status: Not listed by any agency.

Identification: There are fourteen species of *Liatris* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Cronquist, 1980; Wunderlin, 1998.

Synonyms: *Laciniaria graminifolia* (Walter) Kuntze.

Historical Context in South Florida: Walter M. Buswell first collected grassleaf gayfeather in 1933 in Lee County at an unstated locality (s.n., USF). Olga Lakela collected it once in Charlotte County in 1961 within the city of Punta Gorda (24684, USF). Gann and Tiffany Troxler Gann searched for this station in 2000, but it appeared to have been destroyed by development. Grassleaf gayfeather has been reported for Big Cypress National Preserve (Black & Black, 1980), but we have been unable to verify this report.

Comments: *Although this is a temperate species at the southern end of its range, there is a cluster of collections in Sarasota, Charlotte, and Lee counties that indicate that this species was a persistent part of the South Florida flora. Wunderlin (1998) describes the habitat of grassleaf gayfeather as flatwoods and open hammocks. In the central peninsula it has only been collected in Hillsborough, Pinellas, Sarasota and Sumter counties, so it is not particularly common there. Some work would have to be done to determine its exact habitat requirements, if a reintroduction were to be considered.*

Preliminary recommendations:

- Continue surveys in Charlotte and Lee counties.

***Lipocarpa maculata* (Michx.) Torr.
American Halfchaff Sedge**

South Florida Status: Extirpated. Collected once in 1965 near Immokalee.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier County.

South Florida Habitats: Moist soils.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration; Tobe et al. (1998) has a color photo and illustrations.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Olga Lakela collected American halfchaff sedge once in 1965 in a “swampy ditch and partially disturbed margin of pineland” about two miles south of the intersection of SR 82 and SR 29, north of Immokalee in Collier County (29198, FLAS, USF). It was reported for Sanibel Island (Herwitz & Wunderlin, 1990), but this report was probably in error (R.P. Wunderlin, personal communication, 7 September 2001).

Comments: *This is a temperate species at the southern end of its range, and it may have always been rare in South Florida. It is also possible that this station represents an introduced waif population.*

Preliminary recommendations:

- Continue surveys in the Immokalee area.

***Macradenia lutescens* R. Br.
Longland Orchid**

South Florida Status: Extirpated. Last reported in 1966 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, and northern South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has both illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton first collected longgland orchid in 1903 at Royal Palm Hammock (s.n., NY), in what is now Everglades National Park (s.n., NY). John Kunkel Small also collected it in Royal Palm Hammock in 1916 (7394, FLAS, NY). Small made another collection of longgland orchid from an unnamed hammock on Long Pine Key in 1916. Plants at Royal Palm Hammock were apparently observed by Frank C. Craighead, who reported to the Chief Ranger of Everglades National Park that the last plants at Royal Palm Hammock had been poached by 1955 (Craighead memorandum of November 18, 1966).

Longgland orchid was not collected again until February 1959 when Craighead rediscovered it in Osteen Hammock on Long Pine Key (s.n., FTG). Forty-two plants were counted (Craighead memorandum of November 18, 1966). In April of that year, Craighead translocated several individuals of longgland orchid and spider orchid (see *Brassia caudata* treatment in this chapter) to three hammocks on Long Pine Key: Deer Hammock, Turkey Hammock, and Winkley Hammock (Botanical Notes of Frank C. Craighead). He made another voucher at Osteen Hammock in 1961 (s.n., FTG). By 1964, each of the four translocated populations was down to one individual and two plants remained in Osteen Hammock. The two plants in Osteen remained when Craighead surveyed the site in 1966. It is not entirely clear when the last plants disappeared. Both Chuck E. Hilsenbeck and O.L. "Sonny" Bass reported to George N. Avery that they had seen plants in Osteen Hammock (Avery's Notes, 26 October 1976, 24 January 1977), but when the three of them attempted to relocate this station in February 1977 it was without success (Avery's Notes, 3 February 1977). Avery was unable to locate plants again in October 1977 (Avery's Notes, 29 October 1977). According to

Craighead, poaching was a major factor in the demise of longland orchid.

Craighead had also translocated six cultivated longland orchids from unknown germplasm to Pine Island Hammock, but the last of these plants died following Hurricane Betsy in 1965. Reports of longland orchid from other stations outside of Everglades National Park have been made, but none that we have been able to verify.

Preliminary recommendations:

- Consider reintroduction to the Long Pine Key/Paradise Key area of Everglades National Park.

***Melochia tomentosa* L.
Woolly Pyramidflower**

South Florida Status: Extirpated. Last collected in 1943 south of Coral Gables.

Taxonomy: Dicotyledon; Sterculiaceae.

Habit: Shrub or sub-shrub.

Distribution: Native to peninsular Florida, the West Indies, Texas, Mexico, Central America, and South America. In Florida, woolly pyramidflower is only known from Miami-Dade and St. Lucie counties.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands and, perhaps, scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: There are four species of *Melochia* in Florida. *M. tomentosa* can be distinguished by having five winged fruits, and stems and leaves that are densely stellate pubescent.

References: Small, 1933a; Goldberg, 1967; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Moluchia tomentosa* (L.) Britton.

Historical Context in South Florida: John Kunkel Small first collected woolly pyramidflower in 1916 in a pineland at Buena Vista, just north of present day downtown Miami (7268, FLAS, NY). Small collected it again in 1931 in Coral Gables (s.n., NY).

Woolly pyramidflower was collected last in 1943 by Walter M. Buswell in a pine rockland three miles south of Coral Gables (s.n., FLAS), possibly in the area of Matheson Hammock and Fairchild Tropical Garden.

Comments: *The St. Lucie County record is based upon a collection by John Beckner in 1978 in a tropical hammock on dunes at the junction of SR 707 and SR 712, 5 miles south of Fort Pierce (1978, FLAS). This station needs to be surveyed. If these plants are gone, then woolly pyramidflower is apparently extirpated in Florida.*

Preliminary recommendations:

- Consider restoring pine rocklands in the Coral Gables area and reintroducing woolly pyramidflower.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing woolly pyramidflower.
- Review for listing by FDACS and FNAI.

***Nevrodium lanceolatum* (L.) Fée**
Ribbon Fern

South Florida Status: Extirpated. Last collected in 1960 on Key Largo.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, and Central America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Mangrove swamps; epiphytic on mangrove trees.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has illustrations.

References: Chapman, 1883; Safford, 1912; Small, 1918a; Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Correll & Correll, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Paltonium lanceolatum* (L.) C. Presl.; *Taenitis lanceolata* (L.) Kaulf.

Historical Context in South Florida: Allan H. Curtiss discovered ribbon fern on the edge of Old Rhodes Key along Caesar's Creek in 1881 (s.n., GH, NY, US), in what is now Biscayne National Park. A single plant was seen (Curtiss, 1904). John Kunkel Small (1918a, 1931, 1938) reported it for Elliott Key, but we have been unable to verify this station. There is no indication that Small observed or collected ribbon fern on Elliott Key.

Apparently a Mr. Pendergrast discovered ribbon fern on Key Largo in 1960 and took it to Fred Fuchs, Jr., a local orchid grower, for identification (Delchamps, 1962; Avery's Notes, 2 February 1973). Later that year, C. Eugene Delchamps and Thomas Darling, Jr. observed ribbon fern on Key Largo (Darling, 1962; Delchamps, 1962), most likely in what is now Crocodile Lake National Wildlife Refuge. According to both authors, the plant or plants were sterile. Delchamps maintained that there was more than one plant, while Darling was very specific that only one individual was present. Delchamps collected what was apparently the last specimen from a red mangrove (*Rhizophora mangle*) tree and took it home for cultivation and vouchering (s.n., FLAS, US). Don Keller reported seeing one large plant around 1960 on North Key Largo, but this was gone by 1970 (personal communication, 8 February 2001). Subsequent surveys by Keller on North Key Largo, Old Rhodes Key, and Totten Key failed to yield any plants. Ribbon fern was apparently extirpated, at least in part, from collecting by botanists.

Preliminary recommendations:

- Consider reintroduction to Old Rhodes Key in Biscayne National Park.
- Consider introduction to North Key Largo in Crocodile Lake National Wildlife Refuge.
- Review FNAI rank.

***Oncidium carthagenense* (Jacq.) Sw.
Coot Bay Dancinglady Orchid**

South Florida Status: Extirpated. Collected once in 1916 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Monroe County mainland.

South Florida Habitats: Coastal berms.

Protection Status: Not listed by any agency.

Identification: There are several species of *Oncidium* native to South Florida. Luer (1972) has both illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small collected Coot Bay dancinglady orchid in 1916 in a hammock south of Coot Bay (s.n., NY), in what is now Everglades National Park. It is unknown whether or not the whole plant was taken.

Comments: *Sauleda (1989) suggested that the Coot Bay specimen was a mislabeled specimen from cultivated plants. However, Luer (1972), Wunderlin (1998), and others consider Coot Bay dancinglady orchid as a historical part of the South Florida flora. This debate has precluded listing by FDACS and FNAI.*

Preliminary recommendations:

- Continue surveys in the Flamingo/Cape Sable area of Everglades National Park.

***Peperomia alata* Ruiz & Pavón**
Winged Peperomia

South Florida Status: Extirpated. Last collected in 1939, probably in Fakahatchee Strand Preserve State Park. Last reported in 1977 from Fakahatchee Strand Preserve State Park.

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Not listed by any agency.

Identification: Unlike other native and naturalized species of *Peperomia* in Florida, *P. alata* is minutely black glandular punctate (Wunderlin, 1998).

References: Craighead, 1963; Long & Lakela, 1976; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *P. simplex* Ham., misapplied.

Historical Context in South Florida: “Phillips” apparently first collected winged peperomia in 1938 in the “Big Cypress” (43, FTG), although this and all other collections were probably from what is now Fakahatchee Strand Preserve State Park. It was subsequently collected in 1939 by W.C. & M.W. Muenscher (s.n., NY) and by Edward P. St. John (s.n., FLAS). Two other collections were made without dates, one by Walter M. Buswell (s.n., NY), and one by Roy O. Woodbury (s.n., FTG). These may have preceded the Phillips collection. Frank C. Craighead (1963) reported that the species (as *P. simplex*) was found in the Fakahatchee Strand by Fred Fuchs, Sr., but did not provide a date. More recent collections are unknown, but according to the Botanical Notes of George N. Avery (26 September 1977), it was found by Chuck McCartney in the Fakahatchee Strand in 1977. These plants were growing on a pond-apple (*Annona glabra*) tree. No voucher was collected, so we cannot be positive of the determination.

Preliminary recommendations:

- Consider reintroduction to Fakahatchee Strand Preserve State Park.
- Review for listing by FDACS and FNAI.

***Peperomia magnoliifolia* (Jacq.) A. Dietr.
Spoonleaf Peperomia**

South Florida Status: Extirpated. Last collected in 1922 in Hattie Bauer Hammock.

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic or terrestrial herb.

Distribution: Native to South Florida, the West Indies, Bermuda, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Long & Lakela (1976) has an illustration.

References: Chapman, 1883; Small, 1933a; Small, 1933b; Long & Lakela, 1976; Correll & Correll, 1982; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *P. spathulifolia* Small; *Rhynchophorum spathulifolium* (Small) Small.

Historical Context in South Florida: Abram P. Garber first collected spoonleaf peperomia in 1877 in Miami (10344, NY), presumably in Brickell Hammock. Alvah A. Eaton collected it next in 1905 in Hattie Bauer Hammock (1218, FSU), most of which is now a Miami-Dade County Park. It was collected there again by John Kunkel Small and others in 1915 (6967, NY), and by Small in 1922 (10426, NY).

The Fennell family developed part of Hattie Bauer Hammock as the tourist attraction The Orchid Jungle. This is the portion of the hammock that has been preserved. Other parts of Hattie Bauer Hammock were destroyed for a housing development. It is uncertain which part of the hammock spoonleaf peperomia was in, and the exact cause of its extirpation.

Small (1926b) reported spoonleaf peperomia for Ross Hammock, but we have not been able to find any specimens to corroborate this report. This probably represents a misidentification of *P. obtusifolia*.

Preliminary recommendations:

- Consider reintroduction to Hattie Bauer Hammock.
- Consider reintroduction to Brickell Hammock in Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.
- Review for listing by FNAI.

***Phaseolus polystachios* (L.) Britton et al.
var. *sinuatus* (Nutt. ex Torr. & A. Gray) Maréchal et al.
Thicket Bean**

South Florida Status: Extirpated. Last collected in 1913 in Miami.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Miami-Dade and Glades counties. The Glades County record may represent an introduced waif population.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: In addition to *P. polystachios*, there are two exotic species of *Phaseolus* in Florida (*P. lunatus*, *P. vulgaris*). *P. polystachios* has a long, slender flexuous axis of the raceme, rather than a stout axis.

References: Chapman, 1883; Small, 1933a; Isely, 1990; Wunderlin, 1998.

Synonyms: *P. sinuatus* Nutt. ex Torr. & A. Gray.

Historical Context in South Florida: "Hyle" first collected thicket bean in the middle 1800s at Fort Dallas (s.n., NY), now the site of downtown Miami north of the Miami River, presumably in sandy pine rocklands. Abram P. Garber subsequently collected it in Miami in 1877 (s.n., FLAS, NY), as did J.T. Simpson in 1892 (517, NY). In 1901, John Kunkel Small and George V. Nash collected it in Coconut Grove (191, NY), and in 1913, John Kunkel Small and George K. Small made a collection in pinelands south of the Miami River (4821, NY).

W.F. Wight collected thicket bean once without a date on a roadside in Glades County (s.n., US). It is unclear if this collection represented a native population, or an introduced waif population.

Comments: *This is one of many species of sandhill associates that are disjunct in sand deposits in pine rocklands in Miami-Dade*

County. Although this habitat has been completely destroyed within the known range of thicket bean, it may be possible to restore this habitat and reintroduce thicket bean in the vicinity of Coconut Grove or Coral Gables.

Preliminary recommendations:

- Consider restoring pine rocklands near the Miami River and reintroducing thicket bean.
- Consider restoring pine rocklands in Coral Gables and reintroducing thicket bean.

***Pleopeltis astrolepis* (Liebm.) E. Fourn.
Star-scale Polypody**

South Florida Status: Extirpated by 1986 (Nauman, 1986a). Last collected in 1978 in the Parkland area of northern Broward County.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphyte.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Broward County.

South Florida Habitats: Pond-apple (*Annona glabra*) swamps.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Nelson (2000) has a black and white illustration; Wunderlin & Hansen (2000) has illustrations.

References: Nauman, 1986a, Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *P. revoluta* (Spreng. ex Willd.) A.R. Sm.; *Polypodium astrolepis* Liebm.

Historical Context in South Florida: Daniel F. Austin discovered star-scale polypody in 1976 in the Parkland area of northern Broward County (Nauman & Austin 179, FLAS; Nauman, 1986a). P. Adams also collected it there in 1977 (s.n., FTG, US) as did Nauman in 1978 (341, NY). Nauman (1986b) considered it extirpated due to habitat destruction.

Comments: *The Palm Beach record reported in Wunderlin (1998) is an error caused by a mislabeled herbarium specimen (Adams s.n., FTG).*

Preliminary recommendations:

- Consider introducing star-scale polypody to Doris Davis Forman Wilderness Preserve in Parkland.

***Polypodium triseriale* Sw.
Angle-vein Fern**

South Florida Status: Extirpated. Collected once in 1924 south of Naples.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphyte.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: The original label states “Edge of swamp near Naples,” but Small (1931, 1938) reports its habitat as “low hammocks.”

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has two color photos; Wunderlin & Hansen (2000) has two illustrations; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Goniophlebium brasiliense* (Poir.) Farw.; *Goniophlebium triseriale* (Sw.) Wherry.

Historical Context in South Florida: John Kunkel Small, John B. DeWinkeler, and Charles A. Mosier collected angle-vein fern once in 1924 near Naples in southwestern Collier County (s.n., NY). It is unknown whether or not the entire plant was taken or if more than one plant was present.

It has been reported in error on a number of occasions for Everglades National Park (Avery & Loope, 1980b, 1983; Reimus, 1996, 1999).

Preliminary recommendations:

- Review for listing by FDACS and FNAI.

***Prescotia oligantha* (Sw.) Lindl.
Small Prescott Orchid**

South Florida Status: Extirpated within historical range. Last plants translocated from the wild in 1960.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton discovered small prescott orchid in 1903 in Hattie Bauer Hammock near Homestead (Correll, 1950). He vouchered this population from cultivated material in 1905 (s.n., GH), and apparently collected specimens at Hattie Bauer Hammock that same year (1211, GH; 1240, GH, NY). In 1953, Ray Garrett collected it again in a hammock without precise locality data in Miami-Dade County (s.n., FLAS), but this was presumably from the same station. According to Luer (1972), the only known station of this orchid was slated for development in 1960, so a few plants were translocated to Everglades National Park. Although most of Hattie Bauer Hammock was preserved by the Fennell family as The Orchid Jungle, the southern portion of the hammock was destroyed for a housing development. It is presumed that the small prescott orchid station was in the southern portion of the hammock.

In 1989, Don Keller re-discovered small prescott orchid in a hammock on Long Pine Key (Hammer, 2001). Roger L. Hammer

and Keller photographed a flowering specimen that same year. About a half dozen plants were discovered by 1992, before Hurricane Andrew struck (Hammer, 2001). Neither Hammer nor Keller has revisited this site since the hurricane, so it is uncertain whether or not the population survived. Hammer spoke with Carlyle Luer about this station, but Luer was unable to recall the exact location where the plants were translocated. Nevertheless, with the evidence at hand, it appears that small prescott orchid was introduced into Everglades National Park and is extirpated within its historical range.

Comments: *The two South Florida specimens were collected in late February and early March, so surveys should be conducted within those two months.*

Preliminary recommendations:

- Survey Keller station to determine if plants are extant.
- Consider reintroduction to Hattie Bauer Hammock.
- Maintain Everglades National Park population until such time as a successful reintroduction can be accomplished.

***Pteris quadriaurita* Retz.
Striped Brake**

South Florida Status: Extirpated. Collected once in 1925 near Belle Glade.

Taxonomy: Pteridophyte; Pteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native and widespread in both the New World and Old World tropics (Wunderlin & Hansen, 2000).

South Florida Distribution: Palm Beach County.

South Florida Habitats: Cypress swamps.

Protection Status: Not listed by any agency.

Identification: It is described in Wunderlin & Hansen (2000).

References: Wunderlin, 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Pteris plumula* Desv.

Historical Context in South Florida: Hugh O'Neill collected striped brake once in 1925 in a cypress swamp about two or three miles north of Belle Glade (810, US).

Comments: Don Keller questions whether this was native (personal communication, 8 February 2001). Apparently, it is a widely cultivated species. However, there is no evidence that this species was cultivated in western Palm Beach County when it was discovered. We consider it an extirpated element of the native flora.

Preliminary recommendations:

- Review for listing by FDACS and FNAI.

***Quercus xsucculenta* Small
Succulent Oak**

South Florida Status: Extirpated. Collected once in 1903 in Fort Lauderdale.

Taxonomy: Dicotyledon; Fagaceae.

Habit: Tree.

Distribution: Endemic to South Florida.

South Florida Distribution: Broward County.

South Florida Habitats: Probably scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: No modern taxonomic keys including this hybrid are known. Small (1933) has a key of 42 species and hybrids of the southeastern United States.

References: Small, 1933a; Wunderlin, 1998.

Synonyms: *Q. geminata* Small var. *succulenta* (Small) Trel.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter collected succulent oak once in 1903 in a pineland in Fort Lauderdale (1044, NY).

Comments: This is a purported hybrid between *Q. geminata* and *Q. minima*, both of which are extant and growing in association with each other in South Florida.

Preliminary recommendations:

- Continue surveys in areas where *Q. geminata* and *Q. minima* are sympatric.
- Review for listing by FNAI.

***Ruellia ciliosa* Pursh
Ciliate Wild Petunia**

South Florida Status: Extirpated. Collected once in 1958 in Cape Coral.

Taxonomy: Dicotyledon; Arecaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: There are eight species of native and naturalized *Ruellia* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Wunderlin, 1998.

Synonyms: *R. caroliniensis* (J.F. Gmel.) Steud. subsp. *ciliosa* (Pursh) R.W. Long; *R. caroliniensis* subsp. *ciliosa* (Pursh) R.W. Long var. *cinerascens* (Fernald) Kartesz & Gandhi; *R. ciliosa* var. *cinerascens* Fernald.

Historical Context in South Florida: Robert Kral collected ciliate wild petunia once in 1958 ten miles west southwest of Salvista in Lee County (6543, USF). That area is now in the City of Cape Coral.

Comments: *This is a temperate species at the southern end of its range, and it may always have been rare in South Florida.*

Preliminary recommendations:

- Continue surveys in Lee County.

***Salvia micrantha* Vahl
Yucatan Sage**

South Florida Status: Extirpated. Last collected in 1918 in southern Miami-Dade County.

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, and Central America.

South Florida Distribution: Collier, Miami-Dade, Monroe, and Palm Beach counties.

South Florida Habitats: Hammock edges and pinelands.

Protection Status: Listed as extirpated by FNAI.

Identification: There are ten species of *Salvia* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Epling, 1939; Long & Lakela, 1976; Avery & Loope, 1980a; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *S. blodgettii* Chapm.; *S. micrantha* var. *blodgettii* (Chapm.) Epling.

Historical Context in South Florida: Yucatan sage was collected first on the island of Key West by John Loomis Blodgett between 1838 and 1853 (s.n., US). Since then, it was collected numerous times throughout the Florida Keys from Loggerhead Key (Lansing 2481, F), in what is now Dry Tortugas National Park, to No Name Key in the lower Keys (Simpson 142, F; Pollard et al. 116, NY, US), to Elliott Key in what is now Biscayne National Park (Small and Mosier 5745, NY). John Kunkel Small and Charles A. Mosier collected the last Keys specimens in 1915 on Elliott Key (5745, NY), Key West (5982, NY), and Big Pine Key (6030, NY).

In 1896, Albert S. Hitchcock made the first collection on the Miami-Dade County mainland at Coconut Grove (1514, F). Small and Joel J. Carter also collected Yucatan sage in Miami-Dade County in pinelands and hammocks between Coconut Grove and Homestead. Their first collection was in 1903 in a pineland between Coconut Grove and Cutler (553, NY). Small and Carter also made a collection in what appears to be Brickell Hammock in 1913. Small made the last collection in South Florida in 1918 in the Redland area (8635, NY).

Joseph H. Simpson made a single collection in 1891 on Chokoloskee Island in Collier County (244, US), while Albert S. Hitchcock made a collection in 1899 from the Town of Palm Beach (1513, F). Both of these collections were presumably made in hammocks.

Preliminary recommendations:

- Consider reintroduction to Dry Tortugas National Park and Biscayne National Park.
- Consider restoring rockland hammocks in the Brickell Hammock area and reintroducing Yucatan sage.
- Consider restoring shell mound hammocks on or near Chokoloskee Island and reintroducing Yucatan sage.
- Consider restoring maritime hammocks on the island of Palm Beach and reintroducing Yucatan sage.
- Review for listing by FDACS. Review FNAI rank.

***Scirpus californicus* (C.A. Mey.) Steud.
Giant Bulrush**

South Florida Status: Extirpated. Last collected in 1965 near South Bay in Palm Beach County.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to southern North America and tropical America. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Freshwater marshes.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a photo.

References: Small, 1933a; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John H. Davis, Jr. first collected giant bulrush in 1951 in a marsh in Lake Okeechobee in Martin County (s.n.; FLAS). He made another collection a few days later in Lake Okeechobee in a marsh near Chancey Bay FLAS). R. Metzger made another collection in 1965 along U.S. 27 between South Bay and Bean City in Palm Beach County (191; USF). This collection was from a drainage ditch and may not represent a native population. However, it seems likely that giant bulrush was native to the southern rim of Lake Okeechobee in Palm Beach County.

Preliminary recommendations:

- Consider reintroduction along the southern rim of Lake Okeechobee.

***Spiranthes amesiana* Schltr.
Ames' Lady's-tresses**

South Florida Status: Extirpated. Last collected in 1976 on the Miami Rock Ridge.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the Bahamas, and Nicaragua.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Similar to *S. torta*, but the apex of the lip is acute rather than obtuse, the margin of the lip is lacerate rather than undulate and the basal calli have long trichomes rather than being glabrous (Wunderlin, 1998).

References: Wunderlin, 1998.

Synonyms: *S. torta*, misapplied.

Historical Context in South Florida: Alvah A. Eaton collected the type specimen of Ames' lady's tresses in 1904 in pine rocklands in Coconut Grove (921, GH). It also was collected in 1976 by George N. Avery northwest of Perrine (1254, FLAS), near what is now Tamiami Pineland Complex Addition. Avery found one plant, which was collected from a "low pineland." Avery originally determined this specimen to be *S. torta*, which *S. amesiana* closely resembles. Roger L. Hammer observed this plant with Avery in 1976 (personal communication, 13 March 2001).

Comments: *This species is very similar to S. torta and was described in 1920 from Eaton's Coconut Grove material. It has been overlooked as a member of our flora until recently. Hamer (1984) and Wunderlin (1998) are the first modern authors to report this species for Florida.*

Preliminary recommendations:

- Review all herbarium specimens labeled as *S. torta* to determine if any mislabeled specimens of *S. amesiana* exist.
- Survey Tamiami Pineland Complex Addition.
- Review for listing by FDACS and FNAI.

***Spiranthes polyantha* Rchb. f.
Florida Keys Lady's-tresses**

South Florida Status: Extirpated. Last collected in 1978 on Sewell's Point.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, and Central America. Wunderlin (1998) reports it as rare in Citrus, Martin, and Miami-Dade counties.

South Florida Distribution: Martin and Miami-Dade counties.

South Florida Habitats: Hammocks.

Protection Status: Listed as endangered by FDACS and as imperiled to critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Mesadenus lucayanus* (Britton) Schltr.; *Mesadenus polyanthus* (Rchb. f.) Schltr.

Historical Context in South Florida: John Kunkel Small and Charles A. Mosier first collected Florida Keys lady's-tresses in 1915 on Elliott Key (5764, NY), in what is now Biscayne National Park. Bruce E. Tatje also collected it once in 1978 at Sewell's Point in Martin County (10517, FAU). Sewell's Point has been heavily developed since that time and it is unlikely that any plants remain. A recent collection said to have been from Everglades National Park is treated as a false record, as it cannot be corroborated.

Comments: *Florida Keys lady's-tresses flowers in the winter through spring, when surveys should be conducted.*

Preliminary recommendations:

- Review status of the Citrus County occurrence to determine if Florida Keys lady's-tresses is extant in Florida.
- Consider reintroduction to Elliott Key in Biscayne National Park.

***Styrax americanus* Lam.
American Snowbell**

South Florida Status: Extirpated. Last collected in 1965 in Charlotte County.

Taxonomy: Dicotyledon; Styracaceae.

Habit: Shrub.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte County.

South Florida Habitats: Hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has an illustration; Nelson (1996) has an illustration and a photo; Tobe et al. (1998) has an illustration and photos.

References: Chapman, 1883; Small, 1933a; Ginsoulin, 1974; Little, 1978; Godfrey & Wooten, 1981; Godfrey, 1988; Nelson, 1994; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *S. americanus* Lam. var. *pulverulentus* (Michx.) Rehder; *S. pulverulentus* Michx.

Historical Context in South Florida: John Kunkel Small and others first collected American snowbell in 1923 in a hammock north of Punta Gorda (10910, FLAS). Olga Lakela collected it one other time in Charlotte County in 1965 without indicating the specific locality (28250, USF). It was growing in a hammock on a berm along a creek in white sand scrub.

Comments: *This is a temperate species at the southern end of its range, and it always may have been rare in South Florida.*

Preliminary recommendations:

- Continue surveys in Charlotte County.

***Tectaria coriandrifolia* (Sw.) Underw.
Hairy Halberd Fern**

South Florida Status: Extirpated. Last collected in 1940 on the Miami Rock Ridge.

Taxonomy: Pteridophyte; Dryopteridaceae.

Habit: Perennial lithophytic herb.

Distribution: South Florida, and the West Indies in the Bahamas, Cuba, and Jamaica.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Limestone sinkholes in rockland hammocks.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Small (1931, 1938) have line drawings of all four native South Florida *Tectaria* species; Nelson (2000) has a black and white illustration.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Correll & Correll, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton first collected hairy halberd fern in 1903 in Hattie Bauer Hammock (563, NY; 683, US), most of which is now a Miami-Dade County conservation area. It was observed in three separate sinkholes (Eaton, 1906). It was collected again in Hattie Bauer Hammock in 1933 by Mary W. Diddell (s.n., FLAS) and in 1935 by Maurice Brown (s.n., FLAS). Brown observed thriving colonies in 1935 (Darling, 1961). The herbarium of Irving Washington contained the last specimen collected from Hattie Bauer Hammock in 1940, but the actual collector is unknown (s.n., US).

The Fennell family developed part of Hattie Bauer Hammock as the tourist attraction The Orchid Jungle. This is the portion of the hammock that has been preserved. Other parts of Hattie Bauer Hammock were destroyed for a housing development. It is uncertain which part of the hammock hairy halberd fern was in, and the exact cause of its extirpation.

Comments: As with all lithophytic ferns, hairy halberd fern is dependent on a high freshwater table and sufficient moisture and humidity. The lowering of the freshwater table on the Miami Rock Ridge may make it difficult to reintroduce hairy halberd fern.

Preliminary recommendations:

- Consider reintroduction to Hattie Bauer Hammock.
- Promote a higher regional freshwater table on the Miami Rock Ridge.

***Tectaria xamesiana* A.A. Eaton
Ames' Halberd Fern**

South Florida Status: Extirpated. Last collected in 1940 on the Miami Rock Ridge.

Taxonomy: Pteridophyte; Dryopteridaceae.

Habit: Perennial lithophytic herb.

Distribution: Apparently endemic to South Florida, although both parents occur in the Bahamas.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Limestone sinkholes in rockland hammocks.

Protection Status: Not listed by FDACS because it is a hybrid. Listed as extirpated by FNAI.

Identification: Ames' halberd fern has aborted spores and is intermediate between its two parents. Wunderlin & Hansen (2000) provides other important characters. Small (1931, 1938) have line drawings of all four native South Florida *Tectaria* taxa.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Avery & Loope, 1980a; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Aspidium amesianum* (A.A. Eaton) H. Christ ex C. Chr; *Aspidium trifoliatum* (L.) Sw. var. *amesianum* (A.A. Eaton) Clute.

Historical Context in South Florida: Alvah A. Eaton first discovered Ames' halberd fern in 1903 in a sinkhole in Hattie Bauer Hammock (s.n., NY), most of which is now a Miami-Dade County conservation area. As with *T. coriandrifolia*, it was

observed in three separate sinkholes (Eaton, 1906). Eaton collected it again in Hattie Bauer Hammock in 1905 (1239, NY), and Robert P. St. John collected it in 1934 (170V, NY). The herbarium of Irving Washington contained the last specimen collected from Hattie Bauer Hammock in 1940, but the actual collector is unknown (s.n., US).

The Fennell family developed part of Hattie Bauer Hammock as the tourist attraction The Orchid Jungle. This is the portion of the hammock that has been preserved. Other parts of Hattie Bauer Hammock were destroyed for a housing development. It is uncertain which part of the hammock hairy halberd fern was in, and the exact cause of its extirpation.

Comments: *This was a naturally occurring hybrid between T. coriandrifolia and T. fimbriata. T. coriandrifolia was also historically present in Hattie Bauer Hammock and is now extirpated in South Florida (see T. coriandrifolia account above). As with all lithophytic ferns, Ames' halberd fern is dependent on a high freshwater table and sufficient moisture and humidity. The lowering of the freshwater table on the Miami Rock Ridge may make it difficult to reintroduce hairy halberd fern.*

Preliminary recommendations:

- Consider reintroduction to Hattie Bauer Hammock, through the reintroduction of a viable population of *T. coriandrifolia*. *T. fimbriata* is extant there.
- Promote a higher regional freshwater table on the Miami Rock Ridge.

***Trichomanes lineolatum* (Bosch) Hook.
Lined Bristle Fern**

South Florida Status: Extirpated. Last collected in 1954 on the Miami Rock Ridge.

Taxonomy: Pteridophyte; Hymenophyllaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Limestone sinkholes in rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Small (1931) and Small (1938) both have line drawings of *T. lineolatum*, *T. krausii*, and *T. punctatum* subsp. *floridanum*, the three bristle ferns from the Miami Rock Ridge.

References: Small, 1931b; Small, 1938; Wessels Boer, 1962; Lakela & Long, 1976; Long & Lakela, 1976; Nauman, 1986b; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected lined bristle fern in 1906 in Ross Hammock (2379, FLAS, NY), part of which is now protected within Castellow Hammock Park. It was collected again in Castellow Hammock by Mary W. Diddell in 1932 (s.n., FLAS), and by Robert P. St. John in 1934 (s.n., FLAS). Small collected lined bristle fern once at Hattie Bauer Hammock in 1915 (s.n., FLAS). Mary W. Diddell made the last collection of line bristle fern at Meissner Hammock in 1954 (s.n., FLAS). The extirpation of lined bristle fern was most likely caused by the lowering of the freshwater table on the Miami Rock Ridge.

Comments: *As with all lithophytic ferns, lined bristle fern is dependent on a high freshwater table and sufficient moisture and humidity. The artificially low freshwater table on the Miami Rock Ridge may make it difficult to reintroduce lined bristle fern.*

Preliminary recommendations:

- Consider reintroductions to Hattie Bauer Hammock, Meissner Hammock, and Castellow Hammock Park.
- Promote a higher regional freshwater table on the Miami Rock Ridge.
- Review for listing by FNAI.

***Tridens eragrostoides* (Vasey & Scribn.) Nash**
Love Grass Tridens

South Florida Status: Extirpated. Last collected in 1898 on Upper Matecumbe Key.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, Cuba, Texas, and Mexico.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: "Dry ground among shrubs" (Hitchcock & Chase, 1950).

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Wunderlin, 1998.

Synonyms: *Triodia eragrostoides* Vasey & Scribn.

Historical Context in South Florida: Love grass tridens was collected twice on the island of Key West, once by John Loomis Blodgett between 1838 and 1853 (s.n., NY), and once by Ferdinand Rugel in 1846 (117, USF). Charles L. Pollard and others collected it once on Upper Matecumbe Key in 1898 (147, US). No habitat data was provided for any of these collections.

Preliminary recommendations:

- Consider introduction to Little Hamaca Park in Key West.
- Consider restoring rockland hammocks on Key West and reintroducing love grass tridens.
- Review for listing by FDACS and FNAI.

***Utricularia amethystina* Salzm. ex A. St.-Hil. & Girard
Florida Purple Bladderwort**

South Florida Status: Extirpated. Last collected in 1946 in either Fakahatchee Strand Preserve State Park or Florida Panther National Wildlife Refuge.

Taxonomy: Dicotyledon; Lentibulariaceae.

Habit: Annual or perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: This is a terrestrial *Utricularia*, of which there are several species in Florida. Wunderlin (1998) has a key for the 14 species of *Utricularia* in Florida.

References: Small, 1933a; Godfrey & Wooten, 1981; Taylor, 1989; Wunderlin, 1998.

Synonyms: *Calpidisca standleyae* Barnhart ex Small.

Historical Context in South Florida: Jeanette P. Standley collected Florida purple bladderwort three times in 1916 in the vicinity of Fort Myers (9, NY; 10, NY; 11, NY). There is an additional collection by Standley for the Fort Myers area without a date (406, FSU), but this was also apparently collected in 1916, based upon other collections by Standley. Leonard J. Brass also collected it once in 1946 in Collier County, six miles west of Miles City (15873, FSU, US). This location could have been either in Fakahatchee Strand Preserve State Park or Florida Panther National Wildlife Refuge. Taylor (1989) attempted to find extant stations of Florida purple bladderwort to no avail.

Preliminary recommendations:

- Consider reintroduction to Fakahatchee Strand Preserve State Park and Florida Panther National Wildlife Refuge.
- Review for listing by FDACS and FNAI.

Part 3. The Historical Plants

***Acacia macracantha* Humb. & Bonpl. ex Willd.
Porknut**

South Florida Status: Historical. Last reported in 1987 for the Florida Keys.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Small tree.

Distribution: Native to South Florida, the West Indies, and South America.

South Florida Distribution: Native to the Monroe County Keys. Escaped from cultivation on the South Florida mainland and in Manatee County in central Florida.

South Florida Habitats: Coastal berms and rockland hammocks.

Protection Status: Not listed by any agency.

Identification: Scurlock (1987) has color photos; Nelson (1994) has a color photo; Nelson (1996) has a photo.

References: Ward, 1967; Isely, 1975; Long & Lakela, 1976; Little, 1978; Correll & Correll, 1982; Scurlock, 1987; Isely, 1990; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Ellsworth P. Killip first collected porknut in 1952 on Vaca Key (42009, NY). George N. Avery also observed it on Vaca Key in 1966 in a rockland hammock. Only one tree was seen and it was apparently the same tree that was vouchered by Killip (Avery's Notes, 6 March 1966). The Vaca Key tree was located just east of the Crane Point Hammock Museum, likely in what is now the museum property. Avery discovered porknut on Ramrod Key in 1963 (Avery's Notes, 13 March 1963; Ward, 1967). Avery noted 15 plants on a coastal berm on the southwest portion of the island. A portion of this berm is privately owned and a portion is owned by Monroe County, but this site is apparently not designated as a conservation area. Scurlock (1987) reported that porknut was extant in the Florida Keys, but we have been unable to verify this report. Both the Crane Point Hammock and Ramrod Key stations need to be surveyed.

Porknut has been cultivated in Florida and has sparingly naturalized in Miami-Dade (Isely, 1990) and Manatee counties (Wunderlin, 1998). As far as we are aware, germplasm of the South Florida plants was not conserved.

Preliminary recommendations:

- Survey Crane Point Hammock Museum Site and Ramrod Key Coastal Berm Site.
- If plants are found, map and monitor known populations.
- If no plants are found, assess appropriateness and study feasibility of reintroduction to Crane Point Hammock Museum Site and Ramrod Key Coastal Berm Site.
- Acquire privately owned portion of Ramrod Key Coastal Berm Site, designate Monroe County-owned portion of Ramrod Key Coastal Berm Site as a conservation area, and develop conservation agreement with Crane Point Hammock Museum to restore and manage a viable population of porknut.
- Review for listing by FDACS and FNAI.

***Acacia tortuosa* (L.) Willd.
Poponax**

South Florida Status: Historical. Last reported in 1978 from Chokoloskee Island.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Small tree or shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Collier County.

South Florida Habitats: Hammocks on shell mounds.

Protection Status: Listed as endangered by FDACS.

Identification: Nelson (1994) has a photo; Nelson (1996) has a photo.

References: Ward, 1968a; Isely, 1975; Long & Lakela, 1976; Correll & Correll, 1982; Isely, 1990; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: L. Eleanor Scull first collected poponax in 1937 on Chokoloskee Island, just south of Everglades City (s.n., FLAS). Olga Lakela collected it there again in 1966 (29817, USF; 30151, USF), as did Daniel B. Ward (6021,

USF). John Beckner also collected it there around the same period (Ward, 1968a). Daniel F. Austin and Daniel M. McJunkin (1978) last reported poponax as being present on Chokoloskee Island. The station observed by Austin and McJunkin was subsequently destroyed for a housing development (D.F. Austin, personal communication, 17 August 2000). A survey of the island in 1996 by Gann and Bradley failed to locate any plants.

Frank C. Craighead collected poponax on nearby Ferguson's Mound in 1960 (s.n., FLAS), in what is now Everglades National Park. He reported that the plants were "well established" on shell mounds. John Popenoe collected seeds from Ferguson's Mound in 1967 and accessioned them at Fairchild Tropical Garden. William T. Gillis vouchered this collection in 1971 (11181, FTG). Woodmansee conducted a survey of Ferguson's Mound in 2001, but failed to locate any plants. Germplasm of the Ferguson's Mound plants is maintained at Fairchild Tropical Garden (Accession # 67-330).

Preliminary recommendations:

- Continue surveys on Ferguson's Mound in Everglades National Park.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to Ferguson's Mound.
- Consider restoring shell mound hammocks in the Chokoloskee/Everglades City area and reintroducing poponax.
- Review for listing by FDACS.

***Amaranthus floridanus* (S. Watson) J.D. Sauer**
Florida Amaranth

South Florida Status: Historical. Last collected in 1985 at Fort Myers Beach.

Taxonomy: Dicotyledon; Amaranthaceae.

Habit: Annual terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in peninsular Florida. Wunderlin & Hansen (2001) records it for South Florida, and Alachua, Brevard, Duval, Manatee, Pinellas, and Sarasota counties.

South Florida Distribution: Charlotte, Collier and Lee counties, and the Monroe County Keys.

South Florida Habitats: Beach dunes and open disturbed sites.

Protection Status: Not listed by any agency.

Identification: This is a difficult genus with more than a dozen native and naturalized species in South Florida. *A. floridanus* is a dioecious plant, with regularly apparent sepals without strong midveins, bracts 1-2 mm long with the midrib conspicuously excurrent, leaf blade usually linear to 1 cm wide, and the inflorescence unbranched above the leaves (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Sauer, 1955; Long & Lakela, 1976; Wunderlin, 1998.

Synonyms: *Acnida floridana* S. Watson.

Historical Context in South Florida: John Loomis Blodgett collected the type specimen of Florida amaranth between 1838 and 1853 on the island of Key West (Sauer, 1955). It has not been observed or collected in the Florida Keys since the Blodgett collection. Blodgett also made a collection in the Charlotte Harbor area, also between 1838 and 1853 (s.n., NY). Alvan W. Chapman made a single collection in Collier County in 1895 at "Caseys Pass" at Cape Romano (s.n., GH).

Samuel M. Tracy made the first collection in Lee County in 1901 on Sanibel Island (7621, NY). George R. Cooley rediscovered it on Sanibel Island in 1954 (s.n., FLAS). It was collected several times on Sanibel Island by William C. Brumbach beginning in 1966 (5617, FLAS). Brumbach also collected it in 1968 (6134, FLAS; 6502, FLAS) and 1974 (8697, FLAS). It is uncertain whether or not it is extant on Sanibel. Florida amaranth also was collected on North Captiva Island in 1978 by Sandy Morrill and Jud Harvey (s.n., USF) and in 1979 by Morrill (s.n., USF), possibly in Cayo Costa State Park, although about half of the island is privately owned. It was reported for Cayo Costa Island by Herwitz (1977), but was not found on Cayo Costa Island when it was surveyed from 1990 to 1992 (Herwitz et al., 1996). It was reported for Cayo Costa State Park (Florida Park Service District 4, 1994a), which could have been based upon plants either on North Captiva Island or Cayo Costa Island. Gann and Florida Park Service biologist R. "Bobby" Hattaway surveyed North Captiva Island and Cayo Costa Island within Cayo Costa State Park in February 2001. Habitat for

Florida amaranth is present, but no plants were observed. Florida amaranth was collected at Fort Myers Beach twice, once by I.W. Knoblock 1956 (1439, FLAS), and once by Elliott Brown in 1985 (s.n., USF). This was the last known collection. There is also a 1930 collection in Lee County at "Crescent Beach" by Walter M. Buswell (s.n., NY). The location of this station is unknown.

Comments: *Florida amaranth is an annual that flowers spring through fall, so surveys should be conducted during this time period. There is a specimen in the herbarium of the New York Botanical Garden that is labeled as having been collected in Colorado. This could represent a short-lived naturalized population, or perhaps a mislabeled specimen.*

Preliminary recommendations:

- Survey the Cape Romano area, Fort Myers Beach, North Captiva Island, and Sanibel Island.
- If plants are found, map and monitor known populations.
- Review for listing by FDACS and FNAI.

***Amorpha herbacea* Walter var. *herbacea*
Lusterspike Indigobush**

South Florida Status: Historical. Last collected in 1922 on Marco Island.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Shrub.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the panhandle to the northern and central peninsula.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Scrub, scrubby flatwoods, and mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: *Amorpha herbacea* can be distinguished from *A. fruticosa* by having a gland at the tip of the leaflet instead of a non-glandular mucro (Wunderlin, 1998). *A. herbacea* var. *herbacea* can be distinguished from *A. herbacea* var. *crenulata* in having leaflet margins entire or inconspicuously crenulate instead of having leaflet margins conspicuously crenulate.

References: Chapman, 1883; Small, 1933a; Wilbur, 1975; Long & Lakela, 1976; Isely, 1990; Nelson, 1996; Wunderlin, 1998.

Synonyms: *A. cyanostachya* M.A. Curtis; *A. floridana* Rydb.; *A. herbacea* var. *floridana* (Rydb.) Wilbur.

Historical Context in South Florida: Jeanette P. Standley first collected lusterspike indigobush in 1919 in the Mullock Creek District of Lee County (491, NY), in the vicinity of what is now Estero Bay State Buffer Preserve. In 1922, John Kunkel Small made a collection from the same general area at “Estero south of Fort Myers” (10473, FLAS, NY). It also has been reported for Koreshan State Historic Site in Estero (Florida Park Service District 4, 1994d). In 2001, Gann and Florida Park Service biologists R. “Bobby” Hattaway and Sally Braem briefly searched for lusterspike indigobush at Koreshan State Historic Site, but were unable to locate any plants. It appears that lusterspike indigobush may be extirpated in the Estero area, but more thorough surveys should be conducted.

In 1919, Small and John B. DeWinkeler made a collection from near Naples in Collier County (8153, NY; Small, 1921), in the vicinity of what is now Rookery Bay National Estuarine Research Reserve. Small also made a collection at Caxambas on Marco Island in 1922 (10487, NY), and another that same year on Marco Island with DeWinkeler (10615, US).

Comments: *This is a temperate plant at the southern end of its range, and it may have always been rare in South Florida. Amorpha herbacea* var. *crenulata* *is endemic to Miami-Dade County, and listed as endangered by the U.S. Fish and Wildlife Service and the Florida Department of Agriculture and Consumer Services (see Chapter 5).*

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve, Koreshan State Historic Site, and Rookery Bay National Estuarine Research Reserve.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to the Estero area at Estero Bay State Buffer Preserve and Koreshan State Historic Site.
- Consider restoring scrub habitat on Marco Island and reintroducing lusterspike indigobush.

***Andropogon arctatus* Chapm.**
Pinewoods Bluestem

South Florida Status: Historical. Last collected in 1967 in western Collier County.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida and southern Alabama. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Charlotte and Collier counties.

South Florida Habitats: Presumably flatwoods and scrub. Collected in South Florida only in flatwoods, and flatwoods converted to unimproved pasture.

Protection Status: Listed as threatened by FDACS and as rare by FNAI.

Identification: Hitchcock & Chase (1950) has illustrations of both *A. arctatus* and *A. ternarius*. In *A. arctatus* the stamens are usually 1, the lower glumes somewhat folded, and the awns are less than 1 cm long. In *A. ternarius* the stamens are 3, the lower glumes are flat, and the awns are more than 1 cm long (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Campbell, 1983; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: C.E. Lewis collected pinewoods bluestem once in 1963 in the now defunct U.S. Forest Service Caloosa Experimental Range in southeastern Charlotte County (107, US). Olga Lakela also collected it once in 1967 in Collier County just south of the Lee County line along US 41 (31145, DUKE, USF). Pinewoods bluestem has been reported for Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date), but this presumably represents a misidentification of *A. ternarius*.

Pinewoods bluestem is presumably extirpated, but perhaps it is just overlooked or misidentified as *A. ternarius* (see "Comments" below). Plants could be present in flatwoods or scrub from Charlotte County south to northern Collier County in Fred C. Babcock-Cecil M. Webb Wildlife Management Area, Charlotte

Harbor State Buffer Preserve, Corkscrew Regional Ecosystem Watershed, Estero Bay State Buffer Reserve, or other conservation areas.

If extirpated, pinewoods bluestem was probably lost due to habitat destruction (Collier County), and habitat disturbance (Charlotte County). On his label, C.E. Lewis mentioned that pinewoods bluestem was uncommon at the Caloosa Experimental Range, but had good forage value. It is possible that cattle grazing had a negative impact upon pinewoods bluestem in South Florida.

Comments: *This species is very similar to *Andropogon ternarius*, and according to some authors may be conspecific with that species (Hall, 1978). No reintroductions should be considered in South Florida without a close review of the two known specimens. It is possible that they are misidentifications of *A. ternarius*. Both specimens from South Florida were collected in October, so surveys should be conducted between September and November.*

Preliminary recommendations:

- Examine the two South Florida specimens to make sure that *A. arctatus* is really a part of the South Florida flora. If the specimens are properly identified, then proceed with additional recommendations.
- Survey Fred C. Babcock-Cecil M. Webb Wildlife Management Area, Charlotte Harbor State Buffer Reserve, Corkscrew Regional Ecosystem Watershed, Estero Bay State Buffer Reserve, and other conservation areas in Charlotte, Lee, and northern Collier counties.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to conservation areas within its historical range.

***Asclepias feayi* Chapm. ex A. Gray**
Florida Milkweed

South Florida Status: Historical. Last collected in 1967 near Immokalee.

Taxonomy: Dicotyledon; Asclepiadaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida.

South Florida Distribution: Collier, Glades, and Lee counties. Wunderlin (1998) reports it as occasional in Florida in Clay County and the central and southern peninsula.

South Florida Habitats: Mesic flatwoods, scrubby flatwoods, and scrub.

Protection Status: Not listed by any agency.

Identification: There are twenty-two species of *Asclepias* in Florida. Wunderlin (1998) has a key.

References: Small, 1933a; Wunderlin, 1998.

Synonyms: *Asclepiodella feayi* (Chapm. ex A. Gray) Small.

Historical Context in South Florida: Albert S. Hitchcock first collected Florida milkweed in 1900 in Fort Myers (209, NY, US). In 1916, Paul C. Standley made a collection near Fort Myers (13026, US) and Mary Francis Baker made a collection north of the Caloosahatchee River at Alva (s.n., US), in the vicinity of what is now Caloosahatchee Regional Park. In 1917, Jeanette P. Standley made a collection south of Fort Myers in the Mullock Creek district (432, US), in the vicinity of what is now Estero Bay State Buffer Preserve. In 1930, Harold N. Moldenke made two collections on the same day, one to the west of Fort Myers (927, NY), and one on Pine Island (940a, NY). Florida milkweed also has been reported for two conservation areas in Lee County, Cayo Costa State Park (Florida Park Service District 4, 1994a) and Koreshan State Historic Site (Florida Park Service District 4, 1994d), but both of these stations need to be verified.

John Kunkel Small made the first collection outside of Lee County in 1917 near the Okaloacoochee Slough (8301, NY). It is unknown where Small actually made this collection. The slough is located in both Collier and Hendry counties, in Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Okaloacoochee Slough State Forest, Okaloacoochee Slough Wildlife Management Area, and on private property.

In 1919, Small and John B. DeWinkeler collected Florida milkweed north of Marco Island (9165, NY), in the vicinity of Rookery Bay National Estuarine Research Reserve. Olga Lakela made collections farther north in the county in the Immokalee area in 1965 (28963, USF) and in 1967 (30823, USF). No additional reports have been seen for Collier County.

A single collection from Glades County was made in 1960 by Daniel B. Ward and others ½ mile west of Palmdale (3-18, FLAS), possibly within the boundaries of what is now the Fisheating Creek Wildlife Management Area.

Comments: *Florida milkweed flowers spring through fall, when surveys should be conducted.*

Preliminary recommendations:

- Survey Caloosahatchee Regional Park, Cayo Costa State Park, Estero Bay State Buffer Preserve, Fisheating Creek Wildlife Management Area, and Koreshan State Historic Site.
- Survey the Okaloacoochee Slough in Big Cypress National Preserve, the Florida Panther National Wildlife Refuge, Okaloacoochee Slough State Forest, and Okaloacoochee Slough Wildlife Management Area.
- Survey other historical stations in Collier, Glades, and Lee counties.
- If plants are found, map and monitor known populations.
- If no plants are found, consider introductions to conservation areas within its historical range, including Caloosahatchee Regional Park and Estero Bay State Buffer Preserve.

***Asclepias humistrata* Walter**
Pinewoods Milkweed

South Florida Status: Historical. Last collected in 1991 near North Pelican Bay.

Taxonomy: Dicotyledon; Asclepiadaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) lists it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Collier County. The Collier County plants are disjunct from the nearest population in Highlands County.

South Florida Habitats: Scrub.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Asclepias amplexicaulis* Michx., not Smith.

Historical Context in South Florida: James N. Burch first collected pinewoods milkweed in 1990 in a scrub fragment in Naples (388, Collier County Natural Resources Division herbarium). Burch re-vouchered this station in 1991 (568, Collier County Natural Resources Division herbarium; 570, Collier County Natural Resources Division herbarium). Burch also found pinewoods milkweed in northern Collier County in 1991 in a scrub fragment in North Pelican Bay (433, Collier County Natural Resources Division herbarium). Both of these stations were subsequently destroyed.

Comments: *This is a temperate species at the southern end of its range, and it always may have been rare in South Florida.*

Preliminary recommendations:

- Survey Naples area.
- If plants are found, map and monitor known populations.

***Asclepias tomentosa* Elliott
Velvetleaf Milkweed**

South Florida Status: Historical. Last collected in 1986 on Marco Island.

Taxonomy: Dicotyledon; Asclepiadaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the peninsula.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Scrub and scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo. Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Taylor, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Jeanette P. Standley first collected velvetleaf milkweed in 1917, on a roadside in the Mullock Creek area in Lee County (454, US), in the vicinity of what is now Estero Bay State Buffer Preserve. It has not been collected in Lee County since, but surveys should be conducted in Estero Bay State Buffer Preserve. Harold N. Moldenke first collected it in Collier County in 1930 in Caxambas, near the southern tip of Marco Island (5904, NY). It was collected again on Marco Island by John H. Davis, Jr. in 1947 (s.n., FLAS), and near Caxambas Pass by Olga Lakela in 1970 (s.n., USF). Maria and Mark Minno collected it last on Marco Island in a “weedlot in scrub area” in 1986 (s.n., FLAS). About twenty plants were observed in a circa one-hectare lot.

Comments: *This is a temperate species at the southern end of its range, and it may always have been rare in South Florida. Specimens of A. tomentosa in South Florida have been collected from April through September, when surveys should be conducted.*

Preliminary recommendations:

- Survey Marco Island and the Estero area, including Estero Bay State Buffer Preserve.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to the Estero area at Estero Bay State Buffer Preserve.
- Consider restoring scrub and scrubby flatwoods habitats on Marco Island and reintroducing velvetleaf milkweed.

Asimina incana (W. Bartram) Exell

Woolly Pawpaw

South Florida Status: Historical. Last collected in 1980 near Bonita Springs.

Taxonomy: Dicotyledon; Annonaceae.

Habit: Shrub.

Distribution: Native to southeastern Georgia and peninsular Florida. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the northern and central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey (1988) has an illustration; Nelson (1996) has an illustration and a photo.

References: Small, 1933a; Kral, 1960a; Godfrey, 1988; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *A. speciosa* Nash; *Pityothamnus incanus* (W. Bartram) Small.

Historical Context in South Florida: Walter M. Buswell first collected woolly pawpaw in 1929 in Fort Myers (s.n., FTG). Ruben P. Saulea collected it again in 1980 in the vicinity of Bonita Springs in southwestern Lee County (3340, USF). Although the locality data on the label is somewhat confusing, it appears that the area where it was collected is now being developed as a residential area (R. Irving, personal communication, 17 August 2000).

Preliminary recommendations:

- Survey Bonita Springs area.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to flatwoods in Lee County.

***Asplenium platyneuron* (L.) Britton et al.
Ebony Spleenwort**

South Florida Status: Historical. Last observed in the late 1980s in Everglades National Park.

Taxonomy: Pteridophyte; Aspleniaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to much of eastern North America as well as southern Africa. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula and Miami-Dade County.

South Florida Distribution: Miami-Dade County. The Miami-Dade County plants are disjunct from the nearest population in Highlands County.

South Florida Habitats: Prairie hammocks and bayheads.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has color photos; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. ebenum* Aiton.

Historical Context in South Florida: George N. Avery collected ebony spleenwort once in 1976 in a hammock west of the west end of Context Road in the East Everglades, within the old boundaries of Everglades National Park (1683, FLAS, Everglades National Park herbarium). Only one plant was seen. Two fertile fronds were collected, leaving several sterile fronds. Volunteer botanist Rick Seavey visited this station once around 1987, and observed a single plant (personal communication, 24 January 2001). Seavey also found an additional station southwest of Mahogany Hammock, in a bayhead on the edge of the Shark River Slough in the late 1980s, but has not revisited the station since (personal communication, 24 January 2001).

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida. If still present, this is one of the species that may be affected by the Everglades restoration.*

Preliminary recommendations:

- Survey prairie hammocks and bayheads in the East Everglades and on the edge of the Shark River Slough in Everglades National Park.
- If plants are found, map and monitor known populations.
- If no plants are found, consider for reintroduction to Everglades National Park.

***Aureolaria pedicularia* (L.) Raf.**

var. ***pectinata* (Nutt.) Gleason**

Fernleaf Yellow False Foxglove

South Florida Status: Historical. Collected once in 1986 northwest of Immokalee.

Taxonomy: Dicotyledon; Scrophulariaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier County. The Collier County plants are disjunct from the nearest population in Manatee County.

South Florida Habitats: Scrub.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo.

References: Chapman, 1883; Small, 1933a; Pennell, 1935; Bell & Taylor, 1982; Wunderlin, 1998.

Synonyms: *A. pectinata* (Nutt.) Pennell; *A. pectinata* var. *floridana* Pennell; *Dasistoma pectinata* (Nutt.) Benth.

Historical Context in South Florida: Robin B. Huck collected fernleaf yellow false foxglove once in 1986 in scrubby flatwoods northwest of Immokalee (3294, FLAS). Christman (1988) also reported it for this station, calling the site Immokalee NW RT. 850.

Comments: *This is a temperate species known from a single modern disjunct collection in Collier County. It is possible that this was a waif population. It flowers summer through fall, when surveys should be conducted.*

Preliminary recommendations:

- Survey Immokalee Scrubby Flatwoods Site.
- If plants are found, map and monitor known populations.
- Acquire Immokalee Scrubby Flatwoods Site.

***Bucida spinosa* Jenn.
Spiny Black Olive**

South Florida Status: Historical. Last known plants removed from the wild in 1978 near the Turkey Point Power Plant.

Taxonomy: Dicotyledon; Combretaceae.

Habit: Small tree or shrub.

Distribution: Native to South Florida, the Bahamas, and Cuba.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Hammocks and edges of mangrove swamps along the freshwater marsh ecotone.

Protection Status: Not listed by any agency.

Identification: There are two species of *Bucida* in South Florida, *B. spinosa*, and the exotic *B. buceras*. *B. spinosa* has much smaller leaves, 1-2.5 cm long, versus 3-9 mm long in *B. buceras*. Although Wunderlin (1998) states that only *B. spinosa* is armed, *B. buceras* can, at times, be armed.

References: Long & Lakela, 1976; Nelson, 1996; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Frank C. Craighead first collected spiny black olive in 1962, from a hammock about one mile from the coast and 7.5 miles southeast of Florida City (s.n., FLAS). In later conversations with George N. Avery, Craighead reported that these plants were located near the coast, south of Homestead Bayfront Park (Avery's Notes, 27 August 1965). Donovan S. Correll and John Popenoe collected it again in 1977, on the edge of a mangrove swamp just north of the Turkey Point Power Plant (49008, FTG, NY). Roger L. Hammer observed plants within Florida Power and Light property in 1978, and Pam Krauss and Mark McMahon observed plants, both within and just north of the Turkey Point Power Plant, in that same year (Avery's Notes, 1978). The main population, around 117 plants, was located in the area to the west of where the Turkey Point cooling canals were constructed. Roger L. Hammer translocated these plants to the Florida Power and Light nursery in 1978, immediately before the construction of a perimeter canal would have destroyed them (Avery's Notes, 19 September 1978; R.L. Hammer personal communication, 14 December 2001). No plants have been observed in the wild since that time, but the area around the Turkey Point Power Plant needs to be surveyed, including the recently established Florida Power and Light Mitigation Bank.

Several of the original trees that were translocated are still alive, one at the Turkey Point Power Plant, and several outside of Roger Hammer's former residence in Goulds (R.L. Hammer, personal communication, 17 August 2000).

This attractive tree is widely cultivated in South Florida, but has not been known to naturalize outside of its natural range.

Preliminary recommendations:

- Survey in the vicinity of the Turkey Point Power Plant, including the Florida Power and Light Mitigation Bank.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to the freshwater marsh-mangrove ecotone in the vicinity of the Turkey Point Power Plant.
- Review for listing by FDACS and FNAI.

***Calamintha ashei* (Weath.) Shinnery
Ashe's Calamint**

South Florida Status: Historical. Collected once in 1981 near Palmdale.

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida and Georgia. Wunderlin (1998) reports it as occasional in the central peninsula.

South Florida Distribution: Glades County.

South Florida Habitats: Scrub.

Protected Status: Listed as threatened by FDACS and as rare by FNAI.

Identification: Nelson (1996) has a color photo; Taylor (1998) has a color photo.

References: Small, 1933a; Shinnery, 1962a; Nelson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: *Clinopodium ashei* (Weath.) Small.

Historical Context in South Florida: Ruben P. Saulea collected Ashe's calamint once in 1981 in "white sand scrub" near Palmdale (4987, FTG). Bradley attempted to locate this station in 2000, but was unable to find scrub at the location specified on the herbarium label. It is possible that this collection was actually from Highlands County to the north of Palmdale.

Preliminary recommendations:

- Survey scrub in the vicinity of Palmdale.
- If plants are found, map and monitor known populations.

***Callitriche peploides* Nutt.
Matted Waterstarwort**

South Florida Status: Historical. Last collected in 1977 along the Caloosahatchee River at Alva.

Taxonomy: Dicotyledon; Callitrichaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain, Mexico, and Central America. Wunderlin (1998) reports it as occasional in Florida in the central and western panhandle to the northern and central peninsula.

South Florida Distribution: Lee and Miami-Dade counties.

South Florida Habitats: Shallow water, and moist banks of rivers and streams.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration; Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Fassett, 1951; Long & Lakela, 1976; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected matted waterstarwort in 1877 in Miami (s.n., GH), presumably in freshwater wetlands along the Miami River. Jeanette P. Standley made the next collections in the early 1900s in Lee County. The first collection was from Fort Myers in 1916 (24, US) and the next from the Mullock Creek area in 1917 (s.n., US), in the vicinity of what is now Estero Bay State Buffer Preserve. Matted waterstarwort was not collected again until 1977 when Leland M. Baltzell collected it on the “bottom” of the Caloosahatchee River in Alva at the bridge on State Road 78 (9231, FLAS), in the vicinity of what is now Caloosahatchee Regional Park. Several plants were found in a group. Gann surveyed this area in 2000, but no plants were found. The entire river edge was scoured and eroded, leaving no apparent habitat for matted waterstarwort. It is possible that it is still present at Caloosahatchee Regional Park or other areas along the Caloosahatchee River. Gann surveyed Caloosahatchee Regional Park with Lee County biologists Roger Clark and Rob Irving in

2001. Some habitat was found, but it is severely impacted by wild hogs and exotic pest plants. More survey work needs to be done in this area.

Comments: *Matted waterstarwort is a small annual herb that may be overlooked. It flowers spring through summer, when surveys should be conducted.*

Preliminary recommendations:

- Continue surveys at Caloosahatchee Regional Park
- Survey Estero Bay State Buffer Preserve.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to Lee County at Caloosahatchee Regional Park and Estero Bay State Buffer Preserve.
- Consider restoring floodplain forests and associated habitats along the Caloosahatchee River as habitat for matted waterstarwort.
- Consider restoring freshwater wetlands along the Miami River and reintroducing matted waterstarwort.

***Ceratophyllum muricatum* Cham.**

subsp. ***australe*** (Griseb.) Les.

Prickly Hornwort

South Florida Status: Historical. Last observed in 1978 on Big Pine Key.

Taxonomy: Dicotyledon; Ceratophyllaceae.

Habit: Perennial aquatic herb.

Distribution: Native to eastern North America and Mexico. Wunderlin (1998) reports it as rare in Florida in Brevard, Franklin, and Monroe counties.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Solution holes and ditches.

Protection Status: Not listed by any agency.

Identification: Fruits are important for proper identification, but this is the only species of *Ceratophyllum* reported for the Florida Keys. Its achene margins are winged, while those of *C. demersum*, which occurs on the South Florida mainland, has achenes with margins that are not winged.

References: Wood, 1959; Lowden, 1978; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *C. floridanum* Fassett; *C. submersum* L., misapplied.

Historical Context in South Florida: John Loomis Blodgett first collected prickly hornwort in South Florida between 1838 and 1853 (s.n., NY), probably on Big Pine Key, although the specimen label indicates only “South Florida.” Ellsworth P. Killip made the next collection in 1940 at Watson Hammock on Big Pine Key (32868, US), which is now located within National Key Deer Refuge. In 1953, Killip made a second collection at the same locality (43367, US), and a third collection from just north of Watson Hammock (40732, US). George N. Avery made two observations of prickly hornwort at Watson Hammock, in 1974 and 1978, in mosquito control ditches (Avery’s Notes, 28 April 1974 and 16 December 1978). During a survey he conducted in 1979, he was unable to find any plants (Avery’s Notes, 12 June 1979).

Comments: *This species may be somewhat ephemeral. Les (in Flora of North America Editorial Committee, 1997) states that “the affinity of C. muricatum for shallow, ephemeral habitats results in its sporadic and nonpersistent occurrence.” Any surveys that are conducted for this species should be done for several seasons over a period of several years. The South Florida occurrence of this species has been described as C. floridanum Fassett. See Lowden (1978) and Les (in Flora of North America Editorial Committee, 1997) for discussions of the typification and taxonomy of this species. Wunderlin (1998) reports this as introduced in error.*

Preliminary recommendations:

- Survey Watson Hammock area in the National Key Deer Refuge.
- If plants are found, map and monitor known populations.
- If no plants are found, consider reintroduction to the Watson Hammock area in the National Key Deer Refuge.
- Review for listing by FDACS and FNAI.

***Chaerophyllum tainturieri* Hook.
Hairyfruit Chervil**

South Florida Status: Historical. Collected once in 1967 along Fisheating Creek near Palmdale.

Taxonomy: Dicotyledon; Apiaceae.

Habit: Annual terrestrial herb.

Distribution: Native primarily to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades County.

South Florida Habitats: Floodplain forests.

Protection Status: Not listed by any agency.

Identification: *C. tainturieri* has compound leaves, ribbed fruits that are more than twice as long as they are wide, and no sepals (Godfrey & Wooten, 1981; Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *C. floridanum* (J.M. Coult. & Rose) Bush.

Historical Context in South Florida: William G. D'Arcy collected hairyfruit chervil once in 1967 along Fisheating Creek in Palmdale (1347, FLAS), perhaps within what is now the Fisheating Creek Wildlife Management Area. A single plant was seen.

Comments: *This is a temperate species known from a single collection of a single individual on the edge of its range. It is possible that this was a waif population. It is an annual species that flowers in spring, when surveys should be conducted.*

Preliminary recommendations:

- Survey Fisheating Creek area, including Fisheating Creek Wildlife Management Area.
- If plants are found, map and monitor known populations.

***Chamaecrista nictitans* (L.) Moench var. *nictitans*
Sensitive Pea**

South Florida Status: Historical. Last collected in 1977 near El Jobean.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Annual terrestrial herb.

Distribution: Native nearly throughout the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Charlotte and Collier counties. The Collier County record may represent an introduced waif population.

South Florida Habitats: Flatwoods and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo. There are two varieties of *C. nictitans* in South Florida: var. *nictitans*, and var. *aspera*. The latter is relatively common. *C. nictitans* var. *aspera* is conspicuously pilose, whereas *C. nictitans* var. *nictitans* is incurved-puberulent to glabrate (Wunderlin, 1998).

References: Small, 1933a; Isely, 1990; Taylor, 1998; Wunderlin, 1998.

Synonyms: *C. mohrii* (Pollard) Small ex Britton & Rose; *C. multipinnata* (Pollard) Greene; *C. procumbens* (L.) Greene; *Cassia nictitans* L.; *Cassia nictitans* var. *hebecarpa* Fernald; *Cassia nictitans* var. *mohrii* (Pollard) J.F. Macbr.

Historical Context in South Florida: O.E. Frye first collected sensitive pea in 1946 in “rich flatwoods” in Charlotte County (s.n., FLAS). Alicia Fulton collected it again in Charlotte County in 1977 on the edge of scrub in the vicinity of El Jobean (57, USF). Gann attempted to locate the El Jobean station in 2000, but the locality data was inaccurate and the station could not be located. Potential habitat, however, is present in the area. Daniel B. Ward and others collected sensitive pea once in Collier County in 1965, on a dry marl road-bank west of Miles City (5247, FLAS, NY, USF), probably in what is now Fakahatchee Strand Preserve State Park. It is not clear if sensitive pea is native to that area, or if it was a waif introduced by humans.

Comments: *This is a temperate species at the southern end of its range, but the range of years that specimens were collected suggest that it was a persistent part of the flora.*

Preliminary recommendations:

- Survey El Jobean area, including Charlotte Harbor State Buffer Preserve.
- If plants are found, map and monitor known populations.
- If no plants are found, consider for reintroduction to the El Jobean area at Charlotte Harbor State Buffer Preserve.

***Chrysopsis linearifolia* Semple**
subsp. ***dressii* Semple**
Dress' Goldenaster

South Florida Status: Historical. Last collected in 1985 in Bonita Springs.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in peninsular Florida.

South Florida Distribution: Lee and Miami-Dade counties. The Lee County station may represent an introduced waif population.

South Florida Habitats: Scrubby flatwoods and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo of the species. Variety *dressii* can be distinguished from variety *linearifolia* by having the inflorescence loosely corymbose versus compact subumbellate, and leaf margins undulate versus smooth (Wunderlin, 1998).

References: Semple, 1978; Semple, 1981; Taylor, 1998; Wunderlin, 1998.

Synonyms: *C. hyssopifolia* Nutt., in part, misapplied.

Historical Context in South Florida: Edward L. Palmer first collected Dress' goldenaster along Biscayne Bay in Miami-Dade County in 1874 (2984, MO), presumably in pine rocklands near the Miami River. It was not collected again until 1947, when R. Bruce Ledin collected it in a pineland in Miami (s.n., FLAS). Presumably it grew in sandy pine rocklands near the Miami River. In 1985, Elliott Brown made the only collection known from Lee County in Bonita Springs in disturbed soil in front of a school (s.n., USF). It is unclear if this represents a native population.

Preliminary recommendations:

- Survey Bonita Springs area.
- If plants are found, map and monitor known populations.
- Consider restoring pine rocklands near the Miami River and reintroducing Dress' goldenaster.

***Chrysopsis subulata* Small**
Scrubland Goldenaster

South Florida Status: Historical. Collected once in 1964 in northern Collier County.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as frequent in peninsular Florida.

South Florida Distribution: Collier County. The Collier County population is disjunct from the nearest populations in Highlands and Okeechobee counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992, 1998) has color photos.

References: Small, 1933a; Cronquist, 1980; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Heterotheca hyssopifolia* (Nutt.) R.W. Long var. *subulata* (Small) R.W. Long.

Historical Context in South Florida: Frank C. Craighead collected scrubland goldenaster once in 1964 near "Route 52" [sic] near the Lee County line (s.n., FTG).

Comments: *Scrubland goldenaster flowers in the fall, when surveys should be conducted. The Craighead location of Route 52 is in error. This is probably a typo of Route 82, which exits Collier County near the intersection of Collier County, Hendry County, and Lee County, just north of the northernmost parts of the Corkscrew Regional Ecosystem Watershed in Collier County.*

Preliminary recommendations:

- Survey the vicinity of the Craighead collection, including the northern portions of the Corkscrew Regional Ecosystem Watershed.
- If plants are found, map and monitor known populations.

***Cuscuta gronovii* Willd. ex Schult.
Scaldweed**

South Florida Status: Historical. Last collected in 1945 in the Okaloacoochee Slough in Collier County.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to much of North America and the West Indies. Wunderlin (1998) reports it as occasional in Florida in the northern and central peninsula.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Flatwoods, swales, depression marshes, and probably hydric hammocks.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration; Bell & Taylor (1982) has a color photo.

References: Chapman, 1883; Yuncker, 1932; Small, 1933a; Austin, 1980; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Joseph H. Simpson first collected scaldweed in 1892 in Fort Myers on the margin of a pond (380, US). Albert S. Hitchcock collected it again in Fort Myers in “swamp thickets” in 1900 (232, US). John Kunkel Small and Charles A. Mosier made the last collection near Fort Myers in a pineland in 1926 (s.n.; NY). Mary Francis Baker made a single collection in 1917 in Alva on the north bank of the Caloosahatchee River in Lee County (108, US), in the vicinity of what is now Caloosahatchee Regional Park. Leonard J. Brass made the last collection in Collier County, in 1945, in an open marsh in the Okaloacoochee Slough (15755, US). The Okaloacoochee Slough is located in Collier and Hendry counties in Big Cypress National Preserve, in Florida Panther National Wildlife Refuge, Okaloacoochee Slough State Forest, Okaloacoochee Slough Wildlife Management Area, and on private lands.

Comments: *Scaldweed is parasitic on a wide variety of host plants* (Austin, 1980). *It flowers from summer to fall, when surveys should be conducted.*

Preliminary recommendations:

- Survey Caloosahatchee Regional Park.
- Survey the Okaloacoochee Slough in Collier County within Big Cypress National Preserve and Florida Panther National Wildlife Refuge.
- If plants are found, map and monitor known populations.

***Cuscuta umbellata* Kunth
Flatglobe Dodder**

South Florida Status: Historical. Last collected in 1997 on Lower Matecumbe Key.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to the southern United States, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) reports it as rare in Florida in Flagler County and the central peninsula. Wunderlin & Hansen (2001) records it for South Florida, and Flagler, Sarasota, and Seminole counties.

South Florida Distribution: Lee and Palm Beach counties, and the Monroe County Keys. The Palm Beach County station may have represented an introduced waif population.

South Florida Habitats: Coastal strand.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration.

References: Yuncker, 1932; Small, 1933a; Austin, 1980; Godfrey & Wooten, 1981; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Hugh O'Neill first collected flatglobe dodder in 1925 at the Belle Glade Experiment Station in Palm Beach County (s.n., FLAS). No habitat data was given and it is unclear if it was native to that station. It was not recorded again until Sandy Morrill and Jud Harvey collected it in 1978 on North Captiva Island in Lee County (149, USF). Part of this island is now included in Cayo Costa State Park. Gann and Florida Park Service biologist R. "Bobby" Hattaway surveyed this portion of North Captiva Island in January 2001, and habitat for the plant still

exists. No plants were observed, but this may have been due to the time of year the survey was conducted.

Flatglobe dodder was most recently collected in 1997 by Wayne Hoffman on Sea Oats Beach on Lower Matecumbe Key in the Florida Keys (s.n., FTG). Hurricane Georges in 1998 and Hurricane Irene in 1999 extensively disturbed this site. Following each hurricane, the beach was bulldozed, ultimately obliterating almost every trace of native vegetation. Monroe County subsequently revegetated this area with seaoats (*Uniola paniculata*).

Comments: *Flatglobe dodder flowers in the summer and fall, when surveys should be conducted. It is parasitic on hosts in coastal areas (Austin, 1980; Godfrey & Wooten 1981).*

Preliminary recommendations:

- Survey North Captiva Island and Seoats Beach.
- If plants are found, map and monitor known populations.
- Review for listing by FDACS and FNAI.

***Cyperus cuspidatus* Kunth
Coastalplain Flatsedge**

South Florida Status: Historical. Last collected in 1980 in northwestern Lee County.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain and tropical America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, and Lee counties and the Monroe County Keys.

South Florida Habitats: Moist hammocks and disturbed sandy soils.

Protection Status: Not listed by any agency.

Identification: Coastalplain flatsedge is most similar to *Cyperus squarrosus*. Coastalplain flatsedge differs from *C. squarrosus* in having scales retuse at the base of the awn (versus not retuse), and two lateral nerves on the scales versus six to eight in *C. squarrosus* (Wunderlin, 1998). Godfrey & Wooten (1979) has an

illustration of both *C. cuspidatus* and *C. squarrosus* (as *C. artistatus*); Tobe et al. (1998) has an illustration of *C. cuspidatus*.

References: Small, 1933a; McLaughlin, 1944; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: The earliest known collection of coastalplain flatsedge is from the herbarium of Alvan W. Chapman. The specimen is labeled from Key West in 1843 (s.n., NY), but it is not certain if Chapman was the actual collector. It has not been collected in the Florida Keys since that time.

Mary Francis Baker made the next collections in 1917 near Alva in Lee County (s.n., FLAS; 24, US), in the vicinity of what is now Caloosahatchee Regional Park. Gann surveyed this site with Lee County biologists Roger Clark and Rob Irving in January 2001. Potential habitat exists in the park, but it has been severely impacted by wild hogs and exotic pest plants. Olga Lakela made two collections in Collier County, the first in 1964 off of Lake Trafford Road west of Immokalee (24760, USF), and the other in 1965 in Royal Palm Hammock in Collier-Seminole State Park (29208, USF). R. "Bobby" Hattaway of the Florida Park Service has not seen this species in Collier-Seminole State Park despite numerous botanical surveys (R. Hattaway, personal communication, 12 January 2001). Habitat does exist near Immokalee at Corkscrew Swamp Sanctuary and Corkscrew Regional Ecosystem Watershed, but coastalplain flatsedge has not been observed or reported in that area despite surveys by numerous botanists.

The last station to be collected was in Charlotte County about two miles north of the Lee County line along State Road 765 (Burnt Store Road), where Richard Carter collected it in 1980 (2656, FLAS). The habitat for this station was "bulldozed moist sandy site." Gann observed the area in the vicinity of this station in 2000. The entire area had been cleared and was undergoing development.

Comments: *Coastalplain flatsedge is a small, sporadic, annual, ephemeral species that may be overlooked by botanists, or may*

have always been rare in South Florida. Godfrey and Wooten (1979) state that it prefers moist to wet open places, and is usually a colonizer. Specimens of this species in South Florida have been collected from September through November, when surveys should be conducted.

Preliminary recommendations:

- Survey Caloosahatchee Regional Park.
- Survey appropriate habitats near historical locations in Charlotte, Collier, and Lee counties.
- If plants are found, map and monitor known populations.

***Cyperus stenolepis* Torr.
Strawcolored Flatsedge**

South Florida Status: Historical. Last collected in 1969 north of Indiantown.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native primarily to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida in Okaloosa County and the peninsula.

South Florida Distribution: Collier, Glades, Hendry, and Martin counties.

South Florida Habitats: Marshes, wet prairies, wet flatwoods, and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) includes *C. stenolepis* within the closely related *C. strigosus* L. Wunderlin (1998) separates the two, *C. stenolepis* differing from *C. strigosus* in that its achenes are honeycombed rather than papillate (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: William G. Atwater first collected strawcolored flatsedge in 1958 in the Devil's Garden area of Hendry County (65-95, FLAS). Olga Lakela collected it in 1964 in the Lake Trafford area west of Immokalee in Collier County (27466, USF). William L. McCart collected it in 1969

about five miles south of Palmdale in Glades County (11070, FLAS). Bradley surveyed this area in 2000, but could not locate any plants. McCart also collected it in 1969 on State Road 609, about five miles north of Indiantown in Martin County (10996, FLAS, USF). Bradley and Woodmansee collected it in 1998 just outside of South Florida about 1.3 miles north of the Martin County line in western St. Lucie County (1078, FTG). It was growing on the bank of a creek.

Comments: *This is a large, perennial herb that grows to one meter tall or more and should be easily noticed. Nevertheless, all collections in South Florida were made within the eleven-year period from 1958 to 1969. South Florida is the southernmost limit of the range of C. stenolepis in the southeastern United States. It seems possible that conditions are not especially favorable here, and its occurrence is sporadic.*

Preliminary recommendations:

- Survey appropriate habitats in Collier, Glades, Hendry, and Martin counties.
- If plants are found, map and monitor known populations.

***Dryopteris ludoviciana* (Kunze) Small
Southern Wood Fern**

South Florida Status: Historical. Collected once in 1937 in Collier County. Reported, but unverified, from Corkscrew Swamp Sanctuary.

Taxonomy: Pteridophyte; Dryopteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to southeastern North America. Wunderlin & Hansen (2000) reports it as common nearly throughout Florida.

South Florida Distribution: Collier County.

South Florida Habitats: Hydric hammocks.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has color photos and an illustration; Nelson (2000) has color photos; Wunderlin & Hansen (2000) has an illustration; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1938; Lakela & Long, 1976; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *D. floridana* (Hook.) Kuntze; *Aspidium ludovicianum* Kunze.

Historical Context in South Florida: E.P. St. John collected southern wood fern once in 1937 in “Deep Lake Hammock” (1476, FLAS), in what was almost certainly the Fakahatchee Strand, now in the Fakahatchee Strand Preserve State Park. It has been reported for the Corkscrew Swamp Sanctuary (Judd, 1994), but this station needs to be verified.

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary and Fakahatchee Strand Preserve State Park.
- If plants are found, map and monitor known populations.

***Echinodorus berteroi* (Spreng.) Fassett
Upright Burhead**

South Florida Status: Historical. Last collected in 1982 in the Pinecrest area of Big Cypress National Preserve.

Taxonomy: Monocotyledon; Alismataceae.

Habit: Perennial terrestrial herb.

Distribution: Native, but local, to North America, the West Indies, South America, and Mexico. Wunderlin (1998) reports it as occasional in Florida in Taylor County south to Levy County, Monroe County, and Escambia County. Wunderlin & Hansen (2001) records it for Monroe, Dixie, Levy, and Taylor counties.

South Florida Distribution: Monroe County.

South Florida Habitats: Shallow fresh water.

Protected Status: Not listed by any agency.

Identification: *E. berteroi* is similar to some *Sagittaria* species, but can be distinguished by having all bisexual flowers instead of upper male flowers and lower female flowers (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Fassett, 1959; Godfrey & Wooten, 1979; Correll & Correll, 1982; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *E. cordifolius* (L.) Griseb., misapplied; *E. rostratus* (Nutt.) Engelm.; *Echinocarpus radiatus* of Melville (1882).

Historical Context in South Florida: John Loomis Blodgett first collected upright burhead on the island of Key West between 1838 and 1853 (s.n., NY). It also was reported for Key West by Melville (1884). It was collected on Lower Matecumbe Key in 1892 by Joseph H. Simpson (434, NY) and in 1948 by J.S. Haeger (s.n., FLAS). Both of these collections were probably from the margins of permanent freshwater ponds described by the British surveyor Bernard Romans (1775). David and Sally Black collected upright burhead once in 1982 in the Pinecrest area of Big Cypress National Preserve (s.n., FTG). One plant was observed, which was collected for the FTG specimen (S. Black, personal communication, 2 July 2001). It has not been seen in South Florida since that time.

Comments: *Upright burhead flowers during the spring and summer, when surveys should be conducted.*

Preliminary recommendations:

- Survey Pinecrest area of Big Cypress National Preserve.
- If plants are found, map and monitor known populations.
- Consider restoring freshwater wetlands on Lower Matecumbe Key and reintroducing upright burhead.
- Review for listing by FDACS and FNAI.

***Eleocharis montevidensis* Kunth**
Sand Spikerush

South Florida Status: Historical. Last collected in 1969 on Sanibel Island. Last verifiable native population was collected in the late 1800s.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to much of North America, Mexico, Central America, and South America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier and Lee counties. The South Florida stations are disjunct from the nearest population in Lake County. The Lee County station may represent an introduced waif population.

South Florida Habitats: Brackish or freshwater marshes.

Protected Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Svenson, 1937; Ward and Hodgson, 1975; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *E. arenicola* Torr. ex Engelm. & A. Gray.

Historical Context in South Florida: Allan H. Curtiss collected sand spikerush once in Collier County in the late 1800s, on the margins of "Palm Creek" west of Everglades City (s.n., US). Palm Creek presumably refers to what is now known as Blackwater River, which runs through Collier-Seminole State Park. William C. Brumbach also collected sand spikerush in 1969 in moist soil on a grassy roadside on Sanibel Island in Lee County (6713, FLAS). It is unclear if the Sanibel Island station was native, or if it represented an introduced waif population.

Preliminary recommendations:

- Survey Collier-Seminole State Park and Sanibel Island.
- If plants are found, map and monitor known populations.

***Elytraria caroliniensis* (J.F. Gmel.) Pers.
var. *caroliniensis*
Carolina Scalystem**

South Florida Status: Historical. Last collected in 1985 in North Fort Myers.

Taxonomy: Dicotyledon; Acanthaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the northern and central peninsula.

South Florida Distribution: Charlotte and Lee counties.

South Florida Habitats: Flatwoods and moist areas.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has both illustrations and color photos.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *E. virgata* Michx.; *Tubiflora caroliniensis* J.F. Gmel.

Historical Context in South Florida: Albert S. Hitchcock first collected Carolina scalystem in 1900 around flatwoods ponds in Fort Myers (16112, NY). Elliott Brown collected it again in Lee County in 1985 in North Fort Myers near Yellow Fever Creek (s.n., USF). Gann and Tiffany Troxler Gann briefly surveyed this site in 2000, but were unable to locate any plants. The site is still undeveloped, but disturbed. Carolina scalystem could still be present. O.E. Frye made a collection in Charlotte County in 1946 in “Cabbage Hammock” (159, FLAS), a site of unknown location.

Comments: *This is a temperate species at the southern end of its range, and it may have always been rare in South Florida. It is replaced in most of South Florida by the endemic variety E. caroliniensis var. angustifolia. It is a facultative wetland species that grows in areas of moist soils containing abundant calcium (Tobe et al., 1998).*

Preliminary recommendations:

- Survey Yellow Fever Creek Site.
- If plants are found, map and monitor known populations.
- Acquire Yellow Fever Creek Site.

***Eriochloa michauxii* (Poir.) Hitchc.
var. *simpsonii* Hitchc.
Simpson’s Cup Grass**

South Florida Status: Historical. Last collected in 1966 on Sanibel Island.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Collier, Lee, and Monroe counties.

South Florida Habitats: Beach dunes and dry disturbed sites.

Protection Status: Not listed by FDACS due to its status as a variety. Listed as critically imperiled by FNAI.

Identification: *E. michauxii* var. *simpsonii* can be distinguished from *E. michauxii* var. *michauxii* in that the lower floret is neutral instead of male (Wunderlin, 1998).

References: Hitchcock & Chase, 1950; Avery & Loope, 1980a; Shaw & Webster, 1987; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Joseph H. Simpson collected the type specimen of this endemic grass on Cape Romano in 1891 (262, NY). No other collections have been made from that area. Simpson collected another specimen, actually a month earlier, at Cape Sable on the Monroe County mainland (165, NY), in what is now Everglades National Park. Alvah A. Eaton made a collection in 1905 at Flamingo (Shaw and Webster, 1987), which is located to the east of Cape Sable in Everglades National Park. It is possible that both of these collections came from the same station, as that entire region was often referred to as Cape Sable.

Eaton made a collection of Simpson's cup grass in "Lee County" in 1905 (1300, NY), but this specimen could have come from either Collier or Lee counties, as what is now Collier County was part of Lee County at the time. However, two specimens were collected from modern Lee County, the first in 1964 by Olga Lakela on a back dune on the Gulf of Mexico near Bonita Springs (27094, USF), and the second by William C. Brumbach from a dry roadside on Sanibel Island in 1966 (5583, USF).

Jason R. Swallen made a collection in 1939 "Keys" (4057, TAES), presumably in the Monroe County Keys. Swallen later made an additional collection on Lower Matecumbe Key (Shaw and Webster, 1987). No additional collections from the Keys have been made.

Comments: *Most collections have been made from March to May, so surveys should be conducted during this time period.*

Preliminary recommendations:

- Survey historical locations, including Everglades National Park.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Review FNAI rank.

***Govenia utriculata* (Sw.) Lindl.
Tropical Govenia**

South Florida Status: Historical. Last collected in 1964 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Frank C. Craighead discovered tropical govenia in October 1959 in a hammock on Long Pine Key in Everglades National Park (Luer, 1972). Twenty-five or more plants were observed (letter from Frank C. Craighead to the Chief Ranger of Everglades National Park, 18 November 1966). All collections and observations from Florida have been from this station. Craighead made two collections in 1960, the first in April (s.n., FTG), and the second in the fall (s.n., FLAS). In October 1961, 21 plants were counted, but by December of that year it appeared that many of the plants had died or had been removed by collectors. In October 1962 only four plants were counted and it appeared as if collectors had trampled the area. On November 20, 1962 Craighead again visited the site and those four plants had been removed. By December 15, 1963 only one plant could be found. On November 22, 1964, Daniel B. Ward made the last collection of the species in South Florida with Craighead (4353, FLAS). Only flowers were taken, and eight or nine plants were present (Craighead counted nine and Ward eight). Despite surveys by George N. Avery in 1976 and 1978, and many others subsequently, no verifiable observations have been made.

Paul Martin Brown has observed four sterile plants of what he believes is *Govenia* in Everglades National Park near the Craighead station (Brown, 2000). It is possible that after many years, dormant seeds have sprouted and that tropical govenia is once again part of the South Florida flora. There have been some other reports of tropical govenia in South Florida, but none that we have been able to verify.

Comments: *Govenia floridana P.M. Br. has been published as a new name for the Florida plants of Govenia (Brown, 2000). If this treatment is accepted, then the Florida plants are endemic and cannot be reintroduced since no Florida plants are known from cultivation. The taxonomy of Florida plants should be studied further. If the new plants discovered by Brown are indeed tropical govenia, then the National Park Service will need to vigorously protect these plants from poaching.*

Preliminary recommendations:

- Review taxonomic treatment of *Govenia* in Florida.
- Monitor new plants discovered by Paul Martin Brown.
- If plants are found, then map outline of station every year and count individual plants.
- If plants are found, protect from poaching.
- If plants are found, consider establishing an *ex situ* collection of germplasm.

***Harrisia fragrans* Small ex Britton & Rose
Fragrant Pricklyapples**

South Florida Status: Historical. Known only from two collections from Cape Sable and Big Pine Key in 1982.

Taxonomy: Dicotyledon; Cactaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as rare in Florida from Volusia County south to St. Lucie County. It is apparently extant only in St. Lucie County.

South Florida Distribution: Monroe County.

South Florida Habitats: Coastal berms and possibly rockland hammocks.

Protection Status: Listed as endangered by USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo, and a key to the three native *Harrisia* species in South Florida; the IRC Website has a color photo.

References: Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Benson, 1982; Austin, 1984; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *Cereus eriophorus* Pfeiff. & Otto var. *fragrans* (Small ex Britton & Rose) L.D. Benson.

Historical Context in South Florida: John Kunkel Small described fragrant pricklyapples from plants collected to the north of our area in the vicinity of Fort Pierce (s.n., NY). The first report of fragrant pricklyapples from South Florida was by Small (1932) who attributed plants in Miami-Dade County to this species. Daniel F. Austin (1984) contends that this was in error. The next report from South Florida is by Lyman D. Benson (1982) who reported the species from the “Cape Sable area” of Everglades National Park, but his specimen was actually collected to the east of Flamingo (16578, POM). Benson and others also collected a specimen from Big Pine Key in the lower Florida Keys (16575, POM). We have not seen these specimens. Austin (1984) believed that this species did not occur in South Florida.

Preliminary recommendations:

- Examine Benson specimens at the Rancho Santa Ana Botanic Garden (POM). If the specimens are valid, then proceed with additional recommendations.
- Survey Flamingo/Cape Sable area in Everglades National Park and Big Pine Key.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Review for listing by USFWS.

***Heliotropium fruticosum* L.
Key West Heliotrope**

South Florida Status: Historical. Last collected in 1978 on Sugarloaf Key.

Taxonomy: Dicotyledon; Boraginaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: There are several species of *Heliotropium* in South Florida. *H. fruticosum* is the only one with flowers subtended by foliaceous bracts.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Ward & Fantz, 1977; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *H. myosotoides* Chapm.; *H. phyllostachyum* Torr.

Historical Context in South Florida: Key West heliotrope was collected first on the island of Key West either by John Loomis Blodgett between 1838 and 1853 (s.n., NY), or by Ferdinand Rugel in 1846 (s.n., US). It was collected several other times on Key West in the late 1800s, including by E. Palmer in 1874 (409, NY) and by Abram P. Garber in 1877 (4406, NY).

George N. Avery rediscovered Key West heliotrope at one small station on Sugarloaf Key in 1964 (Avery's Notes, 25 August 1964). In 1967, Avery found only four plants at this station (Avery's Notes, 16 August 1967). The last record is a collection from Sugarloaf by Avery in 1978 (1959, FLAS, FTG). Bradley and Woodmansee surveyed in the vicinity of the Sugarloaf Key station in 2000, in Sugarloaf Hammocks, Florida Keys Wildlife and Environmental Area, but were unable to find any plants. The actual station is still undeveloped, but is privately owned and was not surveyed.

Comments: *Key West heliotrope flowers all year.*

Preliminary recommendations:

- Survey Sugarloaf Key Heliotropium Site.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- If no plants are found, consider reintroduction to the lower Florida Keys, including Sugarloaf Hammocks, Florida Keys Wildlife and Environmental Area.
- Acquire Sugarloaf Key Heliotropium Site.

- Review for listing by FNAI

***Isoetes flaccida* Shuttlew. ex A. Braun
Florida Quillwort**

South Florida Status: Historical. Last collected in 1999 at Hogan Island in Collier County.

Taxonomy: Pteridophyte; Isoetaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida and Georgia. Wunderlin & Hansen (2000) reports it as occasional in Florida from the central panhandle to the peninsula.

South Florida Distribution: Collier, Glades, Miami-Dade, and Monroe counties.

South Florida Habitats: Margins of streams and sinkholes.

Protection Status: Not listed by any agency.

Identification: Wunderlin & Hansen (2000) has an illustration.

References: Chapman, 1883; Eaton, 1906; Pfeiffer, 1922; Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Boom, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *I. flaccida* var. *alata* N. Pfeiff.; *I. flaccida* var. *chapmanii* Engelm.

Historical Context in South Florida: Abram P. Garber first collected Florida quillwort in 1878 in Lake Flirt to the west of Lake Okeechobee in Glades County. Lake Flirt was destroyed by drainage. Leonard J. Brass collected Florida quillwort in 1964 on the edge of Fisheating Creek near Palmdale (33217, USF), in or near what is now the Fisheating Creek Wildlife Management Area. Richard Moyroud collected it later in this same area (s.n., FAU), but this specimen does not have a date.

John Kunkel Small and Joel J. Carter first collected Florida quillwort in Miami-Dade County in 1903 between Coconut Grove and Cutler (1209, NY). Alvah A. Eaton collected it in a “muddy alligator hole at Gossman’s” in 1905 (1244, MO), which is now known as Hattie Bauer Hammock, the largest portion of which is a Miami-Dade County conservation area. Eaton also reported observing Florida quillwort at “Orange Glade, border of the Miami [River] at the rapids...” and “in the brook at Snapper hammock”

(Eaton, 1906). The former station is now destroyed. The latter station probably refers to historic Snapper Creek near what is now Matheson Hammock Park, but Snapper Creek is now canalized and salt water intruded. This could represent Small and Carter's 1903 station.

Leonard J. Brass collected Florida quillwort once in Monroe County on the mainland off of Loop Road in 1954 (33217, ARCH), probably in what is now Big Cypress National Preserve. Taylor R. Alexander collected Florida quillwort once in the Fakahatchee Strand in Collier County in 1975 (s.n., FTG). Daniel F. Austin made the most recent collection in 1999 at Hogan Island south of Immokalee in Collier County (s.n., FAU, USF). Unfortunately this was the only plant seen, and it was collected before its identification was known (D.F. Austin, personal communication, 31 January 2001).

Comments: *Florida quillwort appears to be a sensitive species that has fared poorly in South Florida following widespread hydrological modifications and habitat degradation. This species produces spores in the summer, when surveys should be conducted.*

Preliminary recommendations:

- Survey Hogan Island, Fakahatchee Strand Preserve State Park, Fisheating Creek Wildlife Management Area, Hogan Island, and the Loop Road area of Big Cypress National Preserve.
- If plants are found, map and monitor known populations.

***Lechea lakelae* Wilbur
Lakela's Pinweed**

South Florida Status: Historical. Last collected in 1987 on Marco Island.

Taxonomy: Dicotyledon; Cistaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Collier County.

South Florida Habitats: Scrub and coastal strand.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Similar to *L. torreyi*, except capsules, stem, and leaves are completely glabrous, rather than appressed pilose. The capsules also slightly exceed the inner sepals at maturity, rather than being slightly shorter than or equal to them (Wunderlin, 1998).

References: Wilbur, 1974; Avery & Loope, 1980a; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Olga Lakela first collected Lakela's pinweed in 1964 on Marco Island (27822a, USF). Lakela made collections on Marco a number of times after that: in 1967 (30953, FSU), in 1968 with Frank Almeda (31567, USF), and in 1969 (31879, FSU). The only additional collection seen from Marco Island was made by Donald R. Richardson in 1987 (s.n., USF). This species may be extinct, although Jim Burch has observed what he thinks may be Richardson's station, but has yet to observe plants in fruit (personal communication, 22 May 2001). This station is in a vacant lot that was formerly scrub, with some native species persisting.

Wilbur (1974) also thought that this species might have occurred in Broward County at one time. He cites one specimen from the Buswell Herbarium (now at Fairchild Tropical Garden) collected by Walter M. Buswell in 1936 in scrub above Fort Lauderdale. Wilbur observed this specimen before he thought that it might represent a distinct species. It is discussed by Wilbur and Daoud (1961) and does seem to fit the description of *L. lakelae*. Unfortunately, this specimen may have been lost.

Preliminary recommendations:

- Survey Richardson station and other areas on Marco Island.
- Survey scrub in the vicinity of Fort Lauderdale.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Acquire Lakela's Pinweed Site.

***Lepanthopsis melanantha* (Rchb. f.) Ames**
Tiny Orchid

South Florida Status: Historical. Last observed around 1990 in Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, Cuba, and Jamaica.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps; epiphytic on hardwoods.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Luer (1972) has both illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: *Lepanthes harrisii* Fawc. & Rendle.

Historical Context in South Florida: D.T. Thompson discovered tiny orchid in the western part of the Big Cypress Swamp in 1931 (Correll, 1950; Luer, 1972), in what was almost certainly the Fakahatchee Strand. E.P. St. John and others vouchered it in 1939 for Deep Lake (s.n., FLAS), but St. John's Deep Lake collections from both 1937 and 1939 all appear to have come from what is now Fakahatchee Strand Preserve State Park. Roger L. Hammer, George N. Avery, David Black, Sally Black, and Sue Schreiber all observed a single plant growing on a pond apple (*Annona glabra*) tree in 1976 (Avery's Notes, 11 November 1976). Hammer reports that in 28 years of exploring the Fakahatchee Strand he has only encountered tiny orchid on five occasions (Hammer, 2001), the last of which was around 1990 (personal communication, 4 January 2000). Florida Park Service biologist Mike Owen has never seen tiny orchid despite numerous searches (personal communication, 22 January 2001).

Comments: *This is an extremely small orchid (ca. 5 cm or 2 inches tall) that is very difficult to detect in the wild. We are hopeful that tiny orchid is extant and has just escaped observation in the last few years.*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- If no plants are found by 2010, consider reintroduction to Fakahatchee Strand Preserve State Park.

***Liquidambar styraciflua* L.
Sweetgum**

South Florida Status: Historical. Native population vouchered once in 1966 at La Belle.

Taxonomy: Dicotyledon; Hamamelidaceae.

Habit: Tree.

Distribution: Native to the eastern United States, Mexico, and Central America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Native to Hendry County. Cultivated outside of its historical range in South Florida and sparingly naturalized.

South Florida Habitats: Riverine swamps.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has an illustration; Tobe et al. (1998) has illustrations and color photos.

References: Chapman, 1883; Small, 1933a; West & Arnold, 1948; Long & Lakela, 1976; Godfrey & Wooten, 1981; Godfrey, 1988; Nelson, 1994; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 1999.

Synonyms: None.

Historical Context in South Florida: Olga Lakela collected sweetgum once in 1966 south of the Caloosahatchee River at La Belle in Hendry County, in what appeared to be a remnant of primary vegetation (29999, USF). Bradley briefly surveyed this area in 2000, including the La Belle Nature Park, but did not find any plants. Most of the historical forest along the south side of the Caloosahatchee River has been destroyed.

Lee County biologist Roger Clark also showed a naturalized stand to Gann and Rob Irving in January 2001. This stand was adjacent to an old homestead several miles south of the Caloosahatchee River west of Fort Myers. A specimen was collected in Martin County in 1997 by Gene M. Silberhorn in a vacant lot (s.n., USF). This population is probably naturalized from cultivated plants. The closest historical station to Martin County on the east coast is Brevard County (Little, 1978).

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey hammocks in the La Belle area, including La Belle Nature Park.
- If plants are found, map and monitor known populations.
- If no plants are found, assess appropriateness and study feasibility of reintroduction to the La Belle area at La Belle Nature Park.
- Consider restoring floodplain forest along the Caloosahatchee River and reintroducing sweetgum.

***Lobelia homophylla* E. Wimm.
Pineland Lobelia**

South Florida Status: Historical. Last collected in 1986 in North Fort Myers. Last observed in 1993 in Hendry County.

Taxonomy: Dicotyledon; Campanulaceae.

Habit: Annual terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as frequent in peninsular Florida.

South Florida Distribution: Collier, Glades, Hendry, and Lee counties. The Hendry County occurrence was not vouchered.

South Florida Habitats: Moist soils.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Wimmer, 1956; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *L. cliffortiana* L., misapplied; *L. cliffortiana* var. *xalapensis* Gray; *L. xalapensis* HBK, misapplied.

Historical Context in South Florida: Abram P. Garber may have first collected pineland lobelia in 1879, but the label on his specimen states only “South Florida” (s.n., NY). It was collected a number of times in and around Fort Myers from 1905 to 1986. The first collection was by Alvah A. Eaton in “East Fort Myers” in 1905 (1414, NY). Subsequent collections in the area were made by Paul C. Standley in 1916 (2829, US) and by Harold Moldenke in 1930 (1010, NY). Elliott Brown made the last collection at Tamiami Village, a trailer park community in North Fort Myers, in 1986 (s.n., USF). Gann briefly surveyed this area in 2000, and a remnant flatwoods site is still present just to the north of Tamiami Village.

Leonard J. Brass made a collection in 1949 along the Fisheating Creek near Fort Center Mound in Glades County (20535, US), in what is now the Fisheating Creek Wildlife Management Area. In 1964, Daniel B. Ward and Robert K. Godfrey collected a solitary plant growing in a moist grassy roadway on the east side of Deep Lake (3994, FLAS), probably in what is now Big Cypress National Preserve. There is also a specimen from the Lemon Bay area, which straddles Charlotte and Sarasota counties, which was collected by Samuel M. Tracy in 1901 (7511, NY). It is uncertain whether this station was in South Florida or in Sarasota County.

In 1993, Chuck McCartney photographed pineland lobelia at a private hunting camp in Hendry County while preparing a plant list (McCartney & Rabenau, 1993). The property was known at the time as Peaceful Palms.

Comments: *Pineland lobelia* flowers spring through fall, when surveys should be conducted.

Preliminary recommendations:

- Survey Deep Lake area of Big Cypress National Preserve and Fisheating Creek Wildlife Management Area
- Survey Lemon Bay area in northern Charlotte County, Peaceful Palms in Hendry County, and the Tamiami Village area.
- If plants are found, map and monitor known populations.
- Acquire Tamiami Village Flatwoods Site.

***Ludwigia decurrens* Walter
Wingleaf Primrosewillow**

South Florida Status: Historical. Last collected in 1964 near Port Salerno in Martin County. Last reported in 1994 for Corkscrew Swamp Sanctuary.

Taxonomy: Dicotyledon; Onagraceae.

Habit: Annual terrestrial herb.

Distribution: Native to the eastern and central United States and tropical America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Lee, Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Pine flatwoods, depression marshes, and swales.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Taylor, 1992; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Jussiaea decurrens* (Walter) DC.

Historical Context in South Florida: Jeanette P. Standley first collected wingleaf primrosewillow in 1916 in the Fort Myers area in Lee County (389, US). It was reported more recently for the Corkscrew Swamp Sanctuary (Judd, 1994) and Corkscrew Regional Ecosystem Watershed (anonymous, no date.d), both of which are located in Lee and Collier counties, but both of these stations need to be verified.

In 1916, John Kunkel Small collected wingleaf primrosewillow in Miami-Dade County in "Everglades west of Peters" (7913, FLAS, NY, US), a station that has been destroyed. Richard A. Howard collected it in 1942 two miles west of Lantana in Palm Beach County (12960, US). It was found in "pine woods on sandy soil, most abundant in wet depressions." This station was also destroyed. Robert Kral collected wingleaf primrosewillow in 1964 in Martin County (22889, TEX, VDB). This collection was made in Port Salerno in "sandy peat of dune swale." We are uncertain where this habitat type may have existed in Port Salerno. Kral may also have been referring to a low swale in sand pine scrub.

Comments: *This is a temperate species at the southern end of its range, and it may have been always rare in South Florida.*

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary.
- Survey Port Salerno area.
- If plants are found, map and monitor known populations.

***Lyonia ferruginea* (Walter) Nutt.
Rusty Staggerbush**

South Florida Status: Historical. Collected once in 1935 near Palmdale.

Taxonomy: Dicotyledon; Ericaceae.

Habit: Shrub or small tree.

Distribution: Native to peninsular Florida, Georgia, and South Carolina. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades County.

South Florida Habitats: Scrub or scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a photo; Nelson (1996) has a photo; Taylor (1998) has a color photo. This is very similar to *L. fruticosa*, which has often been misidentified as *L. ferruginea* in South Florida. In *L. ferruginea* the leaves are revolute and not reduced toward the ends of the flowering shoots, whereas in *L. fruticosa* the leaves are not revolute and the leaves are reduced toward the end of the flowering shoots (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Judd, 1981; Godfrey, 1988; Taylor, 1992; Nelson, 1994; Nelson, 1996; Wunderlin, 1998.

Synonyms: *Andromeda ferruginea* Walter; *Xolisma ferruginea* (Walter) A. Heller.

Historical Context in South Florida: Hardrada H. Hume collected rusty staggerbush in 1935 at Palmdale (s.n., FLAS), in or near what is now Fisheating Creek Wildlife Management Area.

Comments. *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey Palmdale area, including the Fisheating Creek Wildlife Management Area.
- If plants are found, map and monitor known populations.

***Matelea gonocarpus* (Walter) Shoiners
Angularfruit Milkvine**

South Florida Status: Historical. Last collected in 1961 near Lakeport in Glades County. Last reported in 1997 for Corkscrew Regional Ecosystem Watershed.

Taxonomy: Dicotyledon; Asclepiadaceae.

Habit: Perennial vine.

Distribution: Native to the eastern and central United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades and Lee counties.

South Florida Habitats: Mesic hammocks.

Protection Status: Listed as threatened by FDACS.

Identification: Bell & Taylor (1982) has a color photo.

References: Chapman, 1883; Small, 1933a; Drapalik, 1969; Bell & Taylor, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: *M. suberosa* (L.) Shoiners, misapplied; *Gonolobus suberosus* (L.) R. Br., misapplied; *Vincetoxicum suberosum* (L.) Britton, misapplied.

Historical Context in South Florida: Walter M. Buswell first collected angularfruit milkvine in “woods near Ft. Myers” in Lee County (s.n., NY). Buswell’s specimen is undated but he collected in Fort Myers in the 1920s and 1930s. Daniel B. Ward and others made the next collection of angularfruit milkvine in 1961 in a mesic hammock about 8.5 miles northwest of Lakeport in Glades County (2428, FLAS). This station has not been surveyed recently but is most likely extirpated. Angularfruit milkvine also has been reported for Corkscrew Regional Ecosystem Watershed (Hilsenbeck, 1997), but this station needs to be verified. The Corkscrew Ecosystem Watershed is located in both Lee and Collier counties, but it appears that Hilsenbeck’s list refers to the Lee County portion of the site.

Comments: *This is a temperate species at the southern end of its range, and it may have been always rare in South Florida.*

Preliminary recommendations:

- Survey Corkscrew Regional Ecosystem Watershed.
- Survey the Lakeport area in Glades County.
- If plants are found, map and monitor known populations.

***Maxillaria parviflora* (Poepp. & Endl.) Garay
Purple Tiger Orchid**

South Florida Status: Historical. Last reported in 1990 from Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS.

Identification: There are two species of *Maxillaria* native to South Florida. *M. parviflora* has long rhizomatous stems whereas *M. crassifolia* plants are caespitose (Wunderlin, 1998). The IRC Website has a color photo

References: Wunderlin, 1998; Liogier & Martorell, 2000; Coile, 2000.

Synonyms: *Maxillaria conferta* (Griseb.) C. Schweinf. ex Léon.

Historical Context in South Florida: Roger L. Hammer discovered purple tiger orchid in 1975 in Fakahatchee Strand Preserve State Park (Hammer, 1981; McCartney, 1995). Carlyle A. Luer vouchered the station in 1976 (s.n., SEL). The entire population consisted of several large clumps of plants on a single pop ash (*Fraxinus caroliniana*) tree. When Hammer returned with Don Keller around 1990 he found that a large trunk of the host tree had fallen into the water, killing about half of the population (Hammer, 2001). This was the last time purple tiger orchid was observed. Hammer returned in 1996 with Bradley and Florida Park Service biologist Mike Owen, but they were unable to locate the host tree. Subsequent visits by Hammer, Owen, and others have proven unsuccessful.

Comments: *This appears to have been a very small population that was extirpated due to natural causes.*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park on an annual basis.
- If plants are found, map and monitor known populations.
- Review for listing by FNAI.

***Pecluma dispersa* (A.M. Evans) M.G. Price
Widespread Polypody**

South Florida Status: Historical. Last known plants removed from the wild in 1980.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphytic, lithophytic, or terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin & Hansen (2000) reports it as occasional in Florida in Alachua County and in the central and southern peninsula.

South Florida Distribution: Martin County and the Monroe County Keys.

South Florida Habitats: Rockland and mesic hammocks.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Chafin (2000) has illustrations and color photos; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Evans, 1968; Lakela & Long, 1976; Long & Lakela, 1976; Correll & Correll, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Polypodium dispersum* A.M. Evans.

Historical Context in South Florida: Allan H. Curtiss first collected widespread polypody in 1897 in “dry woods” at Sewell’s point in Martin County (5861, FLAS, NY). Clifton E. Nauman and Bruce E. Tatje discovered another Martin County station in 1978 in or near what is now Rocky Point Hammock, a Martin County

conservation area (524, USF). Recent surveys of Rocky Point Hammock by Bradley and Woodmansee failed to locate any plants, but this site needs additional surveys.

John Kunkel Small and Charles A. Mosier first collected widespread polypody in Monroe County in 1915 on Pumpkin Key, a small island off the coast of Key Largo in Biscayne Bay (5686, FLAS, NY). Small vouchered this station again in 1920 (9501, NY), and several observations were made of the Pumpkin Key plants over many years (Avery's Notes, January 1969, 24 February 1970). Mark C. McMahon made the last voucher of this population in 1977 (2001, FAU). Roger L. Hammer removed the last plants on Pumpkin Key in 1980 prior to the development of the island (Avery's Notes, 5 December 1980). These plants were given to John Popenoe at Fairchild Tropical Garden, but apparently they have since perished (R.L. Hammer, personal communication, 7 February 2001).

The only other station to be collected in South Florida was on Key Largo in Monroe County. John Kunkel Small vouchered the Key Largo station once in 1916 (7294, US; 7299, NY). No subsequent collections or observations of the Key Largo plants have been made.

Preliminary recommendations:

- Survey Pumpkin Key and Rocky Point Hammock.
- If plants are found, map and monitor known populations.
- Consider reintroduction to Key Largo at Crocodile Lake National Wildlife Refuge, Dagny Johnson Key Largo Hammocks Botanical State Park, Dove Creek Hammocks, and John Pennekamp Coral Reef State Park.
- Acquire Pumpkin Key.

***Pelexia adnata* (Sw.) Poit. ex Rich.
Hachuela**

South Florida Status: Historical. Last reported in 1983 in Fuchs Hammock Preserve.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: In Florida, the leaves of this species are covered with conspicuous white spots.

References: Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Spiranthes adnata* (Sw.) Benth. ex Fawc. & Rendle.

Historical Context in South Florida: Roger L. Hammer discovered hachuela in 1977 in Fuchs Hammock, now a Miami-Dade County conservation area (Hammer, 1981). George N. Avery vouchered this station in 1978 with a flower spike and one leaf (1894, FLAS). A total of three plants were observed, and some herbivory was noted on one of the plants (Avery's Notes, 24 April 1978). By 1981, Avery and Hammer had found a total of five plants in the population (Avery's Notes, 5 February 1981). By 1983, Hammer observed that the population had dwindled to one plant (Avery's Notes, 4 March 1983). The population was being overwhelmed by the exotic pest vine nephthytis (*Syngonium podophyllum*). By 1985, Hammer was unable to locate any plants at that station (Hammer, 2001). Subsequently, the Miami-Dade County Parks Department removed the nephthytis from the area, but no new plants have been found.

A recent (1988) collection said to be from Everglades National Park cannot be verified and is treated as doubtful.

Preliminary recommendations:

- Continue surveys at Fuchs Hammock Preserve.
- Review for listing by FNAI.

***Peperomia glabella* (Sw.) A. Dietr.
Cypress Peperomia**

South Florida Status: Historical. Last collected in 1976 in Fakahatchee Strand Preserve State Park.

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS.

Identification: Unlike other native and naturalized species of *Peperomia* in Florida, *P. glabella* is evidently black glandular punctate (Wunderlin, 1998).

References: Craighead, 1963; Long & Lakela, 1976; Correll & Correll, 1982; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Frank C. Craighead (1963) reported that Floyd S. Shuttleworth first collected cypress peperomia in the eastern portion of central Collier County. No date for the discovery was given. Frank C. Craighead collected it in 1960 in Collier County (s.n., USF), without specific locality data. Later in 1960, C. Eugene Delchamps made a collection along Monument Road in Collier County (s.n., NY), which is now within Big Cypress National Preserve. George N. Avery and others later found cypress peperomia in 1970 in the northern portion of what is now Fakahatchee Strand Preserve State Park (Avery's Notes, 25 July 1970). Only one clump of plants was seen. A sample taken by Avery was grown at Fairchild Tropical Garden and John Popenoe made a voucher of the cultivated specimens in 1978 (1232, FTG). This cultivated material was apparently never accessioned by Fairchild Tropical Garden, and it is no longer present at the garden. In 1976, Chuck E. Hilsenbeck made the last known collection in Fakahatchee Strand Preserve State Park (s.n., FTG).

Preliminary recommendations:

- Survey Fakahatchee Strand Preserve State Park and the Monument Road area in Big Cypress National Preserve.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- If no plants are found, consider reintroduction to Fakahatchee Strand Preserve State Park and the Monument Road area in Big Cypress National Preserve.
- Review for listing by FNAI.

***Ponthieva brittoniae* Ames**
Mrs. Britton's Shadow Witch

South Florida Status: Historical. Last observed in 1987 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the Bahamas, and Cuba. Reported in error for central Florida in Sarasota County (P.M. Brown, personal communication, 21 November 2000).

South Florida Distribution: Miami-Dade County. Reported in error for Collier County (P.M. Brown, personal communication, 21 November 2000).

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Luer, 1972; Sauleda & Adams, 1980; Correll & Correll, 1982; McCartney, 1992a; McCartney, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *P. racemosa* (Walter) C. Mohr var. *brittoniae* (Ames) Luer.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Mrs. Britton's shadow witch in 1909 in a pineland northwest of Perrine (3106, NY), and on Long Pine Key (3061, NY; 8128, NY), in what is now Everglades National Park. It was never collected again with certainty outside of Everglades National Park. Frank C. Craighead subsequently collected it on Long Pine Key near Osteen Hammock in 1961 (s.n., FTG), but these plants have not been recently seen. Roger L. Hammer discovered another station on Long Pine Key in the vicinity of Wright Hammock in 1979 (Avery's Notes, 24 February 1979). The plants were growing along the edge of a firebreak road. George N. Avery observed this station in 1979 and again in 1981 and 1983 (Avery's Notes, 1979, 1981, 1983). On the last visit, he showed the station to Chuck McCartney. McCartney subsequently found a single plant growing on the edge of a solution hole north

of Wright Hammock in 1987 (McCartney, 1997). Despite several visits to the Wright Hammock area by McCartney, Hammer, and the authors, no additional plants have been observed. The possible extirpation of this species seems to be due, at least in part, to the re-grading of the firebreak road edge by National Park Service personnel (McCartney, 1997).

Comments: *It should be noted that P. brittoniae is difficult to distinguish from P. racemosa solely on the basis of herbarium specimens. As a result, erroneous records of P. brittoniae have been published. Small and others may have collected Britton's shadow witch at the Deering Estate at Cutler in 1924 (s.n., NY) and 1925 (s.n., NY). These two undetermined specimen need to be examined. Surveys should be conducted from January through March.*

Preliminary recommendations:

- Examine *Ponthieva* specimens from Deering Estate at NY.
- Survey Long Pine Key area in Everglades National Park on an annual basis.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- If no plants are found by 2007, assess appropriateness and study feasibility of reintroduction to Long Pine Key in Everglades National Park.

***Potamogeton pectinatus* L.
Sago Pondweed**

South Florida Status: Historical. Last collected in 1988 in Lake Okeechobee.

Taxonomy: Monocotyledon; Potamogetonaceae.

Habit: Perennial aquatic herb.

Distribution: North America, the West Indies, Mexico, Central America, South America, and the Old World. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the central peninsula.

South Florida Distribution: Broward, Hendry, and Martin counties. The Broward County record may represent an introduced waif population.

South Florida Habitats: Shallow water in lakes and rivers.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1979; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *Stuckenia pectinata* (L.) Börner.

Historical Context in South Florida: Don Doggett first collected sago pondweed in 1954 along the margins of the Caloosahatchee River, west of the La Belle Bridge in Hendry County (s.n., FLAS). Charles Wilett made a single collection in 1975 in a canal along Flamingo Road in Broward County (s.n., FAU). It is uncertain if this represented a native population, or an introduced waif population. In 1988, Mike Bodle collected sago pondweed in the Chancey Bay area of Lake Okeechobee, about 2.5 miles south of the Okeechobee County line.

Preliminary recommendations:

- Survey Lake Okeechobee and the Caloosahatchee River area for sago pondweed.
- If plants are found, map and monitor known populations.
- Consider restoring floodplain forests and associated habitats along the Caloosahatchee River as habitat for sago pondweed.

***Prunus umbellata* Elliott
Flatwoods Plum**

South Florida Status: Historical. Collected once in 1969 at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Rosaceae.

Habit: Shrub.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Probably flatwoods. Reported as “open woodland.”

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a photo.

References: Chapman, 1883; Small, 1933a; Bell & Taylor, 1982; Godfrey, 1988; Nelson, 1994; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: William L. McCart made a single collection of flatwoods plum in 1969 at Jonathan Dickinson State Park in Martin County (10525, FLAS). No other collections or observations are known from this park despite a great deal of botanical activity (R.E. Roberts, personal communication, 16 May 2001).

Comments: *This is a temperate species at the southern end of its range, and it may have always been rare in South Florida.*

Preliminary recommendations:

- Survey Jonathan Dickinson State Park.
- If plants are found, map and monitor known populations.

***Reimarochloa oligostachya* (Munro ex Benth.) Hitchc.
Florida Reimar Grass**

South Florida Status: Historical. Last collected in 1977.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to Florida and Cuba. Wunderlin (1998) reports it as occasional in Florida in the northern and central peninsula.

South Florida Distribution: Hendry and Lee counties, and probably Charlotte County. The Hendry County station may represent an introduced waif population.

South Florida Habitats: Moist soils.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration; Godfrey & Wooten (1979) has an illustration; Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Reimaria oligostachya* Munro ex Benth.

Historical Context in South Florida: Samuel M. Tracy may have collected Florida reimar grass first in 1903 at “Lemon City” (7190, NY) and “Lemon Bay” (s.n., US) in Charlotte County, but these specimens could have been collected outside of South Florida in Sarasota County. Both of these specimens were collected on the same day. In 1967, J.R. Orsenigo made a single collection from the edge of a sugarcane field in eastern Hendry County (s.n., NCU), although it is not clear if this represented a native population. William C. Brumbach collected Florida reimar grass in 1970 and 1972 on Sanibel Island in Lee County (7124, FLAS; 8129, FLAS). Brumbach made another collection on lower Captiva Island in 1977 (9248, NY, USF). There is an additional collection by S.W. Leonard from Punta Rassa on the Lee County mainland in 1970 (4451, NCU). An interesting voucher was deposited by Tim Harris from plants grown in cultivation from seed bank cores taken along the littoral zone from the northwest corner of Lake Okeechobee in Glades County (8, FLAS).

Comments: *Although this species has been collected primarily in disturbed areas, there is no indication that it is introduced.*

Preliminary recommendations:

- Survey Sanibel and Captiva Islands, and in the vicinity of Lemon Bay in Charlotte County.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Determine status in Cuba.

***Sabal minor* (Jacq.) Pers.
Bluestem Palmetto**

South Florida Status: Historical. Last collected in 1983 in southwestern Charlotte County.

Taxonomy: Monocotyledon; Arecaceae.

Habit: Shrub.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte and Glades counties.

South Florida Habitats: Moist to wet hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (1996) has a photo; Tobe et al. (1998) has an illustration and photos.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Godfrey, 1988; Zona 1990; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: None.

Historical Context in South Florida: Hugh O'Neill first collected bluestem palmetto in 1929 in a "high hammock" at Lakeport in Glades County (s.n., FLAS). Bradley searched for this station in 2000, but it has apparently been destroyed. In 1983, A.G. Shuey collected bluestem palmetto in a hardwood swamp in southwestern Charlotte County (2549, USF). Gann searched for this station in 2000. It is still apparently undeveloped, although the site was fenced and posted and therefore not accessed. Shuey described this population as infrequent and very restricted, and while it is possible that it is extant, also it is possible that wild hogs, exotics pest plants, or other disturbances have destroyed this small population.

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey Charlotte County Bluestem Palmetto Site.
- If plants are found, map and monitor known populations.
- Acquire Charlotte County Bluestem Palmetto Site.

***Scirpus americanus* Pers.
American Bulrush**

South Florida Status: Historical. Collected last in 1977 on US Highway 441 in Martin County, just south of the Okeechobee County line.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to North America, the West Indies, and South America. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the northern and central

peninsula. Wunderlin & Hansen (2001) records it only for Citrus, Lee, St. Johns, Taylor, and Wakulla counties.

South Florida Distribution: Lee County.

South Florida Habitats: Coastal marshes.

Protection Status: Not listed by any agency.

Identification: *Scirpus americanus* and *S. pungens* have been much confused in the literature and many accounts of *S. americanus* actually refer to *S. pungens*. In *S. americanus* the apex of the scales of the spikelet are nearly entire and have a short mucro, and the involucre bract is 1-5 cm long; in *S. pungens* the scales have a prominent awn projecting from the cleft apex, and the involucre bract is 3-12 cm long (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Koyama, 1963; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *S. olneyi* A. Gray.

Historical Context in South Florida: George R. Cooley first collected American bulrush in 1954 on Sanibel Island, perhaps within the boundaries of what is now J.N. "Ding" Darling National Wildlife Refuge (s.n., USF). W. Schad and others made a collection in Martin County southeast of Indiantown in 1968 (9754, FAU). Daniel F. Austin and Sandra K. Austin made one other collection in Martin County in 1977. This collection was made along US Highway 441, just south of the Okeechobee County line (4352, FAU), in the vicinity of Chancey Bay. John Popenoe (1981) reported American bulrush for Jonathan Dickinson State Park, but this report probably refers to *S. pungens*. Donald R. Richardson (1977) also reported American bulrush for Yamato Marsh in Palm Beach County, but we have been unable to verify this station. The Yamato Marsh is now mostly destroyed.

Preliminary recommendations:

- Examine specimens from Jonathan Dickinson State Park.
- Survey J.N. "Ding" Darling National Wildlife Refuge.
- If plants are found, map and monitor known populations.
- Review for listing by FDACS and FNAI.

***Scutellaria integrifolia* L.
Helmet Skullcap**

South Florida Status: Historical. Last collected in 1976 near Jensen Beach.

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte, Lee, and Martin counties.

South Florida Habitats: Probably flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration and a color photo. Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *S. integrifolia* var. *major* Chapm.; *S. integrifolia* var. *hispida* Benth.

Historical Context in South Florida: Albert S. Hitchcock first collected helmet skullcap in 1900 in flatwoods in Alva, Lee County (278, NY, US), in the vicinity of what is now Caloosahatchee Regional Park. Paul C. Standley made another collection in that same area in 1927 in pinewoods at Pondilla (52593, US). Olga Lakela made a collection in 1964 in a dry, cleared "prairie" south of Punta Gorda in Charlotte County (27114, USF). Gann attempted to find this station in 2000, but most of the available habitat in that area had been developed. Bruce E. Tatje made the last known collection in 1976 in the vicinity of Jensen Beach in Martin County (s.n., FAU). Helmet skullcap has been reported for Dupuis Reserve (Woodbury, no date), which is located in southwestern Martin and northwestern Palm Beach counties, but this report needs to be verified.

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey Caloosahatchee Regional Park, Dupuis Reserve and the Jensen Beach area.
- If plants are found, map and monitor known populations.
- If no plants are found, consider introduction to Caloosahatchee Regional Park.

***Silphium asteriscus* L.
Starry Rosinweed**

South Florida Status: Historical. Last collected in 1985 in North Fort Myers.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as occasional in Florida from the panhandle to the western central peninsula.

South Florida Distribution: Lee County.

South Florida Habitats: Open woods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Cronquist, 1980; Taylor, 1992; Wunderlin, 1998.

Synonyms: *S. asteriscus* var. *dentatum* (Elliott) Chapm.; *S. dentatum* Elliott; *S. gracile* A. Gray; *S. simpsonii* Greene.

Historical Context in South Florida: Albert S. Hitchcock first collected starry rosinweed in 1900 in a hammock at Fort Myers (166, US). Elliott Brown made a second collection in 1985 at the edge of a grove of *Sabal palmetto* in North Fort Myers. Gann attempted to find the latter station in February 2001, but it had been converted into a shopping center.

Comments: *This is a temperate species at the southern end of its range, and may have always been rare in South Florida.*

Preliminary recommendations:

- Survey North Fort Myers area.
- If plants are found, map and monitor known populations.

***Spiranthes brevilabris* Lindl.**
Texas Lady's-tresses

South Florida Status: Historical. Last observed in the early 1980s in Big Cypress National Preserve.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as rare in Florida in the eastern panhandle and the peninsula.

South Florida Distribution: Collier, Hendry, and Lee counties, and either Broward County or Miami-Dade County.

South Florida Habitats: Flatwoods and wet prairies.

Protection Status: Listed as endangered by FDACS.

Identification: Luer (1972) has illustrations and color photos.

References: Correll, 1950; Luer, 1972; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998; Coile, 2000.

Synonyms: *S. gracilis* (Bigelow) L.C. Beck var. *brevilabris* (Lindl.) Correll.

Historical Context in South Florida: John Kunkel Small and others made the first collection of Texas lady's-tresses in 1911 between Fort Lauderdale and Miami (3319, AMES). The next collections were from the Fort Myers area beginning in 1916. Paul C. Standley collected plants at Fort Myers in February 1916 (12800, US), and his sister, Jeanette P. Standley, collected it again in November of that year (409, US). Paul Standley made another collection in 1919 (18939, US). The last collection from that region was by C.C. Deam about 6.5 miles northwest of Fort Myers in 1938 (58768, DUKE). Perley Poore Sheehan collected Texas lady's-tresses once in Hendry County at Fort Shackelford in 1919 (s.n., NY), in what is now the Big Cypress Seminole Indian Reservation. It has not been collected in Hendry County since.

Chuck McCartney (1986) also reported Texas Lady's-tresses for the Rabenau Camp area, in what is now in the northeastern portion of Big Cypress National Preserve, but these plants have not been seen since the early 1980s (C. McCartney, personal communication, 21 February 2001). McCartney postulates that the removal of cattle from the area after the National Park Service

acquired the property, together with a lack of fire in the pineland, has caused the grassy area where these plants occurred to become overgrown. This pineland should be burned and subsequent surveys should be conducted for Texas lady's-tresses.

Comments: *Wunderlin (1998) suggests that S. brevilabris may be a hybrid between S. floridana and S. vernalis.*

Preliminary recommendations:

- Survey Big Cypress Seminole Indian Reservation and Rabenau Camp area within Big Cypress National Preserve.
- Conduct prescribed burns in the Rabenau Camp area and survey area in subsequent years.
- If plants are found, map and monitor known populations.

***Spiranthes elata* (Sw.) Rich.
Tall Neottia**

South Florida Status: Historical. Last observed in 1980 at Big and Little George Hammocks.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida in Hernando and Miami-Dade counties, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Beadlea elata* (Sw.) Small; *Cyclopogon elatus* (Sw.) Schltr.

Historical Context in South Florida: J.A. Lassiter and others first collected tall neottia in 1961 in a rockland hammock near Cutler (51, USF). As this hammock was in the process of being destroyed, all three plants were collected (Luer, 1972). Gann

rediscovered tall neottia in Miami-Dade County in 1978 at Big George Hammock, now part of the Miami-Dade County conservation area Big and Little George Hammocks (Gann, 2001a). Fewer than 10 plants were observed. George N. Avery vouchered tall neottia there in 1979 (2087, FTG). Gann observed it in flower again in 1980, but it has not been observed there since that time, despite numerous surveys by Gann and others.

Comments: *Tall neottia* was collected once in Hernando County by Allan H. Curtiss in 1881 (Luer, 1972), and is apparently extirpated in Florida and the continental United States.

Preliminary recommendations:

- Continue surveys at Big George Hammock.
- Consider reintroduction to the Cutler area at Bill Sadowski Park and Deering Estate at Cutler.
- Review FNAI rank.

***Spiranthes floridana* (Wherry) Cory
Florida Lady's-tresses**

South Florida Status: Historical. Last collected in 1916 at Fort Myers. Last reported in 1994 for Corkscrew Swamp Sanctuary.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the central and western panhandle to the northern and central peninsula.

South Florida Distribution: Lee County. Reported for Miami-Dade County (Correll, 1940).

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Luer (1972) has illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *S. brevilabris* Lindl. var. *floridanum* (Wherry) Luer; *S. gracilis* (Bigelow) L.C. Beck var. *floridanum* (Wherry) Correll; *Ibidium floridanum* Wherry.

Historical Context in South Florida: Paul C. Standley first collected Florida lady's-tresses in 1916 in a pineland in Fort Myers

(13103, US). His sister, Jeanette P. Standley, collected it in Fort Myers a few weeks later (48, US). Correll (1940) reported Florida lady's-tresses for Miami-Dade County, probably based upon a specimen sent from Walter M. Buswell to the AMES herbarium at Harvard University in 1949. However, the label only states that the specimen was sent from Miami. There is no other locality data, and it is uncertain if this specimen actually represents Miami-Dade County material. Florida lady's-tresses has been reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in Collier County, but this report needs to be verified.

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary.
- If plants are found, map and monitor plants.

***Tillandsia fasciculata* Sw. var. *clavispica* Mez
Clubspike Cardinal Airplant**

South Florida Status: Historical. Last collected in 1958 on Long Pine Key in Everglades National Park.

Taxonomy: Monocotyledon; Bromeliaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to peninsular Florida, Cuba, and Mexico. Wunderlin (1998) reports it as rare in Miami-Dade County. Wunderlin & Hansen (2001) also records it for Brevard County and the Monroe County Keys.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Hammocks.

Protection Status: Listed as endangered by FDACS (as *T. fasciculata*).

Identification: Smith & Downs (1977) and Wunderlin (1998) have keys to the varieties of *T. fasciculata*.

References: Smith, 1966; Smith & Downs, 1977; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Clubspike cardinal airplant was collected first on the island of Key West either by John Loomis Blodgett between 1838 and 1853 (s.n., NY) or by Ferdinand Rugel in 1846 (194, NY). Abram P. Garber collected it

once in Miami in 1877 (1885, NY), presumably in Brickell Hammock south of the Miami River. Frank C. Craighead collected a specimen at Palma Vista Hammock #2 on Long Pine Key in Everglades National Park in 1956 (s.n., US), and another one there in 1958 (s.n., US).

Comments: *All Tillandsia fasciculata taxa in South Florida are affected by the exotic weevil Metamasius callizona, the larvae of which burrows inside the plant and kills it. In Florida, clubspike cardinal airplant is only known from South Florida and the Indian River area, which is the basis for the Brevard County record in Wunderlin & Hansen (2001). The Indian River collection was made in 1877 by John Donnell Smith (s.n., US), and is apparently extirpated.*

Preliminary recommendations:

- Survey the Long Pine Key area of Everglades National Park.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Consider reintroduction to Brickell Hammock at Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.
- Consider restoring rockland hammocks on the island of Key West and reintroducing clubspike cardinal airplant.
- Review for listing by FNAI.

***Tillandsia fasciculata* Sw. var. *fasciculata*
Cardinal Airplant**

South Florida Status: Historical. Last collected in 1970 near Homestead, in the vicinity of Fuchs Hammock and Meissner Hammock.

Taxonomy: Dicotyledon; Bromeliaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS (as *T. fasciculata*).

Identification: Smith & Downs (1977) and Wunderlin (1998) have keys to the varieties of *T. fasciculata*.

References: Smith & Downs, 1977; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: C.F. Dowling collected cardinal airplant once in the vicinity of Fuchs Hammock and Meissner Hammock near Homestead in 1970. The plant was brought into cultivation and a specimen was vouchered from cultivated material by M. Prince in 1992 (s.n., FLAS). Both Fuchs Hammock and Meissner Hammock need to be surveyed.

Comments: *All Tillandsia fasciculata taxa in South Florida are affected by the exotic weevil Metamasius callizona, the larvae of which burrows inside the plant and kills it.*

Preliminary recommendations:

- Survey Fuchs Hammock Preserve and Meissner Hammock.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- If no plants are found, consider introduction to Fuchs Hammock Preserve and Meissner Hammock.
- Review for listing by FNAI.

***Tridens flavus* (L.) Hitchc.
var. *chapmanii* (Small) Shinnery
Chapman's Purpletop Tridens**

South Florida Status: Historical. Last collected in 1988. Last collection of a verifiable native population was made in 1954 in Lee County.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. In Florida, it is known only from Collier, Hernando, and Jackson counties (Wunderlin, 1998).

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Mesic hammocks and disturbed areas.

Protection Status: Not listed by FDACS due to its status as a variety.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Hitchcock & Chase, 1950; Hall, 1978; Wunderlin, 1998.

Synonyms: *Tridens chapmanii* (Small) Chase.

Historical Context in South Florida: Albert S. Hitchcock first collected Chapman's purpletop tridens in 1900 in a hammock in Alva, Lee County (532, US), in the vicinity of what is now Caloosahatchee Regional Park. Roy O. Woodbury made the only other collection from Lee County in 1954 in the vicinity of Olga (SE-330, US), which is located to the south of the Caloosahatchee River, approximately 6.5 miles east southeast of Alva. The collection was made in a "National Forest" which no longer exists. It was reported to be rare there.

Bruce F. Hansen and Richard P. Wunderlin made one additional collection in 1988 at the Rookery Bay National Estuarine Research Reserve in Collier County (11839, USF). This specimen was collected from the area around the headquarters building, and it is unclear whether or not this represented a native population.

Preliminary recommendations:

- Survey Caloosahatchee Regional Park and Rookery Bay National Estuarine Research Reserve.
- If plants are found, map and monitor known populations.
- If no plants are found, consider introduction to Caloosahatchee Regional Park.
- Review for listing by FNAI.

***Vanilla dilloniana* Correll
Mrs. Lott's Vanilla**

South Florida Status: Historical. Last collected in 1944 in Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial vine.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County and the Monroe County mainland.

South Florida Habitats: Rockland hammocks and coastal berms.

Protection Status: Listed as endangered by FDACS.

Identification: Luer (1972) has illustrations and color photos; the IRC Website has a color photo.

References: Correll, 1946; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *V. eggersii* Rolfe, misapplied.

Historical Context in South Florida: Alvah A. Eaton first collected Mrs. Lott's vanilla in 1903 in Brickell Hammock (s.n., AMES), near present-day downtown Miami, and at Madeira Hammock (Ames, 1904a), near Flamingo in what is now Everglades National Park. Eaton made another collection in 1904 from Brickell Hammock (971, AMES). John Kunkel Small also made a collection in 1904 from Miami (2310, NY), presumably from Brickell Hammock. Mrs. Lott's vanilla was collected again in Brickell Hammock in 1905 by P. & P. St. Rolfs (s.n., NY), in 1906 by Small and Joel J. Carter (2568, NY), in 1911 by Small and others (s.n., NY), and in 1913 by Small and Carter (4636, NY). R.H. Humes made a collection of material from Brickell Hammock (s.n., AMES), which was used by Donovan S. Correll in 1946 as the type specimen for the species (Correll, 1946). According to Luer (1972), the specimen used as the type was material originally collected from Brickell Hammock in 1928.

Eaton's Madeira Hammock collection would have been made to the east of Flamingo in what is now Everglades National Park. Small also made a collection from Madeira Hammock in 1916 (8048, NY), and Humes made a collection in 1944 in "Monroe County, Cape Sable region" (Correll, 1946), which would have been to the west of Madeira Hammock. It has not been collected there since.

Germplasm of plants collected from Brickell Hammock is maintained in cultivation (Hammer, 2001).

Comments: *Vanilla dilloniana* closely resembles both *V. barbellata* of South Florida and *V. claviculata* of the West Indies. Both specimens from Everglades National Park are sterile, and may not actually represent *V. dilloniana*. It is possible that some plants remain in Everglades National Park, but flowering material

would be necessary to make a positive determination. Strangely, Donovan S. Correll (1950) regarded this species as “common” in South Florida.

Preliminary recommendations:

- Survey hammocks along the northern shore of Florida Bay in Everglades National Park.
- If plants are found, map and monitor known populations.
- If plants are found, consider establishing an *ex situ* collection of germplasm.
- Consider reintroduction to Brickell Hammock at Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.
- Review for listing by FNAI.

***Warea carteri* Small
Carter's Pinelandcress**

South Florida Status: Historical. Last collected in 1942 in Miami.

Taxonomy: Dicotyledon; Brassicaceae.

Habit: Annual terrestrial herb.

Distribution: Endemic to peninsular Florida from Brevard County south to Miami-Dade County. Wunderlin (1998) reports it as occasional in Florida in the central and southern peninsula.

South Florida Distribution: Miami-Dade and Glades counties.

South Florida Habitats: Sandy pine rocklands, and scrub or scrubby flatwoods.

Protection Status: Listed as endangered by USFWS, as endangered by FDACS, and as rare by FNAI.

Identification: Taylor (1998) has a color photo. Chafin (2000) has illustrations and a photo.

References: Small, 1933a; Long & Lakela, 1976; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected Carter's pinelandcress in 1878 in Miami (s.n., FLAS), presumably in sandy pine rocklands near the Miami River. Subsequently, it was collected numerous times between Miami and Black Point. Collections were made in 1903 by John Kunkel

Small and Joel J. Carter (831, NY), in 1913 by Small (4755, US), in 1930 by Harold N. Moldenke (273, US), in 1933 by F. Duckett (240, US), three times in 1934 by Walter M. Buswell (s.n., FLAS; s.n., FTG; s.n., FTG), and once in 1936 by Buswell (s.n., FTG). Buswell made the two last collections of Carter's pinelandcress in South Florida in 1942 (s.n., FTG; s.n., FTG). Hardrada H. Hume collected it in 1925 in Palmdale in Glades County (s.n., FLAS). It is possible that plants are still present in that area and it should be surveyed.

Roy O. Woodbury (no date) reported it for Dupuis Reserve, but we have been unable to verify this station.

Numerous studies have been conducted on this federally listed species in central Florida. See U.S. Fish and Wildlife Service (2000) for a review of the literature.

Preliminary recommendations:

- Survey Dupuis Reserve and the Palmdale area.
- If plants are found, map and monitor known populations.
- Consider reintroducing Carter's pinelandcress to pine rocklands in Miami-Dade County, including the Burger King World Headquarters Tree Preserve (Appendix 9).
- Consider restoring pine rocklands along the Miami River and reintroducing Carter's pinelandcress.

***Zigadenus densus* (Desr.) Fernald
Crowpoison**

South Florida Status: Historical. Collected once in 1967 near Palmdale in Glades County.

Taxonomy: Monocotyledon; Liliaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as common in Florida from the northern counties to the central peninsula.

South Florida Distribution: Glades County.

South Florida Habitats: Unknown, but probably wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Preece, 1956; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Amianthium angustifolium* (Michx.) A. Gray; *Tracyanthus angustifolius* (Michx.) Small.

Historical Context in South Florida: William G. D’Arcy collected crowpoison a single time in 1967 at Fisheating Creek near Palmdale in Glades County (1345, FLAS), in the vicinity of the newly acquired Fisheating Creek Wildlife Management Area.

Comments: *This is a temperate species at the southern end of its range, and it always may have been rare in South Florida.*

Preliminary recommendations:

- Survey the Fisheating Creek area, including Fisheating Creek Wildlife Management Area.
- If plants are found, map and monitor known populations.

Chapter 5

The Critically Imperiled Plants of South Florida

This chapter provides accounts of 244 species that have been ranked by IRC as critically imperiled in South Florida, as defined in Table 1.1 in Chapter 1. Each account provides a detailed history of the plant in South Florida, obtained through the study of herbarium specimens, literature, correspondence with other botanists, field surveys, and additional sources. Herbarium citations (e.g. USF) are provided (Appendix 11). In some cases we had to make difficult decisions concerning reported but undocumented occurrences. We welcome any additional information on these taxa for incorporation into future editions of this manual.

The South Florida conservation status of each plant is indicated at the beginning of its account under “South Florida Status,” and includes the IRC ranking and a list of known occurrences. Additional data is provided for the convenience of users. “Taxonomy” indicates the group of plants to which the taxon belongs (dicotyledon, monocotyledon, or pteridophyte), and its family, primarily following Wunderlin (1998). “Habit” indicates the form of the taxon (tree, herb, epiphyte, etc.). “Distribution” indicates the global range of the taxon, and “South Florida Distribution” gives the specifics of its range in the region. “South Florida Habitats” indicates from which South Florida habitats the species is known. “Protection Status” indicates if the taxon is listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS), the Florida Department of Consumer Services, Division of Plant Industry (FDACS), or the Florida Natural Areas Inventory (FNAI). “Identification” supplies references to photographs, illustrations, and other tools. “References” are given for additional useful literature. “Synonyms” are from Wunderlin (1998) and other publications cited in the manual.

The chapter is divided into three parts. The first treats taxa not known from any conservation areas. The second part treats taxa that are known from a single conservation area in South Florida. The third part treats all other critically imperiled taxa.

The history of each taxon was used to make conservation and restoration recommendations. In this chapter, recommendations are broad and include but are not limited to: surveying, mapping, monitoring, vouchering, habitat management, and reintroduction. These recommendations follow the guidelines discussed in Chapter 3.

The IRC Website (www.regionalconservation.org) has additional data on the plants covered in this chapter, including photographs of some species.

Part 1. Plants Not Known In Any Conservation Area

Anagallis pumila Sw. Florida Pimpernel

South Florida Status: Critically imperiled. One occurrence at Pelican Marsh in Collier County.

Taxonomy: Dicotyledon; Primulaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida, central Florida (Highlands County), the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Mesic flatwoods, pond margins, and river banks.

Protection Status: Not listed by any agency.

Identification: There are three species of *Anagallis* in Florida. *A. pumila* can be distinguished from the other two by having pedicellate flowers and opposite or whorled leaves (Wunderlin, 1998).

References: Chapman, 1878; Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *Centunculus pentandrus* R. Br.; *Centunculus tenellus* Duby; *Micropyxis pumila* (Sw.) Duby.

Historical Context in South Florida: Alvan W. Chapman (1878) first reported Florida pimpernel from the banks of the Caloosahatchee River, presumably in Lee County. Abram P. Garber probably collected the specimen upon which this report was based, but we have been unable to locate the specimen. Florida pimpernel was not reported again for Lee County until 1985, when Elliott Brown collected it in a “damp pineland” just north of Tamiami Village and west of US 41 in North Fort Myers (s.n., USF). Gann briefly surveyed this station in 2000. No plants were found, but additional surveys of this site should be conducted.

Olga Lakela made the first collections in Collier County in 1966 near Immokalee, north of State Road 29 in “pineland; white sand with scrub oaks and *Serenoa repens*...” (29417, USF). Kristi

Pierce collected it again in Collier County in 1998 at Pelican Marsh in the vicinity of Naples Park (s.n., USF).

Major Threats: Habitat destruction at Pelican Marsh station.

Preliminary recommendations:

- Survey Tamiami Village Flatwoods Site.
- Map and monitor plants at Pelican Marsh annually.
- Acquire Tamiami Village Flatwoods Site.
- Review for listing by FDACS and FNAI.

***Asplenium xbiscaynianum* (D.C. Eaton) A.A. Eaton
Biscayne Spleenwort**

South Florida Status: Critically imperiled. One occurrence at Warwick Hammock.

Taxonomy: Pteridophyte; Aspleniaceae.

Habit: Perennial lithophytic herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Moist, exposed limestone in rockland hammocks.

Protection Status: Not listed by FDACS due to its hybrid status. Listed as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a black and white photo; the IRC Website has a color photo.

References: Eaton, 1906; Small, 1938; Darling, 1961; Lakela & Long, 1976; Long & Lakela, 1976; Avery & Loope, 1980a; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. rhizophyllum* L. var. *biscaynianum* D.C. Eaton.

Historical Context in South Florida: Isaac Holden first collected Biscayne spleenwort in 1887 in Brickell Hammock (s.n., NY). It was collected again in Brickell Hammock by Ralph M. Munroe in 1888 (s.n., NY), and by John Kunkel Small and Joel J. Carter in 1906 (s.n., FTG). Eaton (1906) reported that it was abundant at the bluffs near the "Punch Bowl" in Brickell Hammock. Walter M. Buswell made several collections from 1938 to 1949 in Miami that were presumably from Brickell Hammock (e.g. s.n., FTG). The

last collection from Brickell Hammock was by E.P. Kearsley in 1946 (s.n., NY). Thomas Darling, Jr. observed it there again in 1961 (Darling, 1961). A single specimen was seen in a small hammock near the Rickenbacker Causeway, possibly what is now Alice C. Wainwright Park. Don Keller also reports seeing a single individual at Alice Wainwright Park in the late 1980s on the bluff facing Biscayne Bay (personal communication, 8 February 2001). This could have been the same station that was observed by Darling. Recent surveys of that hammock by Gann, Bradley, and others have failed to locate any plants.

The next station to be vouchered was at Warwick Hammock, where Small and others made the first collection in 1922 (10731A, NY, US). Frank C. Craighead and Monroe R. Birdsey probably made the next collection there in 1959 (s.n., FTG), although their locality data is somewhat vague. William G. Atwater also collected it at that station in 1960 (s.n., ARCH, USF). P.B. Tomlinson made another collection in 1962 (12562, FTG), and stated that the hammock was mostly destroyed by that date. It was later developed for single-family residences. Gann found plants in 1995 that were persisting on exposed limestone in a private garden (s.n., FTG). About 50 plants were observed. Subsequently this property was sold. While the status of the plants at this station is unknown, Biscayne spleenwort is reported to be extant in another private yard in Warwick Hammock (D. Keller, personal communication, 8 February 2001).

Small and others also made a collection in Addison Hammock, now in the Deering Estate at Cutler, in 1923 (11103, NY), as did Donovan S. Correll, Helen B. Correll, and John Popenoe in 1974 (41536, FTG). The label says that it was "Very Rare!" and it has not been observed or collected there since that time. The last station to be discovered and vouchered was at Castellow Hammock Park, where Roger L. Hammer discovered a small population in 1984 on exposed limestone in the vicinity of *Asplenium dentatum* (s.n., FTG). This population has not been observed since Hurricane Andrew in 1992, and it may no longer be extant (R.L. Hammer, personal communication, 31 January 2001).

Frank C. Craighead translocated some plants into Everglades National Park in the 1950s, and they have been observed by a

number of people over the years. Don Keller most recently observed one plant there in 1993 (personal communication, 8 February 2001).

Major Threats: Habitat degradation and destruction at Warwick Hammock stations; long-term drainage on the Miami Rock Ridge; exotic pest plant invasions; off-target damage from exotic pest plant control programs; poaching; extirpation of the parent species (both parents are extant together only at Warwick Hammock).

Comments: *Biscayne spleenwort* is a hybrid between *A. dentatum* and *A. verecundum*. Both the parents and *Biscayne spleenwort* require exposed limestone and adequate moisture and humidity, conditions that are now found in few rockland hammocks in Miami-Dade County. Due to the lowering of the regional freshwater table, it does not seem feasible to attempt to reintroduce *Biscayne spleenwort* to Brickell Hammock at this time.

Preliminary recommendations:

- Survey Warwick Hammock and Castellow Hammock Park.
- Map known plants at least every three years.
- Monitor known plants at least every year.
- Develop conservation agreements with owners of the Warwick Hammock stations. Provide technical assistance to help manage these populations.
- Consider augmenting population at Warwick Hammock.
- Consider reintroducing *Biscayne spleenwort* to other sites within its historical range, including the Deering Estate at Cutler (through the reintroduction of *A. verecundum*), and Castellow Hammock Park (through the reintroduction of *A. dentatum*).
- Promote a higher regional water table on the Miami Rock Ridge.

***Carya glabra* (Mill.) Sweet
Pignut Hickory**

South Florida Status: Critically imperiled. One occurrence along Alligator Creek in Charlotte County.

Taxonomy: Dicotyledon; Juglandaceae.

Habit: Tree.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte County.

South Florida Habitats: Mesic hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Nelson, 1994; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *C. ovalis* (Wagenh.) Sarg.; *Hicoria austrina* Small; *Hicoria glabra* (Mill.) Britton.

Historical Context in South Florida: Gann and Bradley discovered pignut hickory in 1996, south of a rest area at the intersection of I-75 and Charlotte County Road 768, on the banks of Alligator Creek. This station is owned by the Florida Department of Transportation. Bradley vouchered pignut hickory there in 1998 (1288, FTG, USF). Fewer than 100 plants were observed at this station, although more plants may be present along other parts of Alligator Creek.

Major Threats: Habitat destruction; exotic pest plant invasions.

Comments: *This is a temperate species at the southern limit of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey along Alligator Creek.
- Map plants at Alligator Creek at least every three years.
- Monitor plants at Alligator Creek at least every year.
- Designate Alligator Creek Pignut Hickory Site as a conservation area.

***Cucurbita okeechobeensis* (Small) L.H. Bailey
Okeechobee Gourd**

South Florida Status: Critically imperiled. One occurrence on islands in Lake Okeechobee.

Taxonomy: Dicotyledon; Cucurbitaceae.

Habit: Annual vine.

Distribution: Endemic to peninsular Florida.

South Florida Distribution: Glades and Palm Beach counties.

South Florida Habitats: Hardwood swamp forests and wet disturbed sites.

Protection Status: Listed as endangered by the USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo.

References: Small, 1922; Bailey, 1930; Small, 1933a; Bailey, 1943; Long & Lakela, 1976; Ward, 1978; Avery & Loope, 1980a; Walters et al., 1992; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *Pepo okeechobeensis* Small.

Historical Context in South Florida: Okeechobee gourd was collected first by John Kunkel Small and George K. Small in 1913 on Torrey Island in Lake Okeechobee in Palm Beach County (4155, NY). It was this specimen that Small (1930b) designated as the type specimen of *Pepo okeechobeensis*. Small also collected it in 1917 at the southwestern shore of Lake Okeechobee (8243, FLAS), and observed it in “hammocks of the four islands of Lake Okeechobee and in the hammocks of the southern and eastern shores” (Small, 1922). Small is referring to Torrey, Kreamer, and Ritta islands, and probably Observation Island. The entire range of the plant lies within the levee that now surrounds Lake Okeechobee.

Okeechobee gourd has been collected at Lake Okeechobee numerous times since 1917: in 1930 by Walter M. Buswell (s.n., FTG), in 1941 by John H. Davis, Jr. (s.n., FLAS), in 1965 by John Beckner (705, NY), in 1978 and 1982 by John Popenoe (1852, FTG; 2366, FTG), in 1981 by Donovan S. Correll and others (51517, FTG), and in 1990 by Terrence Walters and others (614, FTG; 615, FTG). It also was collected several times in 1997 by Bradley and Woodmansee (e.g., 939, FTG), who were shown several colonies of plants by South Florida Water Management biologist Mike Bodle. Plants were observed on Ritta Island, Torrey Island, and in the South Bay area. Bodle has observed these populations annually since 1997. Fewer than 1,000 plants are thought to be extant within any one year.

Okeechobee gourd has recently been reported in disturbed areas in Broward and Miami-Dade counties (USFWS, 2000), but it does not appear that these populations are native. As a federally listed plant, much research has been conducted on Okeechobee gourd. This research is reviewed in U.S. Fish and Wildlife Service (2000). An *ex situ* collection of germplasm is maintained at Bok Tower Gardens (USFWS, 2000).

Major Threats: Hydrological modifications in Lake Okeechobee; exotic pest plant invasions, especially melaleuca (*Melaleuca quinquenervia*).

Comments: Okeechobee gourd was discovered in 1774 by William Bartram (1791) along the St. Johns River in northern Florida. It has been rediscovered in that area and has been collected in Lake, Seminole, and Volusia counties (USFWS, 2000; Wunderlin & Hansen, 2001).

Preliminary recommendations:

- Map and monitor known stations annually
- Control exotic pest plants, especially melaleuca.
- Ensure that water management practices in Lake Okeechobee do not threaten Okeechobee gourd.
- Continue conservation biology and conservation horticulture studies.
- Continue maintenance of *ex situ* collection of germplasm at Bok Tower Gardens.
- Consider augmenting population in Lake Okeechobee.

***Cuscuta americana* L.
American Dodder**

South Florida Status: Critically imperiled. One occurrence on disturbed private property in Miami-Dade County.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to peninsular Florida, the West Indies, Mexico, and South America. Wunderlin (1998) reports it as rare in Florida. It has been collected in South Florida, and in Lake and Polk counties (Wunderlin & Hansen, 2001).

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Rockland hammocks, pinelands, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration; Correll & Correll (1982) has an illustration.

References: Yuncker, 1932; Small, 1933a; Long & Lakela, 1976; Austin, 1980; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and others first collected American dodder in 1925 in a rockland hammock on Lower Matecumbe Key (s.n., FLAS, NY). This is the only known collection from the Florida Keys. That same year, Ethel Z. Bailey made a collection in Coconut Grove in Miami-Dade County (6457, NY). It was collected in a pineland at Buena Vista in 1929 by Charles A. Mosier (s.n., NY), and again in 1930 by Mosier (s.n., NY) and Harold N. Moldenke (372a, NY). Buena Vista was located just north of present-day downtown Miami. Walter M. Buswell made several collections in Coral Gables beginning in 1940 (s.n., FTG), and ending in 1943 (s.n., FTG; s.n., NY). Robert T. Clausen and Buswell also made a collection in Coral Gables in 1943 (6231, NY). American dodder was not recorded again until 1999, when Bradley found it growing in a disturbed thicket across the street from Old Dixie Pineland in Naranja. Bradley vouchered this station in 2000 (2086, FTG).

Major Threats: Habitat destruction.

Comments: *American dodder flowers in the summer through fall, when surveys should be conducted.*

Preliminary recommendations:

- Map and monitor known stations annually.
- Acquire Old Dixie Pineland site.
- Consider establishing an *ex situ* collection of germplasm.

- Assess appropriateness and study feasibility of introducing American dodder to other sites within its historical range, including the Old Dixie Pineland site and Klopp Tract, Lignumvitae Key Botanical State Park on Lower Matecumbe Key.
- Assess appropriateness and study feasibility of restoring sandy pine rocklands near the Miami River and reintroducing American dodder.
- Review for listing by FDACS and FNAI.

***Desmodium strictum* (Pursh) DC.
Pinebarren Ticktrefoil**

South Florida Status: Critically imperiled. One occurrence at the Ludlam Florida Power and Light Easement in southern Miami-Dade County.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Miami-Dade County, where it is disjunct from Polk County.

South Florida Habitats: Sandy pockets in pine rocklands.

Protection Status: Not listed by any agency.

Identification: There are 26 species of *Desmodium* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Isely, 1990; Wunderlin, 1998.

Synonyms: *Meibomia stricta* (Pursh) Kuntze.

Historical Context in South Florida: George N. Avery first collected pinebarren ticktrefoil in 1978 at the Ludlam Pineland (1975, FTG, FLAS; 1983, FTG, FLAS), just north of what is now Deering Estate at Cutler. Part of Ludlam Pineland is now the Ludlam Pineland Tract, a Miami-Dade County conservation area, and part is a power line easement owned by Florida Power and Light. Although it is not certain, it appears that Avery found plants on property now owned by the county, just across the property line from the Florida Power and Light easement. In the mid-1990s Bradley found plants about 25 meters away in the Florida Power

and Light easement. Bradley and Woodmansee observed this station again in 2000.

Major Threats: Habitat destruction at the Ludlam Florida Power and Light Easement; fire suppression; exotic pest plant invasions, especially by Burmared (*Neyraudia reynaudiana*).

Preliminary recommendations:

- Survey Ludlam Pineland Tract.
- Map plants at Ludlam Pineland at least every three years.
- Monitor plants at Ludlam Pineland at least every year.
- Develop conservation agreement with Florida Power and Light to restore and manage a viable population of pinebarren ticktrefoil at the Ludlam Florida Power and Light Easement. Provide technical assistance to help restore and manage this population.
- Control exotic pest plants, especially Burmared.

***Dicranopteris flexuosa* (Schrad.) Underw.
Drooping Forked Fern**

South Florida Status: Critically imperiled. One occurrence on the bank of a canal in northwestern Palm Beach County.

Taxonomy: Pteridophyte; Gleicheniaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida, Alabama, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Palm Beach County.

South Florida Habitats: Known only from a disturbed canal bank.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has two color photos; Wunderlin & Hansen (2000) has two illustrations; the IRC Website has a color photo.

References: Small, 1938; Lakela & Long, 1976; Moyroud & Nauman, 1989; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: Drooping forked fern was discovered first in northeastern Palm Beach County by Steve Farnsworth in 1988 (Moyroud and Nauman, 1989), and vouchered by Richard Moyroud that same year (s.n.; NY, USF), and again in 1989 (s.n.; USF). The colony is growing on the bank of a canal adjacent to a school. The North County Water Control District manages this site. Richard Moyroud observed this colony in 2000, and fewer than 1,000 plants were thought to be present (R. Moyroud, personal communication, 19 January 2001).

Major Threats: Habitat destruction; exotic pest plant invasions, including Old World climbing fern (*Lygodium microphyllum*); hydrological modifications; poaching.

Comments: *Drooping forked fern prefers soil with a high clay content (Wunderlin & Hansen, 2000), and probably became established in South Florida after a canal was constructed, exposing a clay-like hardpan (Moyroud and Nauman, 1989). Based upon canal construction data obtained by Moyroud and Nauman, the Palm Beach County colony was less than 13 years old at the time of its discovery. Moyroud (personal communication, 19 January 2001) feels that unique conditions, including an even moisture flow across the hardpan from the adjacent uplands, low soil fertility, and highly acid soils provide the appropriate habitat for this species. It is uncertain that these conditions would be found in South Florida except in unusual, and temporary, circumstances. It seems possible that, without human disturbance, drooping forked fern would not have become well established in South Florida.*

Preliminary recommendations:

- Map and monitor plants annually.
- Develop a conservation agreement with the North County Water Control District to protect and manage Drooping Forked Fern Site. Provide technical assistance to help manage this population.
- Control exotic pest plants, especially Old World climbing fern.
- Consider introducing drooping forked fern to other sites within Palm Beach County, where it can be managed and studied.

***Gymnopogon chapmanianus* Hitchc.
Chapman's Skeleton Grass**

South Florida Status: Critically imperiled. One occurrence in scrub along State Road 764 in Charlotte County.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to Florida. Wunderlin (1998) reports it as occasional in the peninsula west to Wakulla County.

South Florida Distribution: Broward, Charlotte, Collier, and Lee counties.

South Florida Habitats: Flatwoods and scrub.

Protection Status: Listed as rare by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Smith, 1971; Long & Lakela, 1976; Hall, 1978; Wunderlin, 1998.

Synonyms: *G. floridanus* Swallen.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Chapman's skeleton grass in 1903 in pinelands in Fort Lauderdale (1030, NY). It was collected twice in Charlotte County, the first time in 1946 in flatwoods without precise locality data by O.E. Frye (s.n., FLAS), and the second time in 1999 by Richard P. Wunderlin along State Road 764 (10714, USF). The latter station is the only extant station known.

Olga Lakela collected Chapman's skeleton grass several times in Collier County beginning in 1964. She collected it first west of Immokalee (27419, USF), and again in 1964 in scrub northwest of Naples at County Road 846 (27703, USF). She collected it again in 1965 in scrub in the vicinity of Little Hickory Pass (29251, USF), and collected it twice in 1967 on Marco Island, the first time in scrub (27527, FLAS, USF), and the second in partly cleared scrub on the grounds of the schoolhouse (31185, FLAS, USF).

Olga Lakela collected Chapman's skeleton grass once in Lee County in 1967 on Pine Island in a recently cleared area, on the east side of State Road 767 north of the junction with State Road 78 (30566, USF). Gann attempted to locate this station in 2001, but it appeared to have been destroyed. However, there are

pinelands in the vicinity that could contain populations of Chapman's skeleton grass, and these sites should be surveyed.

Major Threats: Habitat destruction of only known population; fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Survey Pine Island in Lee County.
- Map and monitor known stations annually.
- Acquire State Road 764 Chapman's Skeleton Grass Site.
- Consider introducing Chapman's skeleton grass to other sites within its historical range, including the Fort Lauderdale Executive Airport Gopher Tortoise Preserve in Broward County.
- Consider restoring scrub and scrubby flatwoods on Marco Island and reintroducing Chapman's skeleton grass.

***Lactuca floridana* (L.) Gaertn.
Woodland Lettuce**

South Florida Status: Critically imperiled. One occurrence on Observation Island in Lake Okeechobee.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Annual or biennial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports this as occasional nearly throughout Florida.

South Florida Distribution: Glades County.

South Florida Habitats: Mesic hammocks.

Protection Status: Not listed by any agency.

Identification: It can be distinguished from other *Lactuca* species in Florida by having achenes with a short stout beak to 1/3 as long as the body, or no beak, rather than having a filiform beak more than 1/2 as long as the body (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Mulgedium floridanum* (L.) DC.; *Mulgedium villosum* (Jacq.) Small.

Historical Context in South Florida: Gann and Bradley first collected woodland lettuce in Glades County in 1997 on

Observation Island in Lake Okeechobee (1000, FTG). Fewer than 10 plants were found on disturbed ground in a mesic hammock.

Major Threats: Manipulation of water levels in Lake Okeechobee; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon or ephemeral in South Florida. In 1980, George N. Avery collected this species in Miami-Dade County at the edge of a guava thicket (2210, FTG). This was probably an introduced, short-lived occurrence.*

Preliminary recommendations:

- Map and monitor plants on Observation Island annually.
- Control wild hogs.

***Nelumbo lutea* Willd.
American Lotus**

South Florida Status: Critically imperiled. Three occurrences in Lake Okeechobee, Lake Hicpochee, and Lake Trafford.

Taxonomy: Dicotyledon; Nymphaeaceae.

Habit: Perennial aquatic herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as occasional in Florida from the central peninsula to the central panhandle.

South Florida Distribution: Collier, Glades, and Palm Beach counties. It needs to be vouchered in Collier County.

South Florida Habitats: Lakes.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Tobe et al. (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Wood, 1959; Long & Lakela, 1976; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Taylor, 1992; Flora of North America Editorial Committee, 1997; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *N. pentapetala* (Walter) Willd.; *Nelumbium luteum* Willd.

Historical Context in South Florida: William G. Atwater first collected American lotus in 1960 along the western shore of Lake

Okeechobee in Glades County (M-234, FLAS). The Glades County occurrence was re-vouchered in 1997 by Bradley and Woodmansee, who observed large stands of American lotus in Fisheating Bay (406, FTG). Bradley and Woodmansee also collected it that same year in Palm Beach County along the eastern edge of Torrey Island in Lake Okeechobee (384, FTG).

Florida Department of Environmental Protection biologist Jackie Smith observed plants in Lake Hicpochee in Glades County in 2000 and in Lake Trafford in Collier County in 2001 (personal communication, 26 February 2001). Black & Black (1980) reported American lotus for Big Cypress National Preserve, but this probably represented a cultivated population. American lotus has been cultivated elsewhere in South Florida outside of its historical range (e.g., Treetops Park in Broward County), but it is not known to escape from cultivation.

Major Threats: Manipulations of water levels in Lake Okeechobee; off-target damage from exotic pest plant control programs; poaching.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. The dried infructescences of this species have been collected in Lake Okeechobee and used in floral arrangements. It is unknown what impact this collecting has had on the population.*

Preliminary recommendations:

- Voucher plants in Lake Hicpochee and Lake Trafford.
- Survey Big Cypress National Preserve.
- Map known stations at least every three years.
- Monitor known stations annually.
- Determine impacts of the collecting of infructescences on American lotus.

***Nolina atopocarpa* Bartlett**
Florida Beargrass

South Florida Status: Critically imperiled. One occurrence in northwestern Lee County and southwestern Charlotte County on non-conservation lands along Burnt Store Road.

Taxonomy: Monocotyledon; Agavaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to Florida. Wunderlin (1998) reports it as occasional from the central panhandle to the central peninsula.

South Florida Distribution: Charlotte and Lee counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Listed as threatened by FDACS and as rare by FNAI.

Identification: It can be distinguished from *N. brittoniana* of central Florida by having leaves 2-4 mm wide, rather than 6-15 mm wide (Wunderlin, 1998).

References: Small, 1933a; Ward, 1978; Wunderlin, 1998; Coile, 2000.

Synonyms: *N. georgiana* Michx., misapplied.

Historical Context in South Florida: Florida beargrass has been collected three times in South Florida. All three collections were made near the Charlotte County-Lee County line off State Road 765 (Burnt Store Road). Robert B. McCartney and Nancy Bissett made the first collection in 1989 in Charlotte County (s.n., USF), followed in 1991 by Steven L. Orzell and Edwin L. Bridges in Lee County (16497, USF) and Dorothy P. Zysko in Charlotte County (s.n., USF). Gann briefly surveyed the Charlotte County stations in 2000. The McCartney and Bissett station had been destroyed, but habitat was still present in the vicinity of the Zysko station, both on private property and in the Yucca Pen Unit of the Fred C. Babcock-Cecil M. Webb Wildlife Management Area. In 2001, Gann also attempted to locate the Orzell and Bridges station. Habitat still exists at the station, but it is in private ownership and is posted. Florida beargrass is assumed to be extant at one or both of the latter two stations.

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions.

Comments: *Florida beargrass flowers in the spring, when surveys should be conducted.*

Preliminary recommendations:

- Survey appropriate habitats along Burnt Store Road in Charlotte and Lee counties, including the Yucca Pen Unit of Fred C. Babcock-Cecil M. Webb Wildlife Management Area.

- Map known stations at least every three years.
- Monitor known stations at least every year.
- Continue acquisition projects to expand Fred C. Babcock-Cecil M. Webb Wildlife Management Area and Charlotte Harbor State Buffer Preserve along Burnt Store Road.

***Orontium aquaticum* L.**
Goldenclub

South Florida Status: Critically imperiled. One occurrence on private property in Glades County.

Taxonomy: Monocotyledon; Araceae.

Habit: Perennial terrestrial herb.

Distribution: Native primarily to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin, Glades, and Lee counties, and either Collier or Hendry County.

South Florida Habitats: Cypress swamps.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration and color photos.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small first collected goldenclub in 1917 in the Okaloacoochee Slough (s.n., US), which runs through both Hendry and Collier counties, and is now partially protected in Big Cypress National Preserve, Florida Panther National Wildlife Reserve, Okaloacoochee Slough State Forest, and Okaloacoochee Slough Wildlife Management Area. Paul C. Standley collected the next specimen in 1927 in a cypress swamp in the vicinity of Fort Myers (52568, US). In 1978, Bruce E. Tatje made a single collection in Martin County on the headwaters of the south fork of the St. Lucie River (61, FAU). This collection may have been made within what is now the South Fork

St. Lucie River site, which is being managed as part of Jonathan Dickinson State Park.

In 2000, Bradley discovered goldenclub in Glades County (2095, FTG). A small colony of plants was found under a bridge along John Hendry Slough just south of the Highlands County line. The species is probably present along the creek on private property to the east and west of this bridge. It seems likely that goldenclub is present in the newly protected Fisheating Creek Wildlife Management Area.

Major Threats: Habitat destruction; hydrological modifications; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Fisheating Creek Wildlife Management Area, South Fork St. Lucie River in Jonathan Dickinson State Park, and the Okaloacoochee Slough in Big Cypress National Preserve, Florida Panther National Wildlife Reserve, Okaloacoochee Slough State Forest, and Okaloacoochee Slough Wildlife Management Area.
- Map known stations at least every three years.
- Monitor known stations annually.

***Potamogeton pusillus* L.
Small Pondweed**

South Florida Status: Critically imperiled. One occurrence in Lake Okeechobee.

Taxonomy: Monocotyledon; Potamogetonaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to North America, Mexico, and the Old World. Wunderlin (1998) reports it as occasional in Florida in the panhandle and the central peninsula.

South Florida Distribution: Charlotte, Martin, and Palm Beach counties.

South Florida Habitats: Lakes and creeks.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Small, 1933a; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *P. pusillus* subsp. *tenuissimus* (Mert. & W.D.J. Koch) R.R. Haynes & Hellq.

Historical Context in South Florida: T.S. Denike first collected small pondweed in 1973 in a pond inside the IBM Corporation complex in Boca Raton in Palm Beach County (s.n., FAU). It is not certain whether or not this population was native. In 1980, Ruben P. Sauleda made a collection in Charlotte County in the vicinity of Murdock (3385, USF). The specimen was reported to have been collected in a creek running through a pineland. Gann surveyed this area in 2000, but did not locate any plants. The Murdock area has been heavily developed and all natural waterways have been canalized. In 1983, Ken Langeland collected small pondweed in Martin County in a lake at a Florida Power and Light property in Indiantown (s.n., FLAS). The plants were stated to be frequent there. In 1997, South Florida Water Management District biologist Mike Bodle showed plants of this species to Bradley and Woodmansee at Halifax Bank in Lake Okeechobee in Palm Beach County. Bradley and Woodmansee vouchered this population (390, FTG). A few plants were seen floating in deep water.

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This is a species at the southern end of its range in Florida, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Indiantown area.
- Map known stations at least every three years.
- Monitor known stations annually.

***Rhynchospora pusilla* Chapm. ex M.A. Curtis
Fairy Beaksedge**

South Florida Status: Critically imperiled. One occurrence at Lake Trafford Flatwoods Site.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain and the West Indies. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the peninsula.

South Florida Distribution: Collier, Lee, Glades, and possibly Miami-Dade counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *R. intermixta* C. Wright.

Historical Context in South Florida: Abram P. Garber first collected fairy beaksedge in 1877, with the location given as “Everglades. Florida” (s.n., US). This station may have been in Miami-Dade County, where Garber collected extensively in 1877. In 1919, Paul C. Standley made a collection in the vicinity of Fort Myers (18905, US). In 1964, Olga Lakela made a collection in Collier County near Corkscrew Swamp Sanctuary (27057, USF). In 1998, Bradley collected fairy beaksedge at the Lake Trafford Flatwoods Site in Immokalee (1870, FTG). This is the only known extant location. Daniel B. Ward and others also collected fairy beaksedge in Glades County in 1965, southwest of Palmdale (5196, FLAS), in the vicinity of what is now the Fisheating Creek Wildlife Management Area.

Major Threats: Fire suppression; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary, Corkscrew Regional Ecosystem Watershed, and Fisheating Creek Wildlife Management Area.
- Map known stations at least every three years.
- Monitor known stations at least annually.
- Acquire Lake Trafford Flatwoods Site.

***Schizachyrium sericatum* (Swallen) Gould
Silky Bluestem**

South Florida Status: Critically imperiled. One occurrence on a roadside on Ramrod Key.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Original habitat unknown, but possibly in pinelands, openings in hammocks, or on coastal berms. Now confined to a single roadside.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Swallen, 1941; Hitchcock & Chase, 1950; Hall, 1978; Avery & Loope, 1980a; Wunderlin, 1998; Coile, 2000.

Synonyms: *Andropogon sericatus* Swallen.

Historical Context in South Florida: W.A. Silveus first collected silky bluestem in 1940 on Ramrod Key (6633, US). This collection was designated as the type specimen when Jason R. Swallen described it as a new species in 1941. No habitat data was specified. It was not seen again until 1995, when Bradley made two collections on roadsides on Ramrod Key (269, FTG; 278, FTG). Fewer than 50 plants were seen. This species was erroneously reported for Key Largo (Hall, 1978).

Major Threats: Mowing; herbicide applications; dumping.

Comments: *This is one of the state's most imperiled plant species. It will be under constant threat of extinction until a population is established within an appropriate habitat in at least one conservation area.*

Preliminary recommendations:

- Survey additional areas on Ramrod Key, including the Ramrod Key Coastal Berm Site.
- Map and monitor plants at least annually.

- Develop conservation agreement with Monroe County to insure that maintenance personnel do not accidentally kill the Ramrod Key population.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Assess appropriateness and study feasibility of introducing silky bluestem to other sites within its historical range, including Ramrod Hammocks, Florida Keys Wildlife and Environmental Area.
- Review for listing by USFWS.

***Tephrosia angustissima* Shuttlew. ex Chapm.
var. *corallicola* (Small) Isely
Coral Hoarypea**

South Florida Status: Critically imperiled. One occurrence at USDA Subtropical Horticulture Research Station.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and Cuba.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS (as *T. angustissima*) and as critically imperiled by FNAI.

Identification: *T. angustissima* is distinguished from other species of *Tephrosia* in Florida by having a glabrous style (Wunderlin, 1998). The variety *corallicola* is distinguished from other varieties of *T. angustissima* by being finely villous or canescent (Wunderlin, 1998). Chafin (2000) has illustrations and a color photo (by Hammer).

References: Small, 1909; Small, 1933a; León & Alain, 1951; Shoiners, 1962b; Long & Lakela, 1976; Austin et al., 1980b; Isely, 1982; Isely, 1990; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *T. corallicola* (Small) León; *Cracca corallicola* Small.

Historical Context in South Florida: John Kunkel Small first collected coral hoarypea in 1904 in pinelands between Coconut Grove and Cutler (2112, NY). Small (1909) later described it as a new species, *Cracca corallicola*. The next collection was not made until 1935, when Walter M. Buswell vouchered it south of

Coral Gables (s.n., FTG, NY) and photographed it in that location in 1937 (s.n., USF). In 1948, Roy O. Woodbury collected it at Cutler (s.n., FTG). It was not seen again until 1968, when George N. Avery collected it in pinelands across from Fairchild Tropical Garden (463, FLAS, FTG, USF), a station that has been destroyed. Avery made another collection at the USDA Subtropical Horticulture Research Station in 1978 (1807, FLAS; Avery's Notes, 4 January 1978). Around 1995, Bradley, Woodmansee, and Dena Garvue observed this station. Plants were found growing in an open mowed field near a small pine rockland fragment. This remains the only known station in South Florida. Fairchild Tropical Garden maintains an *ex situ* collection of coral hoarypea.

Major Threats: Destruction of plants at the USDA Subtropical Horticulture Research Station.

Comments: *The status of this species in Cuba is unknown.*

Preliminary recommendations:

- Map and monitor plants annually.
- Develop conservation agreement with USDA to protect and restore a viable population of coral hoarypea at the USDA Subtropical Horticulture Research Station.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology and conservation horticulture studies.
- Consider introducing coral hoarypea to other stations within its historical range, including Ludlam Pineland Tract.
- Determine status in Cuba.

Part 2. Plants In One Conservation Area

Adiantum villosum L. Woolly Maidenhair

South Florida Status: Critically imperiled. One occurrence at Castellow Hammock Park.

Taxonomy: Pteridophyte; Adiantaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Oolitic limestone in rockland hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has a color photo.

References: Nauman, 1987b; Wunderlin, 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. tetraphyllum* of Nauman, not Humb. & Bonpl. ex Willd.

Historical Context in South Florida: Alan Cressler discovered woolly maidenhair in 1987 in Ross Hammock in Castellow Hammock Park, and it was vouchered there that same year by Clifton E. Nauman, Roger L. Hammer, and Cressler (1881, FTG). Only one plant was present, and this individual is still the only plant known in Florida.

Major Threats: Stochastic events (e.g., hurricanes); poaching; exotic pest plant invasions; off-target damage from exotic species control efforts; long-term drainage on the Miami Rock Ridge.

Comments: *Wunderlin (1998) lists this as an exotic, but there is no evidence that this species has escaped from cultivation (Nauman, 1987b). Wunderlin & Hansen (2000) treats it as a recent range extension from the West Indies.*

Preliminary recommendations:

- Map plant(s) at Castellow Hammock Park on an annual basis.
- Monitor plant(s) on a quarterly basis.
- Protect from poaching.
- Consider establishing an *ex situ* collection of germplasm.

***Anagallis minima* (L.) E.H.L. Krause**
Chaffweed

South Florida Status: Critically imperiled. One occurrence at Corkscrew Regional Ecosystem Watershed.

Taxonomy: Dicotyledon; Primulaceae.

Habit: Annual terrestrial herb.

Distribution: Native to much of North America south to Mexico. It is also present in the Old World.

South Florida Distribution: Charlotte, Collier, Glades, and Lee counties. Reported in error for the Florida Keys in Monroe County by Small (1913). Wunderlin (1998) reports it as occasional in Florida in the peninsula and the central and western panhandle.

South Florida Habitats: Moist, usually disturbed soils.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *Centunculus minimus* L.

Historical Context in South Florida: Alvan W. Chapman first collected chaffweed in the mid 1800s along the Caloosahatchee River (s.n., US), presumably in Lee County. Paul C. Standley collected it next in Lee County in a pineland ditch in Fort Myers in 1916 (2641, US). William C. Brumbach collected chaffweed on Sanibel Island four times between 1969 (6605, FLAS) and 1973 (8253, NY). All of these collections were from damp, disturbed soils. Loran C. Anderson observed it in 1997 in the Flint Pen Strand section of what is now Corkscrew Regional Ecosystem Watershed (Anderson, 1997), where it is presumed to be extant.

Allan H. Curtiss collected chaffweed in 1901 in ditches near Punta Gorda in Charlotte County (6756, NY, USF). In 1924, John Kunkel Small and others made a collection on the edge of a swamp near Naples in Collier County (11156, NY). In 1968, Olga Lakela made a collection along State Road 29 north of Immokalee (31708, USF). Frank C. Craighead collected it in 1962 about eight miles west of Palmdale along State Road 74 in Glades County (s.n., FTG).

Major Threats: Exotic pest plant invasions; hydrological modifications.

Comments: *This is a small, annual terrestrial herb that could easily be overlooked. Collections from South Florida have been made from January through April, when surveys should be conducted.*

Preliminary recommendations:

- Voucher plants at Corkscrew Regional Ecosystem Watershed.
- Survey along Caloosahatchee River, including Caloosahatchee Regional Park.
- Survey other historical stations.
- Map and monitor known stations on a regular basis.

***Aristida floridana* (Chapm.) Vasey
Key West Threeawn**

South Florida Status: Critically imperiled. One occurrence at Little Hamaca Park.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Apparently native to South Florida. Native to Mexico.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Dry, disturbed sites.

Protection Status: Not listed by any agency due to dispute as to origin (see Comments).

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Hitchcock, 1924; Henrard, 1926; Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Wunderlin, 1998.

Synonyms: *A. ternipes* Cav., misapplied; *Ortachne floridana* (Chapm.) Nash; *Streptachne floridana* Chapm.

Historical Context in South Florida: Key West threeawn was collected first on the island of Key West in the mid 1800s by either John Loomis Blodgett (s.n., NY) or Alvan W. Chapman (s.n., NY). It was not seen again until George N. Avery observed it in 1965 on Ramrod Key on a disturbed roadside (Avery's Notes, 29 July

1965). Avery returned to that station in 1978, but the site had been destroyed (Avery's Notes, 17 August 1978). Avery also found Key West threawn on Key West along a railroad embankment in 1966, a site that was almost completely destroyed by 1978 (Avery's Notes, 7 August 1966, 30 August 1978). Bradley rediscovered Key West threawn in 1998 along a disturbed roadside at Little Hamaca Park on Key West.

Major Threats: Stochastic extinction (e.g., hurricanes); management error; exotic pest plant invasions.

Comments: *There has been some discussion as to whether or not Key West threawn is really native (e.g., Austin, 1981). It has been found only in the lower Florida Keys in open, dry, disturbed soils. Although it was originally thought to be a South Florida endemic, it is now known to be native to the Yucatan peninsula in Mexico, where it is relatively abundant. This issue needs further study. At a minimum, Key West threawn should be protected from extirpation until the issue can be resolved.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Study nativity of Key West threawn. If the species is native, implement additional recommendations.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting population at Little Hamaca Park.
- Consider introducing populations to other sites within its historical range.

***Aristolochia pentandra* Jacq.
Marsh's Dutchman's-pipe**

South Florida Status: Critically imperiled. One occurrence at Biscayne National Park.

Taxonomy: Dicotyledon; Aristolochiaceae.

Habit: Perennial vine.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Coastal rockland hammocks and coastal berms.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Correll & Correll (1982) has an illustration.

References: Chapman, 1883; Small, 1933a; Pfeifer, 1970; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected Marsh's dutchman's-pipe in 1877 in Miami (1129a; F, GH, NA, US), presumably in Brickell Hammock. In 1913, John Kunkel Small and George K. Small collected it in a hammock between Miami and Coconut Grove (4634, NY). This collection was almost certainly from Brickell Hammock. In 1926, Small and others made the last collection on the South Florida mainland at what is now Deering Estate at Cutler (s.n., USF).

Small and George V. Nash first collected Marsh's dutchman's-pipe in the Florida Keys in 1901 on Elliott Key (223, NY), in what is now Biscayne National Park. It has been collected three other times on Elliott Key, once by J.L. Fennell in 1939 (1046, UC), once by Frank C. Craighead in 1966 (s.n., FTG), and once by George N. Avery in 1978 (1823, FTG, USF). It has been observed on Elliott Key more recently by Roger L. Hammer in 1990 and 1996 (personal communication, 5 March 2001), and by Bradley and Woodmansee in 2001. The plants are primarily found on a coastal berm that runs along the eastern side of the island. Bradley and Woodmansee have collected geographical coordinates for the plants they have located on the island.

In 1904, Nathaniel L. Britton collected Marsh's dutchman's-pipe on Soldier Key (335, F, NY), also in what is now Biscayne National Park. Small and Joel J. Carter subsequently collected it there in 1909 (3141, FTG, GH, NY, US). Bradley and Woodmansee surveyed this station in 2001, but no viable habitat for this species remains due to anthropogenic disturbances and rising sea level. In 1915, Small and Charles A. Mosier made a collection on Pumpkin Key (5674, MO, NY), a privately held island just outside of Biscayne National Park in Monroe County. Small and Mosier

also made a single collection in 1912 in a hammock on Upper Matecumbe Key (3912, NY). This is the only known record for the middle Florida Keys.

Major Threats: Exotic pest plant invasions, especially latherleaf (*Colubrina asiatica*); off-target damage from exotic species control efforts; sea-level rise.

Comments: *This species is a larval food plant for the polydamus swallowtail butterfly (Battus polydamas). The presence of a population of polydamus swallowtails on Elliott Key indicates that the population of Marsh's Dutchman's-pipe on Elliott Key may be larger than thought (R.L. Hammer, personal communication, 5 March 2001).*

Preliminary recommendations:

- Survey Pumpkin Key and Upper Matecumbe Key.
- Map and monitor known stations on a regular basis.
- Control latherleaf and other exotic pest plants on Elliott Key.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider reintroducing Marsh's dutchman's-pipe to other sites within its historical range, including Addison Hammock at the Deering Estate at Cutler.
- Consider introducing Marsh's dutchman's-pipe to other sites within its historical range, including Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens within historic Brickell Hammock, and Attwood Addition, Indian Key Historic State Park on Upper Matecumbe Key.

***Asimina obovata* (Willd.) Nash
Bigflower Pawpaw**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Annonaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida.

South Florida Distribution: Glades and Martin counties. Kral (1960a) cited an improperly labeled specimen attributed to Miami-

Dade County (J. Popenoe, personal communication, 13 March 2001). The Martin County station needs to be vouchered.

South Florida Habitats: Scrub.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Nelson (1996) has a photo and an illustration; Taylor (1998) has a color photo.

References: Small, 1933a; Kral, 1960a; Godfrey, 1988; Taylor, 1992; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *Pityothamnus obovatus* (Willd.) Small.

Historical Context in South Florida: Ruben P. Sauleda first collected bigflower pawpaw in 1981 near Palmdale in Glades County (4991, FTG), in the vicinity of what is now the Fisheating Creek Wildlife Management Area. Loran C. Anderson recently discovered it at Jonathan Dickinson State Park (Anderson, 1997), but this station needs to be vouchered.

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Jonathan Dickinson State Park.
- Survey Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Asplenium abscissum* Willd.
Cutleaf Spleenwort**

South Florida Status: Critically imperiled. One occurrence at Fern Forest Nature Center.

Taxonomy: Pteridophyte; Aspleniaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin & Hansen (2000) reports it as occasional in Florida from Alachua County south to Miami-Dade County.

South Florida Distribution: Broward and Miami-Dade counties.

South Florida Habitats: Exposed limestone in rockland hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. firmum* Kunze.

Historical Context in South Florida: John J. Soar first collected cutleaf spleenwort in 1903 in a hammock near Homestead (s.n., NY), possibly at Hattie Bauer Hammock, Fuchs Hammock, or Meissner Hammock. In 1979, Grace Iverson collected cutleaf spleenwort in Broward County (s.n., USF), in what is now Fern Forest Nature Center. Bradley and Alan Cressler observed this population in 1996. Fewer than 10 plants were observed.

Major Threats: Exotic pest plant invasions; off-target damage from exotic species control programs; poaching; long-term drainage of rockland hammock habitat in both Broward and Miami-Dade counties.

Preliminary recommendations:

- Map and monitor plants at Fern Forest Nature Center.
- Protect from poaching.
- Consider augmenting population at Fern Forest Nature Center.
- Consider introducing cutleaf spleenwort to other sites within its historical range, including Hattie Bauer Hammock, Fuchs Hammock, and Meissner Hammock.

***Asplenium erosum* L.
Eared Spleenwort**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Pteridophyte; Aspleniaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to peninsular Florida, the West Indies, Central America, and South America. Wunderlin & Hansen (2000) reports it as occasional in Florida in the central and southern peninsula.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and imperiled by FNAI.

Identification: Nelson (2000) has color photos; Chafin (2000) has an illustration.

References: Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Nelson, 2000; Liogier & Martorell, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. auritum* Sw.

Historical Context in South Florida: Eared spleenwort was collected first in 1938 by Walter M. Buswell in “Big Cypress Hammock” (s.n., NY) and on the same day by W.S. Phillips in “Big Cypress” (s.n., FTG, USF). Presumably the two were collecting together. Both locations refer to the Fakahatchee Strand, now within Fakahatchee Strand Preserve State Park. Subsequent collections were made in 1938 by Roy O. Woodbury and “Waldeck” (s.n., FTG, USF), in 1943 by Buswell (s.n., FTG), in 1944 by Buswell (s.n., FTG, USF), in 1945 by Leonard J. Brass (15801, ARCH), in 1963 by J.A. Lassiter and Rita Lassiter (1, USF), in 1968 by E. Skinner and C. Weymouth (s.n., FTG), in 1978 by Daniel F. Austin and others (6760, USF; 6761, USF), and in 1978 by Clifton E. Nauman and others (330, USF). Florida Park Service biologist Mike Owen estimates that there are fewer than 1,000 plants in Fakahatchee Strand Preserve State Park (personal communication, 22 January 2001).

Major Threats: Poaching; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); hydrological modifications.

Comments: *Lakela & Long (1976), in error, reported this species as being introduced from Jamaica.*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

- Control Old World climbing fern and other exotic pest plants that threaten eared spleenwort.

***Boufferea radula* (Poir.) G. Don
Rough Strongback**

South Florida Status: Critically imperiled. One occurrence at Little Hamaca Park and nearby areas on the island of Key West.

Taxonomy: Dicotyledon; Boraginaceae.

Habit: Shrub or small tree.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

Southern Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Distinguished in the field from *B. succulenta* (syn. = *B. ovata*) by its having very rough leaves, rather than having relatively smooth leaves like adult *B. succulenta*. *B. succulenta*, however, can have rough leaves when young, and has been misidentified as *B. radula* at a number of sites in the Florida Keys. Scurlock (1987) has color photos of both species; Chafin (2000); has an illustration of *B. radula* and a photo of *B. succulenta*.

References: Nuttall, 1849; Small, 1933a; Ward & Fantz, 1977; Little, 1978; Tomlinson, 1980; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *B. revoluta* Kunth, misapplied; *Cordia floridana* Nutt.; *Ehretia radula* Poir.

Historical Context in South Florida: John Loomis Blodgett first collected rough strongback on the island of Key West between 1838 and 1853 (s.n., NY). Other collections were made in 1874 by Edward Palmer (405, NY), in 1877 by Abram P. Garber (s.n., NY), in 1895 by Allan H. Curtiss (5427, NY), and in 1913 by John Kunkel Small and George K. Small (4935, NY). It also has been collected and observed many times in several yards in the city of Key West where it is extant. George N. Avery discovered it at the Key West Cemetery in 1964 (Avery's Notes, 28 August 1964). This occurrence was vouchered by Bradley in 1995 (266, FTG), and last observed by Bradley in 2001, when fewer than 10 plants were seen. T. Ann Williams discovered rough strongback at Little

Hamaca Park in the city of Key West in 1986 (s.n., FTG). One mature individual was observed (T.A. Williams, personal communication, 6 March 2001). It was extant there in 1992, when Gann observed a single mature plant, presumably the same individual discovered by Williams. Little (1978) also reported rough strongback from Stock Island just north of Key West, although no collections from that island have been seen by the authors.

Rough strongback is cultivated throughout South Florida, and has sparingly naturalized outside of its natural range.

Major Threats: Exotic pest plant invasions; destruction of individual plants; stochastic events (e.g., hurricanes).

Preliminary recommendations:

- Map individual plants on an annual basis.
- Monitor individual plants on a quarterly basis and observe condition and reproductive status.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting population at Little Hamaca Park.
- Consider restoring rockland hammock on Key West and introducing rough strongback.

***Brasenia schreberi* J.F. Gmel.**
Watershield

South Florida Status: Critically imperiled. One occurrence at Savannas Preserve State Park.

Taxonomy: Dicotyledon; Cabombaceae.

Habit: Perennial aquatic herb.

Distribution: Native to North America, the West Indies, Central America, South America, and the Old World. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Basin marshes.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo.

References: Chapman, 1883; Small, 1933a; Wood, 1959; Long & Lakela, 1976; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *B. peltata* Pursh.

Historical Context in South Florida: Gann and Bradley first observed watershield in 1997 at Savannas Preserve State Park in Martin County. Bradley and Woodmansee vouchered this population in 2001 (1333, FTG).

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This is the southernmost station for watershield in Florida. It is unknown why there is a gap in its natural range in the rest of South Florida. It is widespread in North America and tropical America.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Burmannia flava* Mart.
Fakahatchee Bluethread**

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Monocotyledon; Burmanniaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida, Cuba, Central America, and South America.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: There is an illustration in Ward (1978).

References: Jonker, 1938; Long & Lakela, 1976; Ward, 1978; Godfrey & Wooten, 1979; Popenoe, 1986; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Jeanette P. Standley first collected Fakahatchee bluethread in 1916 in the vicinity of Fort Myers (376, NY). Leonard J. Brass made the next collection in 1946, six miles west of Miles City (15874, US), either in what is now the Fakahatchee Strand Preserve State Park or in what is now the Florida Panther National Wildlife Refuge. Ward (1978) provides an account of this discovery. Fakahatchee bluethread is extant in Big Cypress National Preserve, where John Popenoe first collected it in 1984 in the Kissimmee Billy Strand area (2394, FTG, USF). Popenoe (1986) described this discovery. Alan Herndon also collected it in 1988 in the Bear Island area of Big Cypress National Preserve (2271, FTG). Bradley collected it at two localities in Bear Island in 1997 (1067, FTG; 1099, FTG).

Major Threats: Fire suppression; recreational off-road vehicle use in Big Cypress National Preserve; wild hog damage; exotic pest plant invasions.

Comments: *Fakahatchee bluethread is overlooked easily in the field. It flowers spring through fall, when surveys should be conducted. Ward (1978) suggested that it may be partially saprophytic, and dependent upon mycorrhizal fungi for the decomposition of organic matter.*

Preliminary recommendations:

- Survey Kissimmee Billy Strand area of Big Cypress National Preserve, Fakahatchee Strand Preserve State Park, and Florida Panther National Wildlife Refuge.
- Map and monitor known stations on a regular basis.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.

***Caesalpinia pauciflora* (Griseb.) C. Wright
Fewflower Holdback**

South Florida Status: Critically imperiled. One occurrence at the National Key Deer Refuge and surrounding private properties on Big Pine Key.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Isely, 1982; Long & Lakela, 1976; Isely, 1980; Scurlock, 1987; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Allan H. Curtiss first collected fewflower holdback in 1880 on Big Pine Key (713, US, NY). Since that collection, numerous other collections have been made on Big Pine Key, where the species occurs today within the boundaries of National Key Deer Refuge. T. Ann Williams has observed plants on Big Pine Key in pinelands south of Watson Boulevard and east of Key Deer Boulevard, and in another area in a pineland near the industrial area behind the Chamber of Commerce building (personal communication, 6 March 2001).

Francis W. Pennell vouchered plants on Cudjoe Key in 1917 (9563, US). It was not seen there again until George N. Avery observed it in 1964 and 1965 (Avery's Notes, 1964-1965). Bruce F. Hansen and others vouchered it there in 1985 (10674, USF, FTG). Presumably this station was in or near National Key Deer Refuge property on the island. In 1964, Avery discovered a population on Summerland Key (Avery's Notes, 11 February 1964). Robert W. Long and R. Broome vouchered this population in 1967 (2480, USF). No recent reports from this island have been seen, and it is probably extirpated there. Suitable habitat for this species may exist on other islands, such as Sugarloaf Key or Little Pine Key. T. Ann Williams has searched for this species extensively on No Name Key to no avail (personal communication, 6 March 2001).

Davis (1942) reported fewflower holdback from the lower Sandy Keys, west of Key West. No specimens from this area have been seen. Gann and Bradley surveyed this area in 1996, but no plants were seen. Davis' report may have been made in error.

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction; sea-level rise.

Preliminary recommendations:

- Survey Cudjoe Key and Summerland Key.
- Map and monitor known stations on a regular basis.
- Acquire private sites with populations of fewflower holdback and add to National Key Deer Refuge.

***Campylocentrum pachyrrhizum* (Rchb. f.) Rolfe**
Leafless Bentspur Orchid

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has both illustrations and color photos; Bell & Taylor (1982) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Ward, 1978; Bell & Taylor, 1982; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton first collected leafless bentspur orchid in 1905 (s.n., NY), presumably in what is now Fakahatchee Strand Preserve State Park. It was subsequently vouchered there by Daniel B. Ward in 1965 (5364, FLAS, FSU) and by George N. Avery in 1969 (2075, FTG). It is extant in deep sloughs in the center of the strand. Gann and Woodmansee observed it there in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 1,000 plants present in the Fakahatchee Strand (personal communication, 7 February 2001).

E.P. St. John also made two collections in the late 1930s from the Deep Lake area (s.n., FLAS; s.n., FLAS), which is located immediately to the east of the Fakahatchee Strand within Big Cypress National Preserve. However, St. John's Deep Lake specimens all appear to be from the Fakahatchee Strand. Black & Black (1980) reported leafless bentspur orchid from Big Cypress National Preserve based upon a 1956 specimen, which we have been unable to verify. It seems doubtful that leafless bentspur orchid was ever present in Big Cypress National Preserve.

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*).

Comments: *This is one of the few epiphytic orchids that will grow on the trunks of royal palms (Roystonea regia) (R.L. Hammer, personal communication, 19 February 2001).*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten leafless bentspur orchid.

***Campyloneurum angustifolium* (Sw.) Fée**
Narrow Strap Fern

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Miami-Dade and Collier counties.

South Florida Habitats: Rockland hammocks and strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has color photos; the IRC Website has a color photo.

References: Eaton, 1906; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Ward, 1978; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Polypodium angustifolium* Sw.

Historical Context in South Florida: John J. Soar and Alvah A. Eaton first collected narrow strap fern in 1903 in Timms Hammock (Eaton, s.n., NY; Small, 1938), now part of the Miami-Dade County park Camp Owaissa Bauer. Eaton (1906) reported that there were a considerable number of plants in Timms Hammock. It was collected again in Timms Hammock by Charles A. Mosier in 1918 and 1919 (s.n., NY; s.n., NY), and by Mary W. Diddell in 1932 (s.n., FLAS). The last collection of narrow strap fern at Timms Hammock was by "Mrs. Peterson" in 1935 (s.n., FTG).

E.P. Kearsley first collected narrow strap fern outside of Miami-Dade County in 1949 "40 miles west of Miami" (s.n., NY). It is probable that this collection came from what is now the Pinecrest region of Big Cypress National Preserve, where there are numerous rockland hammocks providing appropriate habitat for narrow strap fern.

In 1931, John Kunkel Small mentioned narrow strap fern only for Timms Hammock, but, by the time of his 1938 work, he knew of its presence in the Fakahatchee Strand (Small 1931, 1938). Eaton (1906) reported that Oakes Ames observed numerous plants in bayheads near Naples, which referred probably to the Fakahatchee Strand. Bruce E. Tatje and Jane H. Thompson vouchered it at Fakahatchee Strand Preserve State Park in 1978 (157, FAU, USF). Gann and Woodmansee observed it there in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 100 plants present in Fakahatchee Strand Preserve State Park (personal communication, 22 January 2001).

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*).

Comments: *Although Small (1931, 1938) stated that its preferred habitat was live oak (Quercus virginiana) trees, this preference refers to its habitat in Timms Hammock. Plants in the Fakahatchee grow on hardwoods, such as pond apple (Annona glabra) and pop ash (Fraxinus caroliniana).*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Survey Pinecrest region of Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten narrow strap fern.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting Fakahatchee population.
- Consider reintroducing narrow strap fern to other sites within its historical range, including Timms Hammock in Camp Owaissa Bauer.

Carex verrucosa Muhl.
Warty Sedge

South Florida Status: Critically imperiled. One occurrence in two conservation areas (Corkscrew Regional Ecosystem Watershed & Corkscrew Swamp Sanctuary).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, and Palm Beach counties.

South Florida Habitats: Freshwater swamps.

Protection Status: Not listed by any agency.

Identification: There is an illustration in Godfrey & Wooten (1979).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *C. joorii* L.H. Bailey, misapplied.

Historical Context in South Florida: Paul C. Standley first collected warty sedge in 1919 near Fort Myers (18952, US). In 1921, Walter M. Buswell made another collection in Lee County from an unspecified station (s.n., FTG). Since then, it remained uncollected in Lee County until 1995, when Steven L. Orzell and Edwin L. Bridges collected it in the Flint Pen Strand (24160, FTG), now part of the Corkscrew Regional Ecosystem Watershed. In 1968, Olga Lakela made a single collection of this species in Collier County in the Corkscrew area (31353, USF). It also is reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in both Collier and Lee counties. It is assumed to be extant there, but needs to be vouchered. These two stations are thought to represent a single population.

A collection was made in Palm Beach County in 1980 by David and Sally Black at the J.W. Corbett Wildlife Management Area (851, FTG). The authors have spent considerable time at Corbett, but have not observed warty sedge there. This occurrence is treated as historical.

Major Threats: Exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); hydrologic modifications.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Corkscrew Swamp Sanctuary.
- Survey J.W. Corbett Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Catopsis nutans* (Sw.) Griseb.
Nodding Strap Airplant**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Bromeliaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has a color photo.

References: Long & Lakela, 1976; Smith & Downs, 1977; Ward, 1978; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Henry E. Brown and William G. Atwater discovered nodding strap airplant in 1959 in Collier County (Ward, 1978), in what is now Fakahatchee Strand Preserve State Park. C. Eugene Delchamps vouchered it there that same year (s.n., US). In a 1960 letter from Brown to Lyman B. Smith of the Smithsonian Institution, Brown described the many stations where he and Atwater found plants, often in abundance, believing it to be the most abundant *Catopsis* in the Fakahatchee. Roger L. Hammer has observed it at a dozen or more stations within the Fakahatchee Strand (personal communication, 26 March 2001). Nodding strap airplant is extant there, and was observed in 2000 by Gann and Woodmansee on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 1,000 plants present in the Fakahatchee Strand (personal communication, 11 June 2000).

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially by Old World climbing fern (*Lygodium microphyllum*).

Comments: *Chapman (1883) used Catopsis nutans for plants that were really C. berteroniana (Small, 1905), and Small (1933a) used the name Catopsis nutans to refer to plants that were really C. floribunda (Ward, 1978).*

Preliminary recommendations:

- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten nodding strap airplant.

***Cayaponia americana* (Lam.) Cogn.
American Melonleaf**

South Florida Status: Critically imperiled. One occurrence at Castellow Hammock Park.

Taxonomy: Dicotyledon; Cucurbitaceae.

Habit: Perennial vine.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Not listed by any agency.

Identification: Correll & Correll (1982) has an illustration of a related species, *C. racemosa*. In South Florida, *Cayaponia americana* most resembles *Melothria pendula*. *Cayaponia* can be distinguished from *Melothria* by its green or greenish white corolla instead of a yellow corolla and its fruit in racemes rather than solitary fruit (R.P. Wunderlin, personal communication, 23 May 2001).

References: Small, 1905; Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *C. racemosa* Cogn., misapplied.

Historical Context in South Florida: American melonleaf was collected first by Ferdinand Rugel in 1846 in "Florida" (s.n., US), but this specimen almost certainly came from Miami-Dade County. John Kunkel Small and Joel J. Carter made the next collection in 1903 between Cutler and Camp Longview (792, NY). Camp Longview was historically located to the west of present day Florida City. Small and Percy Wilson made another collection near Camp Longview in 1904 (1593, NY). Small (1905) reported on his discovery of this species in Florida. In 1906, Small and Carter collected American melonleaf in Castellow Hammock (2722, NY), now part of Castellow Hammock Park. It was

observed there several times by George N. Avery from 1976 to 1982 (Avery's Notes), and was vouchered by Avery in 1976 (1245, FTG) and 1982 (2370, GH, FTG). Gann and Bradley observed fewer than 100 plants there in 1997.

Major Threats: Exotic pest plant invasions; off-target damage from exotic plant species control efforts.

Preliminary recommendations:

- Map and monitor plants at Castellow Hammock Park.
- Control exotic pest plants, while preventing off-target damage to American melonleaf.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider introducing American melonleaf to other sites within its historical range.
- Review for listing by FDACS and FNAI.

***Celtis iguanaea* (Jacq.) Sarg.
Iguana Hackberry**

South Florida Status: Critically imperiled. One occurrence at Mound Key Archaeological State Park.

Taxonomy: Dicotyledon; Ulmaceae.

Habit: Shrub.

Distribution: Native to South Florida, central Florida (Manatee County), the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Shell mounds.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Chafin (2000) has an illustration; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Ward, 1978; Tomlinson, 1980; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Momisia iguanaea* (Jacq.) Rose & Standl.

Historical Context in South Florida: John Kunkel Small first collected iguana hackberry in 1922 on Horr's Island in Collier County (10479, GH, NY). George N. Avery collected it again on Horr's Island in 1970 (838, FTG, USF), as did Bruce F. Hansen and others in 1988 (11806, USF). It was apparently absent from the island when Bradley and Joseph O'Brien surveyed it in 1996. The island was in the process of being developed at the time, and the species is probably extirpated there.

George Cooley and others collected iguana hackberry in 1954 on Sanibel Island in Lee County (s.n., GH). William C. Brumbach also collected it on Sanibel Island in 1972 at the J.N. "Ding" Darling National Wildlife Refuge (7856, US). However, it was not recorded for the refuge by Wunderlin et al. (1980), who conducted extensive fieldwork there in 1978 and 1979. Brumbach collected it on upper Captiva Island in 1971 (7772, GH, USF), 1972 (8060, GH), and again in 1978 (9348, FTG, GH, USF). It is assumed to be extirpated there due to development. Susan Todd collected it at the Mound Key Archaeological State Park in 1974 (44, USF). It was observed there in 2001 by Gann and Florida Park Service biologists R. "Bobby" Hattaway and Sally Braem.

Major Threats: Exotic pest plant invasions.

Comments: *This species is reported in the United States only for peninsular Florida and southern Texas, although the report of plants from Texas may be in error (Flora of North America Editorial Committee, 1997). Joseph H. Simpson collected the Manatee County specimen in 1891 (s.n., GH, NY), where it is extirpated. The only known plants in the continental United States are at Mound Key Archaeological State Park.*

Preliminary recommendations:

- Survey J.N. "Ding" Darling National Wildlife Refuge.
- Map and monitor known stations on a regular basis.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology and conservation horticulture studies.
- Consider augmenting population at Mound Key Archaeological State Park.

- Consider reintroducing iguana hackberry to other sites within its historical range.
- Consider introducing iguana hackberry to other sites within its historical range.
- Review FNAI rank.

***Cenchrus myosuroides* Kunth**
Big Sandbur

South Florida Status: Critically imperiled. One occurrence at Dry Tortugas National Park.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida, the West Indies, Texas, Mexico, Central America, and South America.

South Florida Distribution: Lee, Collier and Monroe counties.

South Florida Habitats: Shell mounds, coastal berms, dunes, and disturbed areas.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Chase, 1920; Small, 1933a; Hitchcock & Chase, 1950; Delisle, 1963; Long & Lakela, 1976; Hall, 1978; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: John Loomis Blodgett first collected big sandbur between 1838 and 1853 on the island of Key West. Allan H. Curtiss made the next collection prior to 1896 on Indian Key (3620, ISC, US), in what is now Indian Key Historic State Park. Curtiss collected it again on Indian Key in 1896 (5643, ISC, MO, US), and John Kunkel Small and Nathaniel L. Britton collected it there in 1919 (9347, NY). John Kunkel Small and others collected it on West Summerland Key in 1911 (3629, NY). It was observed there again by George N. Avery in 1966 (Avery's Notes, 12 February 1966), and vouchered again by John Popenoe in 1981 (1950, USF). F.R. Fosberg made a collection on Loggerhead Key in Dry Tortugas National Park in 1962 (43041, US). Reimus and Robertson (1997) reported that it has been observed south of the lighthouse on that key since 1962. Richard E. Reimus reports that he observed perhaps 10-15 plants on

Loggerhead Key in March 2001 (personal communication, March 12, 2001).

There are also a few collections of big sandbur from the middle and upper Keys. Percy Jones made a collection "South of Upper Matecumbe Key" in 1898 (985, US). This collection was made on railroad and road fill, and may not have represented a native population. Agnes Chase made a collection on Key Largo in 1907 (3936, US), in an "open hammock near Planter." This may have been in the vicinity of what is now Dove Creek Hammocks, Florida Keys Wildlife and Environmental Area, near the southern end of Key Largo. Jason R. Swallen made a collection on "Key Vacca (Grassy Key)" in 1935 (5201, US), presumably in the vicinity of what is now Curry Hammock State Park. George N. Avery observed it once at Boot Key south of Marathon 1964 (Avery's Notes, 7 August 1964). In 1980, R.W. Pohl made a collection on dunes on the Atlantic side of 20th Street on "Key Vaca" (13901, ISC). This collection was probably made on Boot Key.

Additional collections and reports have been made for islands in Florida Bay, in what is now Everglades National Park. Alvah A. Eaton made the first collection on Joe Kemps Key in 1905 (1345, US). William B. Robertson collected it on Frank Key, just south of Joe Kemps Key, in 1968 (s.n., FTG).

Abram P. Garber collected big sandbur at "Caloosa" in 1878 (11906, MO), presumably in what is now coastal Lee County. It also was collected on Marco Island in coastal Collier County. Joseph H. Simpson made the first collection there in 1891 (281, US). Subsequent collections were made by Harold N. Moldenke in 1930 (s.n., FTG) and Olga Lakela in 1962 (s.n., USF; 29070, USF; 29086, USF; 29243, USF).

Major Threats: Exotic pest plant invasions; sea-level rise.

Comments: *Wunderlin (1998) lists big sandbur only for Collier and Monroe counties. There is a specimen collected by Robert Combs in 1898 at Homosassa in Citrus County (Chase, 1920), where it is apparently extirpated. J. Richard Abbott also collected it in Levy County in 1996 (9518, FLAS). This is a perennial*

species that rarely produces inflorescences in its first year (Delisle, 1963).

Preliminary recommendations:

- Survey Curry Hammock State Park, West Summerland Key and islands in Florida Bay in Everglades National Park, and Tigertail Beach County Park on Marco Island.
- Map and monitor known stations on a regular basis.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting population at Dry Tortugas National Park.
- Consider reintroducing big sandbur to other sites within its historical range, including Indian Key Historic State Park.
- Review for listing by FDACS and FNAI.

***Cheilanthes microphylla* (Sw.) Sw.
Southern Lip Fern**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Pteridophyte; Adiantaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southern United States, the West Indies, Mexico, Central America, and South America. Wunderlin & Hansen (2000) reports it as rare in Washington County and the peninsula. Wunderlin & Hansen (2001) record it for Alachua, Citrus, Collier, Duval, and Washington counties.

South Florida Distribution: Collier County.

South Florida Habitats: Coastal shell mounds.

Protection Status: Listed as endangered by FDACS and as rare by FNAI.

Identification: Nelson (2000) has a black and white photo; Wunderlin & Hansen (2000) has illustrations.

References: Chapman, 1883; Small, 1938; Evans, 1975; Lakela & Long, 1976; Long & Lakela, 1976; Ward, 1978; Correll & Correll, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000

Synonyms: None.

Historical Context in South Florida: John Kunkel Small first collected southern lip fern in 1916 on the Turner River Mound near the mouth of the Turner River (7756, FTG, NY), now in Everglades National Park. It was collected at the same station in 1933 by Hugh O'Neill (7590, NY, US), in 1938 by John H. Davis, Jr. (s.n., FLAS), and in 1960 by Frank C. Craighead (s.n., FLAS). Bradley and Woodmansee observed these plants in 1997. Fewer than 100 plants were seen growing in small swales on the backside of the mound.

In 1977, Sally Black and K. Hipps collected southern lip fern on Horr's Island in association with *Celtis iguanaea* (s.n., FTG). Bradley and Joseph O'Brien surveyed Horr's Island in 1996, but southern lip fern was not seen. The island was undergoing rapid residential development at that time. James N. Burch reported that he had seen some plants in the 1990s on an island in Addison Bay that had been mostly destroyed for fill (personal communication, November, 2000). It is unknown whether or not this station is extant. There have been other reports of southern lip fern on shell mounds in southwestern Florida, but none that we have been able to verify. More surveys should be conducted in the Ten Thousand Islands region.

There was one station in Miami-Dade County that was observed as early as 1959 (Darling, 1962), and collected in 1963 by E.S. Ford (s.n., FLAS). This specimen was found growing on a rock wall in Matheson Hammock Park, but it is not clear that this station represented a native population of this fern, or even if this actually represented *C. microphylla* (Knoblock, 1967; Evans, 1975; Wunderlin & Hansen, 2000).

Major Threats: Exotic pest plant invasions; sea-level rise; poaching.

Comments: *It appears that the natural habitat and range of southern lip fern is on shell mounds in southwestern Florida, and that it has never been common. However, with the loss of the Horr's Island station, it would be prudent to establish at least one other population between Turner River Mound and Horr's Island.*

Preliminary recommendations:

- Survey shell mounds in the Ten Thousand Islands region.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider introducing southern lip fern to other sites within its historical range.

***Chrysopsis mariana* (L.) Elliott
Maryland Goldenaster**

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) lists it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte and Collier counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Small, 1933a; Cronquist, 1980; Semple, 1981; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Heterotheca mariana* (L.) Shinners.

Historical Context in South Florida: Elliott Brown collected Maryland goldenaster once in 1985 in cleared flatwoods at the “head of Lake Port Charlotte” (s.n., USF), presumably in the vicinity of Port Charlotte in Charlotte County. The locality data for this specimen is confusing, and Gann was unable to find this station in 2000. Also, it is unclear whether or not this station represented a native population.

Bradley collected Maryland goldenaster again in 1997 in the Bear Island area of Big Cypress National Preserve (1085, FTG, USF). Bradley and Woodmansee observed it there as recently as 2001.

Major Threats: Fire suppression; recreational off-road vehicle use in Big Cypress National Preserve; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Maryland goldenaster flowers during the fall, when surveys should be conducted.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Clitoria mariana* L.
Atlantic Pigeonwings**

South Florida Status: Critically imperiled. One occurrence at Juno Dunes Natural Area.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial vine.

Distribution: Native to the eastern United States. Wunderlin (1998) lists it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Mesic flatwoods, scrubby flatwoods, and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Isely, 1990; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Martusia mariana* (L.) Small.

Historical Context in South Florida: John Kunkel Small and others first collected Atlantic pigeonwings in 1915 in a pineland south of the Miami River (6432, FLAS, NY). William G. Atwater made the next collection in 1958 on Marco Island in Collier County (s.n., FLAS). Nixon Smiley collected Atlantic pigeonwings in 1976 in the Kissimmee Billy Strand area of what is now Big Cypress National Preserve (s.n., FTG). Donovan S. Correll and others vouchered it there that same year (47169, FTG). It is unknown whether or not plants at this station are extant. Atlantic

pigeonwings was recorded for Palm Beach County at Juno Dunes Natural Area by Palm Beach County biologist Steve Farnsworth (1995a, 1997). Bradley and Woodmansee vouchered this station in 1997 (339, FTG). It is estimated that fewer than 10 plants are present.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Kissimmee Billy Strand area in Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.
- Consider feasibility of restoring scrubby flatwoods on Marco Island and reintroducing Atlantic pigeonwings.
- Consider restoring pine rocklands along the Miami River and reintroducing Atlantic pigeonwings.

***Coelorachis tuberculosa* (Nash) Nash
Florida Joint-tail Grass**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park and perhaps adjacent private properties.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Depression marshes.

Protection Status: Listed as threatened by FDACS and as rare by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration; Tobe et al. (1998) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000.

Synonyms: *Manisuris tuberculosa* Nash.

Historical Context in South Florida: John Popenoe first collected Florida joint-tail grass in 1975 at Jonathan Dickinson State Park (350, FTG). It also was collected there in 1995 by Edwin L. Bridges and Randy L. Mears (23905, FTG), and later that year by Bradley (166, FTG). Sally Black also collected it in 1989 near Jonathan Dickinson State Park at the Diamond T. Ranch in Martin County (1174, FLAS). It may be present at this or other private properties adjacent to Jonathan Dickinson State Park.

Major Threats: Exotic pest plant invasions; hydrological modifications; wild hog damage; habitat destruction outside of Jonathan Dickinson State Park.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey appropriate habitats in Martin County for additional plants.
- Map and monitor known stations on a regular basis.
- Acquire lands with depression marshes near Jonathan Dickinson State Park.

***Croton humilis* L.
Pepperbush**

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Shrub.

Distribution: Native to South Florida, the West Indies, and Mexico.

South Florida Distribution: Collier and Monroe counties.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: There are 12 species of *Croton* in Florida. Wunderlin (1998) has a key. This species superficially resembles *Rivina humilis*. The IRC Website has a color photo

References: Chapman, 1883; Ferguson, 1901; Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *C. berlandieri* Torr.

Historical Context in South Florida: Alva Bennett first collected pepperbush in 1834 or 1835 on the island of Key West (s.n., NY). It was collected there again by John Loomis Blodgett between 1938 and 1852 (s.n., NY), by Allan H. Curtiss in the late 1800s, and by John Kunkel Small in 1913 (4899, NY; s.n., FTG). In 1952, it was collected at Cactus Hammock on Big Pine Key by Ellsworth P. Killip (41961, NY), and later the same year by “Dickson” (s.n., FTG). Cactus Hammock is located within the National Key Deer Refuge.

Hugh O’Neill made the first collection on the mainland in the Pinecrest area in 1929 (s.n., FTG), either in or near what is now Big Cypress National Preserve. Other vouchers were collected in that area by Frank C. Craighead in 1963 (s.n., USF), by George N. Avery in 1971 (1040, FTG, USF), and by David and Sally Black in 1978 (218, FTG). Black & Black (1980) reported it as rare in Big Cypress National Preserve. Ann Buckley and Ted Hendrickson last vouchered this station in 1984 (46, FAU), but it is assumed to be extant.

It also was collected once in Miami-Dade County in 1978 as a weed at Fairchild Tropical Garden by Donovan S. Correll (50387, FTG). This should not be considered part of its natural range in Florida.

Major Threats: Exotic pest plant invasions.

Comments: *Plants with a known provenance from the Pinecrest area are in cultivation by Joyce W. Gann and by Bradley.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider reintroducing pepperbush to sites within its historical range, including Cactus Hammock in the National Key Deer Refuge.

- Consider introducing pepperbush to other sites within its historical range, including Little Hamaca Park.
- Review for listing by FNAI.

***Cyperus squarrosus* L.
Bearded Flatsedge**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (National Key Deer Refuge) and one non-conservation area (Valhalla Rock Barren Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the United States, Mexico, Central America, South America, the West Indies, and the Old World. Wunderlin (1998) reports it as occasional in Florida in South Florida, and in Hillsborough County, Escambia County, and the central panhandle.

South Florida Distribution: Collier County and the Monroe County Keys.

South Florida Habitats: Coastal rock barrens, rockland hammocks, shell mounds, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: There are about 50 species of *Cyperus* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; McLaughlin, 1944; Long & Lakela, 1976; Godfrey & Wooten, 1979; Correll & Correll, 1982; Wunderlin, 1998.

Synonyms: *C. aristatus* Rottb.; *C. inflexus* Muhl.

Historical Context in South Florida: John Loomis Blodgett first collected bearded flatsedge between 1838 and 1853 on the island of Key West (s.n., NY). It also was observed at Key West by J. Cosmo Melville in 1872 (Melville, 1884). Subsequent collections were made by John Kunkel Small and Elizabeth W. Small in 1913 (4885, NY) and by Small and Charles A. Mosier in 1915 (5981, NY). Small and others made a collection on Big Pine Key in 1921 (10144, NY). This collection was made on the southern end of the island, probably in Cactus Hammock, which is now part of the National Key Deer Refuge. George N. Avery observed this population in 1964 (Avery's Notes, 23 August 1964) and vouchered it there in 1971 (1074, USF). Bradley observed this

population in 2001. In 1966, Avery also observed plants in Watson Hammock on Big Pine Key (Avery's Notes, 1 July 1966). In 1966, Avery observed plants on Crawl Key at the Valhalla Rock Barren site (Avery's Notes, 31 August 1966), and he vouchered this population in 1981 (s.n., USF). Bradley re-vouchered plants there in 1998 (1468, FTG, USF). It is estimated that fewer than 100 plants occur on Crawl Key.

Olga Lakela collected bearded flatsedge first in Collier County in 1965 on a shell mound on Marco Island (29238, NY, USF). This station has been destroyed. Bradley collected bearded flatsedge at a second station in Collier County in Immokalee in 1998 (1853, FTG, USF). This population was growing along the edge of a road, and may not represent a native population.

Major Threats: Habitat destruction; sea-level rise.

Preliminary recommendations:

- Survey Cactus Hammock and Watson Hammock on Big Pine Key in the National Key Deer Refuge.
- Map and monitor known stations annually.
- Acquire Valhalla Rock Barren site.
- Consider introducing bearded flatsedge to other sites within its historical range, including Little Hamaca on Key West.

***Dalea pinnata* (J.F. Gmel.) Barneby var. *pinnata*
Summer Farewell**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photograph. The species is distinguished from other species of *Dalea* in South Florida by having flower spikes subtended by a conspicuous involucre and by having plumose calyx segments (Wunderlin

1998). The variety is distinguished from var. *adenopoda* by having leaflets that are filiform to linear rather than elliptic-oblongate and 0.3-0.6 mm wide rather than 1-2 mm wide (Wunderlin, 1998).

References: Small, 1933a; Long & Lakela, 1976; Barneby, 1977; Isely, 1990; Wunderlin, 1998.

Synonyms: *Kuhnistera pinnata* (J.F. Gmel.) Kuntze;
Petalostemon pinnatum (J.F. Gmel.) S.F. Blake.

Historical Context: Richard Meyers first collected summer farewell in 1967 at Jonathan Dickinson State Park (s.n., FAU). Roy O. Woodbury also collected it there in 1989 (s.n., FTG). In 1997, Bradley and Woodmansee collected it along the Loxahatchee River within Jonathan Dickinson State Park (585, FTG).

A number of authors have reported occurrences of *Dalea pinnata* or *Petalostemon pinnata* from sites in Collier, Lee, Palm Beach, and Martin counties. Reports in Palm Beach and Martin counties may be referable to this taxon, but they need to be verified. Reports from Collier and Lee counties probably refer to *D. pinnata* var. *adenopoda*.

Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Dichantherium scabriusculum* (Elliott)
Gould & C.A. Clark
Woolly Witchgrass**

South Florida Status: Critically imperiled. One occurrence at Pal-Mar.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to Hillsborough County.

South Florida Distribution: Palm Beach County, where it is disjunct from the nearest population in Hillsborough County.

South Florida Habitats: Wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration; Tobe et al. (1998) has a photo and illustrations. This is a large *Dichantherium* with culms 1-1.5 meters tall (Hitchcock & Chase, 1950).

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Hansen & Wunderlin, 1988; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Panicum cryptanthum* Ashe; *Panicum scabriusculum* Elliott.

Historical Context in South Florida: Bradley and Woodmansee first collected woolly witchgrass in 1997 at Pal-Mar in Palm Beach County (229, FTG). Fewer than 10 plants were seen in one small colony. It has been reported for Dupuis Reserve (Woodbury, no date), which is located nearby in Palm Beach and Martin counties, but this report needs to be verified.

Major Threats: Drainage of wet flatwoods habitat; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve, Pal-Mar Natural Area, and un-acquired portions of the Pal-Mar CARL Site.
- Map and monitor known stations on a regular basis.

***Digitaria pauciflora* Hitchc.
Twospike Crab Grass**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands and marl prairies.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Hitchcock & Chase (1950) has an illustration; the IRC Website has a color photo.

References: Small, 1933a; Henrard, 1950; Hitchcock & Chase, 1950; Hall, 1978; Avery & Loope, 1980a; Avery, 1983b; Webster & Hatch, 1990; Wunderlin, 1998; Bradley & Gann, 1999b; Coile, 2000; USFWS, 2000.

Synonyms: *Syntherisma pauciflorum* (Hitchc.) Hitchc. ex Small.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected twospike crab grass in 1903 between Cutler and Camp Longview in Miami-Dade County (916, NY). Alvah A. Eaton was probably with Small and Carter when he collected it also in 1903 (230, US), reporting the station as Cutler. Twospike crabgrass was collected next by W.A. Silveus in 1939 in South Miami (5285, TAES). It was not seen again until 1963 when Frank C. Craighead collected it on Long Pine Key in Everglades National Park (s.n., FTG). It subsequently was found at many stations on Long Pine Key by a number of botanists. George N. Avery gives detailed notes about finding it at many stations from 1978 to 1980 (Avery's Notes, 1978-1980). Gann and Bradley observed it on Long Pine Key in 2000. In 2001, Gann and Bradley assisted Fairchild Tropical Garden biologists Cynthia Lane, Meghan Fellows, and Jennifer Possley, who began the process of mapping twospike crabgrass in Everglades National Park.

In 1996, Bradley and Roger L. Hammer found a single plant at the Luis C. Martinez U.S. Army Reserve Station in the Richmond Pine Rocklands (Hammer, 1996c). Only a single sterile plant was observed in a marl prairie. While it was observed several times in 1996, surveys in subsequent years have failed to find this plant. It may be extirpated there, but additional surveys are needed.

There are three specimens labeled as having been collected on Big Pine Key in the U.S. National Herbarium. Jason R. Swallen collected them all on the same day in 1954. From an examination of Swallen's collection books at the herbarium library, it seems

unlikely that Swallen actually collected this species on Big Pine Key.

Major Threats: Habitat destruction at Luis C. Martinez U.S. Army Reserve Station; hydrological modifications; fire suppression; exotic pest plant invasions.

Comments: *This species may be sensitive to hydrological changes, which may have contributed to its demise at the Richmond Pine Rocklands. It may also be affected, negatively or positively, by the Everglades restoration. An increase in water delivery to Long Pine Key north of main park road could have a negative impact upon this species.*

Preliminary recommendations:

- Continue surveys at Luis C. Martinez U.S. Army Reserve Station.
- Continue mapping plants at Everglades National Park.
- Monitor plants at Everglades National Park on a regular basis.
- Transfer surplus 144-acre parcel at Luis C. Martinez U.S. Army Reserve Station to a conservation agency.
- Conduct conservation biology and conservation horticulture studies.
- Conduct research to determine the effects of the Everglades restoration on twospike woolly crabgrass.
- Encourage USFWS to list *Digitaria pauciflora*.

***Eleocharis albida* Torr.
White Spikerush**

South Florida Status: Critically imperiled. One occurrence at Bill Baggs Cape Florida State Park.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain west to Texas and Mexico. It is also native to Bermuda. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Lee, Hendry, Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Moist brackish soils.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Ward & Hodgson, 1975; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Joseph H. Simpson first collected white spikerush in Fort Myers in 1892 (588, NY). Albert S. Hitchcock also collected it in Fort Myers in 1900 (405, US). The next collections in Lee County were not made until 1975 and 1976 when William C. Brumbach vouchered it on Sanibel Island at “Caloosa Bayous” (8781, USF; 9031, FTG, USF). This station appears to be near or within the J.N. “Ding” Darling National Wildlife Refuge, but white spikerush was not recorded for that site by Wunderlin et al. (1980), who conducted extensive inventory work there in 1978 and 1979.

In 1956, white spikerush was collected in “Palm Beach & Martin Cos., Jupiter Island” by George R. Cooley and Erdman West (s.n., USF). It was mapped for both of these counties by Ward & Leigh (1975), which has been followed by Wunderlin & Hansen (2001). It is unclear if white spikerush was collected in both counties, or only one of them. Frank C. Craighead made a collection in Hendry County in 1962, somewhere along a 17-mile stretch of State Road 29 between Felda and La Belle (s.n., FTG). In 1967, Olga Lakela collected white spikerush in Collier County on Marco Island in a beach lagoon (30960, USF). Marco Island has been extensively developed since that time, and it is probably extirpated there.

White spikerush is currently known only from the cultural area at Bill Baggs Cape Florida State Park. William T. Gillis first collected it there in 1970 (9262, FTG). It was subsequently collected there by Gillis in 1971 (10865, FTG, USF), by George N. Avery and others in 1972 (1196, USF), and by Gann and others in 1995 (136, FTG). It was observed there as recently as 2000 by Gann and Florida park service biologist Janice A. Duquesnel. Fewer than 100 plants were seen. The population appeared to be declining due to the installation of a nature trail and other factors.

Major Threats: Habitat degradation; exotic pest plant invasions; hydrological modifications.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Blowing Rocks Preserve, the Jupiter Island portion of Hobe Sound National Wildlife Refuge, the vicinity of Caloosa Bayous on Sanibel Island, and Tigertail Beach County Park on Marco Island.
- Map and monitor known stations on a regular basis.
- Consider augmenting population at Bill Baggs Cape Florida State Park.
- Consider introducing white spikerush to other sites within its historical range, including Blowing Rocks Preserve and Hobe Sound National Wildlife Refuge on Jupiter Island and J.N. "Ding" Darling National Wildlife Refuge.

***Encyclia pygmaea* (Hook.) Dressler
Dwarf Butterfly Orchid**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Ward, 1978; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Epidendrum pygmaeum* Hook.; *Hormidium pygmaeum* (Hook.) Benth. & Hook. f. ex Hemsl.; *Prosthechea pygmaea* (Hook.) W.E. Higgins.

Historical Context in South Florida: Alvah A. Eaton first collected dwarf butterfly orchid in 1905 in the Fakahatchee Strand (1400, AMES), within what is now Fakahatchee Strand Preserve

State Park. William G. Atwater re-vouchered this population in 1960 (M-193, FLAS). Gann and Woodmansee observed this population in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 100 plants present in the Fakahatchee Strand (personal communication, 25 January 2001).

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially by Old World climbing fern (*Lygodium microphyllum*).

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten dwarf butterfly orchid.
- Conduct conservation biology and conservation horticulture studies.
- Consider augmenting population at Fakahatchee Strand Preserve State Park.

***Epidendrum strobiliferum* Rchb. f.
Big Cypress Star Orchid**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: *Spathiger strobiliferus* (Rchb. f.) Small.

Historical Context in South Florida: Oakes Ames first collected Big Cypress star orchid in 1904 (s.n., NY), presumably in the Fakahatchee Strand (cf. Ames, 1904b). Alvah A. Eaton collected it again in 1904 (1126, AMES; 1125, AMES) and 1905 (1386, NY). Both of these collections were from what is now Fakahatchee Strand Preserve State Park. J.A. Lassiter and Rita Lassiter re-vouchered it for the Fakahatchee Strand in 1963 (14, USF), as did R. Vagner in 1966 (s.n., USF). Gann and Woodmansee observed this population in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 1,000 plants present in the Fakahatchee Strand (personal communication, 25 January 2001).

John Kunkel Small and Walter M. Buswell also made a single collection from the Deep Lake area in 1925 (12709, NY). Deep Lake is located immediately to the east of the Fakahatchee Strand and is now mostly within the boundaries of Big Cypress National Preserve. No plants have been observed or collected in that area since 1925, and Big Cypress star orchid is not thought to be extant in Big Cypress National Preserve. It is possible that Small and Buswell's collection was from the Fakahatchee Strand.

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially by Old World climbing fern (*Lygodium microphyllum*).

Comments: *A specimen at Harvard University (AMES) collected by Hugh O'Neill (7880) is from "a hammock, 3 miles north of Homestead, along Avocado Drive." in 1933. This refers to either Fuchs Hammock or Meissner Hammock. No other reports are known from Miami-Dade County, and this label data may be in error.*

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten Big Cypress star orchid.

***Eragrostis tracyi* Hitchc.**
Sanibel Island Love Grass

South Florida Status: Critically imperiled. One occurrence at Mound Key Archaeological State Park and one occurrence on private property on Sanibel Island.

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Endemic to the west coast of peninsular Florida from Pinellas County to Lee County.

South Florida Distribution: Lee County.

South Florida Habitats: Shell mounds, coastal grasslands, and disturbed sites.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Hitchcock & Chase, 1950; Lakela, 1965; Koch, 1972; Hall, 1978; Koch, 1978; Ward, 1978; Peterson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: *E. pectinacea* (Michx.) Nees ex Jedwabn. var. *tracyi* (Hitchc.) P.M. Peterson.

Historical Context in South Florida: Samuel M. Tracy first collected Sanibel Island love grass in 1901 on Sanibel Island (7168, US). Other collections were made on Sanibel Island by George R. Cooley in 1953 (4938, USF) and 1954 (2608, USF), and by William C. Brumbach in 1976 (8938, USF). Ward (1978) stated that Brumbach had found this plant on all parts of Sanibel Island, but it was not reported for the J.N. "Ding" Darling National Wildlife Refuge by Wunderlin et al. (1980). Sanibel-Captiva Conservation Foundation biologist David Ceilley reported that Sanibel love grass had been found at the Sea Oats subdivision adjacent to one of the Foundation's conservation areas on Sanibel Island (personal communication, 27 July 2001), but this area needs to be surveyed. Gann, Dick Workman, and others observed plants on the edge of an unpaved road on eastern Sanibel Island in 2001, but this station needs to be vouchered.

In 1978, Sandy Morrill collected Sanibel love grass on North Captiva Island (112, USF), to the north of Sanibel Island. It was

reported for Cayo Costa State Park (Florida Park Service District 4, 1994a), which includes the southern portion of North Captiva Island. Gann and Florida Park Service biologist R. "Bobby" Hattaway surveyed the Cayo Costa State Park portion of North Captiva Island in March 2001, but did not observe any plants.

Olga Lakela discovered Sanibel Island love grass on Mound Key in 1964 (27043, USF), now Mound Key Archaeological State Park. Gann, Hattaway, and Florida Park Service biologist Sally Braem observed it there during a brief survey 2001. Plants were seen growing on the disturbed edge of a nature trail. This station should be re-visited.

Major Threats: Exotic pest plant invasions.

Comments: *This species tolerates disturbance and colonizes recently disturbed areas. Koch (1972) conducted surveys for Sanibel Island love grass at Gasparilla Island in Charlotte County, Pine Island and Fort Myers Beach in Lee County, and Naples in Collier County. No new stations were discovered.*

Preliminary recommendations:

- Voucher plants at Mound Key Archaeological State Park and Sanibel Island stations.
- Survey North Captiva Island and Sanibel Island.

***Eupatorium compositifolium* Walter
Yankeeweed**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Nixon Smiley Pineland Preserve) and one non-conservation area (Federal Correctional Institution in the Richmond Pine Rocklands).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native primarily to the southeastern coastal plain. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Martin and Miami-Dade counties.

South Florida Habitats: Pine rocklands and flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Taylor (1998) has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Godfrey & Wooten, 1981; Taylor, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Nathaniel L. Britton first collected yankeeweed in 1904, in pinelands in Perrine in Miami-Dade County (148, NY). John Kunkel Small also made a collection in 1916 in pinelands to the west of Perrine (7896, NY), perhaps in or near the Richmond Pine Rocklands. In 2000, Bradley and Woodmansee discovered it in the Richmond Pine Rocklands at the Federal Correctional Institution (Bradley et al., 2000a). Only one plant was observed at this station, so it was not vouchered. In 1975, George N. Avery discovered yankeeweed at what is now the Nixon Smiley Pineland Preserve, which is located to the north of the Richmond Pine Rocklands and to the northwest of Perrine (1663, USF, FTG). Bradley observed this station again in 1995. Fewer than 100 plants are thought to be present there. Two other stations were vouchered in Miami-Dade County. Small and Joel J. Carter made a collection in 1906 between Perrine and Homestead (2736, NY), and Walter M. Buswell made a collection in a rocky pineland in Coral Gables in 1943 (s.n., FTG).

Leland M. Baltzell made a collection of yankeeweed in 1977 in the vicinity of Marcy in northeastern Martin County (10028, FLAS). No habitat data was given but it may have been collected in flatwoods. It has been reported for a number of conservation areas in South Florida that need to be verified. These sites include Corkscrew Swamp Sanctuary (Judd, 1994) and Corkscrew Regional Ecosystem Watershed (Anderson, 1997), both of which are located in Collier and Lee counties. It has also been reported for a number of sites in Palm Beach County, including Juno Dunes Natural Area (Farnsworth, 1995a), Loxahatchee Slough Natural Area (Farnsworth, 1994c), and Royal Palm Beach Pines Natural Area (Farnsworth, 1995c).

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction at the Federal Correctional Institution in the Richmond Pine Rocklands.

Comments. *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

However, the disjunct population in Miami-Dade County is floristically interesting and should be protected. Small plants of *Eupatorium capillifolium* can be mistaken for *E. compositifolium*.

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary, Corkscrew Regional Ecosystem Watershed, Juno Dunes Natural Area, Loxahatchee Slough Natural Area, and Royal Palm Beach Pines Natural Area.
- Map and monitor known stations on a regular basis.
- Negotiate conservation agreement the Federal Correctional Institution to restore and maintain a viable population of yankeeweed. Provide technical assistance to help restore and manage this population.

***Euphorbia inundata* Torr. ex Chapm.
Florida Pineland Spurge**

South Florida Status: Critically imperiled. One occurrence at Fred C. Babcock-Cecil M. Webb Wildlife Management Area.

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida and southern Alabama. Wunderlin (1998) reports it as occasional in Florida in the peninsula and in the central and western panhandle.

South Florida Distribution: Charlotte, Collier, and Lee counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Norton, 1900; Small, 1933a; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Galarhoeus inundatus* (Torr. ex Chapm.) Small.

Historical Context in South Florida: O.E. Frye first collected Florida pineland spurge in 1946 at an unspecified locality in Charlotte County (s.n., FLAS). This collection was made in a "pine slough – man made." John Beckner collected it in flatwoods in eastern Charlotte County in 1968 (2265, FLAS). In 1996, Gann and Bradley observed it at Fred C. Babcock-Cecil M. Webb

Wildlife Management Area, several miles to the west of Beckner's station, but this station needs to be vouchered.

Ray Garrett made a collection in Collier County in 1951 northeast of Naples (s.n., FLAS). In 1985, Elliott Brown collected it in Lee County in North Fort Myers (s.n., USF). This station was located to the north of the clubhouse in Tamiami Village, a station that has almost certainly been destroyed. The Tamiami Village Flatwoods Site, which is located just to the north of Tamiami Village, may contain habitat for this species.

Major Threats: Drainage of flatwoods habitat; fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Fred C. Babcock-Cecil M. Webb Wildlife Management Area.
- Survey Tamiami Village Flatwoods Site.
- Map and monitor known stations on a regular basis.
- Acquire Tamiami Village Flatwoods Site.

***Evolvulus grisebachii* Peter
Grisebach's Dwarf Morningglory**

South Florida Status: Critically imperiled. One occurrence at National Key Deer Refuge and adjacent private properties.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and Cuba.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Ooststroom, 1934; Ward, 1968b; Long & Lakela, 1976; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *Evolvulus wrightii* House.

Historical Context in South Florida: John Loomis Blodgett first collected Grisebach's dwarf morningglory between 1838 and 1853 on Big Pine Key in Monroe County (s.n., NY). It has never been

vouchered for any other islands in South Florida. Numerous collections have been made on Big Pine (e.g., Small 3809, NY; Killip 31449, US; Avery et al. 1745, USF; Brumbach 9669, FSU), but few give good data on where plants were found. Grisebach's dwarf morningglory seems to be restricted to the vicinity of Key Deer Boulevard and Watson Boulevard, near the Blue Hole, including private property and property owned by the National Key Deer Refuge. The authors have observed plants there as recently as 2001.

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction; sea-level rise.

Comments: *Ward (1968b) reported this species from Puerto Rico, apparently in error. The status of this species in Cuba is unknown.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Acquire private properties with Grisebach's dwarf morningglory and incorporate into National Key Deer Refuge.
- Conduct conservation biology and conservation horticulture studies.
- Determine status in Cuba.

***Gratiola pilosa* Michx.
Shaggy Hedgehyssop**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Scrophulariaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Glades, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods, depression marshes, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Pennell, 1935; Long & Lakela, 1976; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998

Synonyms: *Tragiola pilosa* (Michx.) Small & Pennell ex Pennell; *Tragiola pilosa* var. *epilis* (Pennell) Small & Pennell ex Pennell.

Historical Context in South Florida: Leonard J. Brass first collected shaggy hedgehyssop in 1945 in Palmdale in Glades County (15456, US), in the vicinity of what is now Fisheating Creek Wildlife Management Area. John Popenoe made the next collection in 1981 at Jonathan Dickinson State Park in Martin County (1937, FTG), where it is assumed to be present. While the label states that it was a “weed in moist area” it was most likely persisting in an area where its habitat had been cleared, or it recruited from a nearby natural area. Popenoe also collected it in Palm Beach County in 1983 along the Loxahatchee River (2352, USF), in what is now Jonathan Dickinson State Park.

There are a number of additional reports of this species that should be verified. It has been reported for Palm Beach County at Royal Palm Beach Pines Natural Area (Farnsworth, 1995c) and Pal-Mar (Bradley et al., 1997b). It also has been reported for the Dupuis Reserve (Woodbury, no date), which is located in both Palm Beach and Martin counties.

Major Threats: Fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve, Fisheating Creek Wildlife Management Area, Pal-Mar, and Royal Palm Beach Pines Natural Area.
- Map and monitor known stations on a regular basis.

***Gymnopogon ambiguus* (Michx.) Britton et al.
Bearded Skeleton Grass**

South Florida Status: Critically imperiled. One occurrence in one conservation area and two non-conservation areas in the Richmond Pine Rocklands (Larry and Penny Thompson Park, former U.S. Naval Observatory site, & U.S. Coast Guard Communication Station).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States and the West Indies. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Miami-Dade and Palm Beach counties.

South Florida Habitats: Pine rocklands and probably mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Smith, 1971; Hall, 1978; Wunderlin, 1998.

Synonyms: *G. racemosus* P. Beauv.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected bearded skeleton grass in 1903 in between Cutler and Camp Longview in Miami-Dade County (921, NY; s.n., US). Camp Longview was historically located to the west of present day Florida City. Alvah A. Eaton also made a collection, probably on the same date, between "Miami and Jenkins Camp" (192, US). He probably was collecting with Small and Carter at the time.

The next collection from Miami-Dade County was made in 1979 by Alan H. Herndon near Camp Choe (277, USF), a Girl Scout camp in Perrine across the Florida's Turnpike from the Richmond Pine Rocklands. George N. Avery observed one plant at Camp Choe in 1980 (Avery's Notes, 23 August 1980). Also in 1980, Avery and Herndon observed one plant at Larry and Penny Thompson Park in the Richmond Pine Rocklands (Avery's Notes, 19 January 1980). Bradley and Woodmansee observed this station in 2000.

Fewer than 10 plants were seen. In 1996, Bradley and Gann observed bearded skeleton grass at what was the U.S. Naval Observatory, also in the Richmond Pine Rocklands (Bradley & Gann, 1996), a site that now is owned by the University of Miami. Fewer than 10 plants were observed. In 2000, Bradley and Woodmansee observed it at the U.S. Coast Guard Communications Station, also in the Richmond Pine Rocklands (Bradley et al., 2000a). Fewer than 10 plants were observed. All of these stations are considered to be the same occurrence.

In 1979, Avery made a collection in the Redland area at the Camp Owaissa Bauer Addition (2184, USF). He saw only “2 little clumps” (Avery’s Notes, 31 October 1979). Bradley has surveyed this station several times, but has not seen this species there.

C.V. Piper made a collection of bearded skeleton grass in 1917 at “Annie” in Palm Beach County (s.n., US).

Major Threats: Habitat destruction in the Richmond Pine Rocklands and at Camp Choe; fire suppression; exotic pest plant invasions.

Comments: *All collections in South Florida have been made during October and November, when surveys should be conducted.*

Preliminary recommendations:

- Survey Camp Choe.
- Map and monitor known stations on a regular basis.
- Develop conservation agreements with the Girl Scouts of America, the University of Miami, and the U.S. Coast Guard to restore and manage viable populations of bearded skeleton grass at their respective sites. Provide technical assistance to help manage these populations.

***Helenium flexuosum* Raf.
Purplehead Sneezeweed**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Everglades National Park) and one non-conservation area (Notre Dame Pineland).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern and central United States. Wunderlin (1998) lists it as occasional in Florida from the northern counties south to the central peninsula and Miami-Dade County.

South Florida Distribution: Miami-Dade County, where it is disjunct from the nearest populations in Polk County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: There are six species of *Helenium* in Florida. This species is a branched perennial with reddish disk flowers (Wunderlin, 1998).

References: Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *H. floridanum* Fernald; *H. nudiflorum* Nutt.

Historical Context in South Florida: John Kunkel Small and Percy Wilson first collected purplehead sneezeweed in 1904 in a pineland near Camp Longview (1675, NY; 1803, NY). This station was located to the west of present-day Florida City. In 1959, Frank C. Craighead first collected purplehead sneezeweed on Long Pine Key in Everglades National Park (s.n., NY; s.n., USF). This station was vouchered again by George N. Avery in 1976 (1219, FTG), by Alan Herndon in 1980 (363, FTG), and by Rick and Jean Seavey in 1985 (99, FTG). The authors have observed plants on Long Pine Key as recently as 2000.

Only two other collections of this species are known from South Florida. Harold N. Moldenke made a collection in Goulds in 1930 (539, NY). In 1998, Bradley collected a specimen at the privately owned Notre Dame Pineland (1824, FTG), which is located to the west of the Homestead Air Reserve Base.

Major Threats: Habitat destruction at Notre Dame Pineland; fire suppression; exotic pest plant invasions.

Comments: *This species seems to grow only in periodically inundated pine rocklands, a habitat that has been eliminated outside of Everglades National Park. The population at Notre Dame Pineland may be declining due to a drop in the water table, while the population in Everglades National Park could be affected by changes in water delivery from the Everglades restoration.*

The plants in South Florida lack ray flowers.

Preliminary recommendations:

- Survey pine rocklands in the Goulds area, including Andrew Dodge Memorial Pineland, Black Creek Forest, Goulds Pineland, and Institute for Regional Conservation Preserve.
- Map and monitor known stations on a regular basis.
- Acquire Notre Dame Pineland.
- Conduct research to determine the effects of the Everglades restoration on purplehead sneezeweed.

***Helianthus radula* (Pursh) Torr. & A. Gray
Stiff Sunflower**

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports this as frequent nearly throughout Florida.

South Florida Distribution: Collier County, where it is disjunct from Hardee and Okeechobee counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: William G. Atwater first collected stiff sunflower in 1958 “5 miles e. of Miles City” in Collier County (C-7, FLAS). This station is probably the same as that vouchered in the Bear Island area of Big Cypress National Preserve by Bradley in 1997 (662, FTG), and by Jordan Muss in 1998 (s.n., USF). Bradley and Woodmansee observed plants there as recently as 2001.

Major Threats: Fire suppression; recreational off-road vehicle use in Big Cypress National Preserve; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Hexalectris spicata* (Walt.) Barnhart
Spiked Crested Coralroot**

South Florida Status: Critically imperiled. One occurrence at J.N. "Ding" Darling National Wildlife Refuge.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial saprophytic herb.

Distribution: Native to the southeastern United States, west to Arizona and New Mexico. Wunderlin (1998) reports it as occasional in Florida from the peninsula west to the central panhandle.

South Florida Distribution: Lee County.

South Florida Habitats: Hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Luer (1972) has illustrations and color photos; Taylor (1998) has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972, Wunderlin, 1998; Coile, 2000.

Synonyms: *H. aphylla* (Nutt.) Raf. Ex S. Watson & S.M. Coult.

Historical Context in South Florida: William C. Brumbach first collected spiked crested coralroot in 1977 on Captiva Island (9261, USF). Joyce W. Gann and G. Donald Gann observed flowering plants on Captiva Island in 1982 (Avery's Notes, 29 May 1982). These plants were found on the edge of a clearing in partial shade (G. Donald Gann, personal communication, 19 February 2001). This island has undergone extensive residential and commercial development since the early 1980s and it is doubtful that any plants remain on Captiva Island.

Bruce F. Hansen and JoAnn Hansen collected spiked crested coralroot on neighboring Sanibel Island in 1979 (5692, USF), at the J.N. "Ding" Darling National Wildlife Refuge. It is assumed to be present there. William C. Brumbach made another collection on private property on western Sanibel Island in 1980 (9561, NY, USF). It is unknown whether or not this population is extant.

Major Threats: Exotic pest plant invasions; poaching.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Hibiscus coccineus* Walter Scarlet Rosemallow**

South Florida Status: Critically imperiled. One occurrence at Corkscrew Swamp Sanctuary.

Taxonomy: Dicotyledon; Malvaceae.

Habit: Shrub.

Distribution: Native to Florida, southern Georgia, and Alabama. Wunderlin (1998) reports it as occasional in Florida from the peninsula to the central and western panhandle.

South Florida Distribution: Collier County, where it is disjunct from Hillsborough and Polk counties.

South Florida Habitats: Cypress swamps.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Nelson (1996) has a color photo; Tobe et al. (1998) has color photos.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Taylor, 1992; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *H. semilobatus* Chapm.

Historical Context in South Florida: M. Menzel and D. Wise first collected scarlet rosemallow in 1972 at Corkscrew Swamp Sanctuary in Collier County (72-19, FSU; 72-20, FSU). Gann and Tiffany Troxler Gann observed it at this station in 1999.

A specimen also exists that has been attributed to Broward County. Wise collected the specimen in 1972 (72-6, FSU), one day before he collected *H. coccineus* with Menzel at Corkscrew. We have seen no other reports from Broward County, and believe that this is a mislabeled specimen actually collected at Corkscrew Swamp Sanctuary.

Roger L. Hammer recently discovered a population of scarlet rosemallow in the Big Cypress Swamp that appears to have escaped from cultivated plants (personal communication, 13 June 2001).

Major Threats: Exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*).

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Control Old World climbing fern and other exotic pest plants that may threaten scarlet rosemallow.

***Huperzia dichotoma* (Jacq.) Trevis.
Hanging Clubmoss**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Pteridophyte; Lycopodiaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps; epiphytic on pond apple (*Annona glabra*) and pop ash (*Fraxinus caroliniana*).

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Tobe et al. (1998) has photos and an illustration; Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has illustrations; the IRC Website has a color photo.

References: Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Austin, 1981; Nauman, 1986a; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Lycopodium dichotomum* Jacq.; *Phlegmariurus dichotomus* (Jacq.) W.H. Wagner.

Historical Context in South Florida: Charles A. Mosier and J.B. McFarlin first collected hanging clubmoss in 1934 in the Fakahatchee Strand (Mosier s.n., NY; McFarlin & Mosier 7357, NY), within what is now Fakahatchee Strand Preserve State Park. Clifton E. Nauman and others vouchered it again without a date (322, USF), presumably before 1980. Other observers include C. Eugene Delchamps, Roger L. Hammer, and George N. Avery (Avery's Notes, 17 November 1968, 11 November 1976, and 18 July 1979). Hammer, Alan Cressler and Don Keller observed three plants in 1988 (R.L. Hammer, personal communication, 8 February 2001). Cressler, Bradley, and Carol Lippincott observed three plants in 1995. The Fakahatchee station remains the only known station in Florida. Florida Park Service biologist Mike Owen estimates that there are fewer than 10 plants in Fakahatchee Strand Preserve State Park.

Major Threats: Poaching; exotic pest plant invasions, especially by Old World climbing fern (*Lygodium microphyllum*).

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten hanging clubmoss.
- Conduct conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting population at Fakahatchee Strand Preserve State Park.

***Ilex ambigua* (Michx.) Torr.
Carolina Holly**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Aquifoliaceae.

Habit: Shrub or small tree.

Distribution: Native to the southeastern coastal plain and piedmont. Wunderlin (1998) reports it as common in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee and Martin counties.

South Florida Habitats: Mesic hammocks, flatwoods, and floodplain forests.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a color photo; Nelson (1996) has an illustration.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Wunderlin & Poppleton, 1977; Little, 1978; Godfrey, 1988; Nelson, 1994; Nelson, 1996; Wunderlin, 1998.

Synonyms: *I. buswellii* Small; *I. caroliniana* (Raf.) Trel.

Historical Context in South Florida: Walter M. Buswell first collected Carolina holly in 1923 at Fort Myers (s.n., USF). After that, it was collected on a number of occasions in the Fort Myers area, up until 1920, when Harold N. Moldenke made the last collection (991, NY). In 1923, Buswell also collected it along the Caloosahatchee River east of Fort Myers (s.n., NY). Small designated this as the type specimen of a new species, *I. buswellii*, which is now considered conspecific with *I. ambigua*. Buswell also collected it at this station in 1929 (s.n., NY). Carolina holly was not vouchered again in Lee County until George N. Avery collected it at Koreshan State Historic Site in 1973 (1475, FTG). Gann and Florida Park Service biologists R. “Bobby” Hattaway and Sally Braem searched for this species during a brief survey in 2001, but were unable to locate any plants. It is possible that construction of a parking lot destroyed the plants, but more survey work should be conducted at Koreshan.

In 1987, Roy O. Woodbury made the first collection in Martin County at Jonathan Dickinson State Park (s.n., FTG). Woodbury also collected it at several private properties in Martin County: south of Palm City in 1989 (M-1083, FTG) and in 1990 (M-1084, FTG); north of Palm City in 1989 (s.n., FTG); west of Stuart in 1990 (M-1085; M-1086, FTG); and, “SR 713” in 1992 (1068, FTG). The latter station possibly refers to State Road 714, which runs west of Palm City. While plants are presumably extant at

Jonathan Dickinson State Park, it is not known whether or not plants at the other stations remain.

Major Threats: Exotic pest plant invasions; habitat destruction.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Koreshan State Historic Site and Woodbury's Martin County stations.
- Map and monitor known stations on a regular basis.

***Kosteletzkya depressa* (L.) O.J. Blanch. et al.
White Fenrose**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Dicotyledon; Malvaceae.

Habit: Short-lived sub-shrub.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Monroe County mainland.

South Florida Habitats: Salt marshes, coastal berms, and open buttonwood forests.

Protection Status: Listed as endangered by FDACS.

Identification: It can be distinguished from *K. virginica* by having white flowers less than 1 cm long, rather than having pink flowers 2-4 cm long (Wunderlin, 1998).

References: Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Wunderlin, 1998; Coile, 2000.

Synonyms: *K. pentasperma* (Bertero ex DC.) Griseb.

Historical Context in South Florida: John Kunkel Small and others first collected white fenrose in 1921 "between Flamingo and Coot Bay" (10306, NY, US). Small and others collected it again in the Flamingo region in 1922 (10688, NY). It was not collected again until 1954, when Frank C. Craighead collected it at "Alligator Creek" (s.n., Everglades National Park herbarium). Since then, it has been collected in the Flamingo area by Craighead in 1962 (s.n., USF), by George N. Avery in 1966 (297, USF), and by

Richard G. Reimus in 1993 (149, FTG). Gann and Bradley have observed plants in the Flamingo region as recently as 2001.

Major Threats: Exotic pest plant invasions, especially Brazilian-pepper (*Schinus terebinthifolius*) and latherleaf (*Colubrina asiatica*); sea-level rise.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Control Brazilian-pepper and latherleaf in the Flamingo/Cape Sable area of Everglades National Park.
- Review for listing by FNAI.

***Leptochloa uninervia* (J. Presl) Hitchc. & Chase
Mexican Sprangletop**

South Florida Status: Critically imperiled. One occurrence at Frog Pond/L-31 N Transition Lands. Other occurrences of waif populations may be present in southern Miami-Dade County.

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the United States, Mexico, and South America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Lee, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Rocky glades, salt marshes, and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Diplachne uninervia* (J. Presl.) Parodi.

Historical Context in South Florida: Robert Kral first collected Mexican sprangletop in 1957 at J.W. Corbett Wildlife Management Area in Palm Beach County (5707, FSU). This collection was made in an abandoned tomato field, and may not represent a native population. In 1964, Robert K. Godfrey collected it along the Caloosahatchee River in Fort Myers in tidal flats adjacent to a mangrove swamp (65429, FSU). In 1971, Stephen D. Koch

collected it again in Lee County in a cleared area on the north side of the Caloosahatchee River in North Fort Myers (7122, FSU). It was reported to be locally abundant.

George N. Avery collected Mexican sprangletop first in Miami-Dade County in 1976 in "rocky glades west of Homestead" (1691, USF). This station is now protected in a remote area of Everglades National Park four to five miles from its eastern boundary (1691, USF). In 1997, Bradley collected it at the Frog Pond/L-31 N Transition Area (1186, FTG), an area of farm fields and rocky glades managed by the South Florida Water Management District. This collection was made at the edge of a farm field, although it may have historically occurred at the site in rocky glades. Bradley also collected the species in 1997 in a tree farm in marl soil northeast of the Homestead Air Reserve Base (1259, FTG). The species may have historically occurred in marl prairies in the area.

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It has weedy tendencies in many of the sites where it has been collected, and it is uncertain whether or not it was historically native at some of these localities.*

Preliminary recommendations:

- Survey Avery station in Everglades National Park.
- Map and monitor known stations on a regular basis.

***Leptochloa virgata* (L.) P. Beauv.
Tropical Sprangletop**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Fakahatchee Strand Preserve State Park) and one non-conservation area (Pelican Marsh).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Peninsular Florida, southern Texas, the West Indies, Central America, and South America. Wunderlin (1998) reports it as rare in Florida in Seminole, Collier, and Miami-Dade counties.

South Florida Distribution: Collier, Miami-Dade, and the Monroe County Keys.

South Florida Habitats: Freshwater marshes, rockland hammocks, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Correll & Correll, 1982; Tobe et al., 1998; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *L. domingensis* (Jacq.) Trin.; *Diplachne domingensis* (Jacq.) Chapm.

Historical Context in South Florida: Tropical sprangletop may have been collected first by Joseph H. Simpson in 1892, but his label states only “Southern Florida” (s.n., NY, US). While not definitely from the range of this manual, Simpson did make other collections in the Florida Keys and Marco Island during the same month. Alvah A. Eaton made the first definite collection from South Florida in 1903 at the town of Newport on Key Largo (432, US). Additional collections were made on Key Largo in 1909 by John Kunkel Small and Joel J. Carter (2850, NY), in 1925 by Small (11640, NY), and in 1928 by Paul Weatherwax (1164, US). Both of Small’s collections state that plants were found in “Hammocks” while the Weatherwax collection was made on a roadside. Weatherwax also stated that the species was “Probably Introduced.”

Harold N. Moldenke first collected tropical sprangletop in Miami-Dade County in 1930 in “dry sandy soil along roadside” in the Black Point area (5543, NY). Frank C. Craighead made the next collection in 1961 in Everglades National Park (s.n., USF). The exact location of this collection is unknown. The only data provided on the specimen states “Concrete bridge,” possibly referring to the Taylor Slough bridge on the main park road.

In 1961, William G. Atwater made a collection of tropical sprangletop in a roadside ditch northwest of Copeland in Collier County (2030, USF). This collection was probably from what is now Fakahatchee Strand Preserve State Park. In 1999, Bruce F. Hansen collected it nearby at the edge of the Fakahatchee Strand Preserve State Park along SR 26, north of Jerome (12888, USF).

Tropical sprangletop has also been reported for the Fakahatchee (Austin et al., 1990). It was also collected further north in Collier County at Pelican Marsh just east of Naples Park by Kristi Pierce in 1998 (s.n., USF). This collection was made from "Open marsh." This station is presumed to be extant, but it needs to be surveyed.

Major Threats: Habitat destruction at Pelican Marsh station; exotic pest plant invasions; hydrological modifications; fire suppression; wild hog damage.

Comments: This species has also been reported in Florida from Seminole County. It is unknown if this occurrence is extant or even if it was a native occurrence.

Preliminary recommendations:

- Survey Pelican Marsh.
- Map and monitor known stations on a regular basis.

***Licaria triandra* (Sw.) Kosterm.
Gulf Licaria**

South Florida Status: Critically imperiled. One occurrence at Simpson Park.

Taxonomy: Dicotyledon; Lauraceae.

Habit: Tree.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as historical by FNAI.

Identification: Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Long & Lakela, 1976; Little, 1978; Tomlinson, 1980; Nelson, 1994; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Misanteca triandra* (Sw.) Mez.

Historical Context in South Florida: John Kunkel Small first collected Gulf licaria in 1904 in Brickell Hammock in Miami (2241, NY). It has been collected numerous times in Brickell Hammock by a number of botanists. Today it is only extant at Simpson Hammock Park, where it was observed as early as 1965 by

George N. Avery (Avery's Notes, 11 November 1965). The authors have observed plants at this station as recently as 2000. Fewer than 10 trees are present, although there are dozens, if not hundreds, of seedlings present (R.L. Hammer, personal communication, 13 June 2001). Fairchild Tropical Garden has germplasm of Gulf licaria (M. Collins, personal communication, 3 July 2001), but it is not entirely clear if these plants are of Florida provenance.

Major Threats: Exotic pest plant invasions; management error; stochastic events (e.g., hurricanes).

Comments: *A number of local botanists have this species in cultivation from seeds collected in Brickell Hammock or from their progeny.*

Preliminary recommendations:

- Map and monitor plants at Simpson Park.
- Consider introductions to other sites within historical Brickell Hammock, including Alice Wainwright Park and Vizcaya Museum and Gardens.
- Review listing by FNAI.

***Liparis nervosa* (Thunb.) Lindl.
Pantropical Widelifip Orchid**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habitat: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, South America, and the Old World. Wunderlin (1998) reports it as rare in Florida in Collier, Hernando, and Hillsborough counties.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS.

Identification: Luer (1972) has illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *L. elata* Lindl.

Historical Context in South Florida: James Layne first discovered pantropical widelip orchid in 1903 (s.n., AMES; Ames, 1904b), in what is now Fakahatchee Strand Preserve State Park. Other collections were made there in 1937 by Walter M. Buswell (s.n., USF) and in 1963 by J.A. Lassiter and Rita Lassiter (16, USF). Numerous botanists, including the authors, have observed this population over the years. Gann and Woodmansee also observed this population in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are between 1,000 and 10,000 plants in the Fakahatchee Strand. Pantropical widelip orchid also has been reported for Big Cypress National Preserve based upon a 1956 specimen (Black & Black, 1980), but we have not been able to verify this occurrence. A 1988 collection said to have been from Everglades National Park cannot be verified, and is treated here as a false record.

Major Threats: Exotic pest plant invasions; poaching; hydrological modifications.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Review for listing by FNAI.

***Ludwigia palustris* (L.) Elliott
Marsh Seedbox**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Onagraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to temperate North America, Eurasia, and Africa. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Charlotte and Martin counties.

South Florida Habitats: Floodplain forests and flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration.

References: Small, 1933a; Godfrey & Wooten, 1981; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Isnardia palustris* L.

Historical Context in South Florida: O.E. Frye first collected marsh seedbox in 1946 in Charlotte County (s.n., FLAS). No specific locality data was given. In 1977, John Popenoe made the first collection in Martin County at Jonathan Dickinson State Park (1025, FTG). Donovan S. Correll and others also collected it there twice in 1978 (19899, FTG; 49911, FTG, NY). All of these collections were made near the Loxahatchee River in floodplain forests or flatwoods. Marsh seedbox has been reported for the Dupuis Reserve (Woodbury, no date), which is located in Martin and Palm Beach counties, but this report needs to be verified.

Major Threats: Exotic pest plant invasions; wild hog damage; hydrological modifications.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Ludwigia virgata* Michx.
Savannah Primrosewillow**

South Florida Status: Critically imperiled. One occurrence at Pal-Mar.

Taxonomy: Dicotyledon; Onagraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida in the northern and central peninsula.

South Florida Distribution: Palm Beach County.

South Florida Habitats: Wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Bradley and Woodmansee first collected Savannah primrosewillow in 1997 in wet flatwoods at Pal-Mar in Palm Beach County (699, FTG). Fewer than 10 plants were observed. It has been reported for Dupuis Reserve (Woodbury, no date), which is located nearby in Martin and Palm Beach counties, and Snake Creek/Miramar Pineland Natural Area in Broward County (Broward County Parks & University of Florida, 1998k), but these reports need to be verified.

Major Threats: Drainage of wet flatwoods habitat; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It is extremely similar to L. maritima, and has been erroneously reported for several stations in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve, Pal-Mar Natural Area, un-acquired portions of the Pal-Mar CARL Site, and Snake Creek/Miramar Pineland Natural Area.
- Map and monitor known stations on a regular basis.

***Lythrum flagellare* Shuttlew. ex Chapm.
Florida Loosestrife**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Fred C. Babcock-Cecil M. Webb Wildlife Management Area) and one non-conservation area (a roadside swale next to Tamiami Village in North Fort Myers).

Taxonomy: Dicotyledon; Lythraceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in Florida in the central peninsula.

South Florida Distribution: Charlotte, Collier, Glades, Hendry, and Lee counties.

South Florida Habitats: Creek bottoms, marshes, and wet disturbed sites.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: It can be distinguished from the other three species of *Lythrum* in Florida by having the uppermost leaves alternate, and usually being decumbent (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Graham, 1975; Long & Lakela, 1976; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small first collected Florida loosestrife in 1917 near Fort Shackleford in Hendry County (8342, FSU, NY). This station is located in what is now the Big Cypress Seminole Indian Reservation. In 1964, Leonard J. Brass made a collection at Rainy Slough near Tasmania in Glades County, where it was reported to be common (33208, USF). Bradley visited this station in 2000, but most of the vegetation was desiccated and no plants were observed. In 1965, Olga Lakela made a collection north of Immokalee in Collier County (28712, FSU). The next year, Lakela collected it a second time north of Immokalee (29805, US, USF). In 1986, Elliott Brown made a collection in Lee County in a roadside swale along US 41 adjacent to Tamiami Village in North Fort Myers (s.n., USF). Gann and Tiffany Troxler Gann found this small station in 2000. It is only a matter of time before this population is destroyed. It is possible that some plants are present at the Tamiami Village Flatwoods Site immediately to the north of Tamiami Village.

Gann and Bradley collected Florida loosestrife at the Fred C. Babcock-Cecil M. Webb Wildlife Management Area in Charlotte County in 1996 (688, USF). A few plants were found growing in the headwaters of a small creek. Florida loosestrife has been reported from the Dupuis Reserve (Woodbury, no date; Gann et al., 1998), which is located in Martin and Palm Beach counties, but these reports need to be verified.

Major Threats: Drainage of wetland habitats; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Survey Big Cypress Seminole Indian Reservation, Immokalee area, Tamiami Village Flatwoods Site, and Tasmania area.
- Map and monitor known stations on a regular basis.
- Consider translocation of Tamiami Village population to a more secure location.
- Acquire Tamiami Village Flatwoods Site.

***Mitchella repens* L.
Partridgeberry**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Rubiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Floodplain forests.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Nelson (1996) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Nelson, 1996; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Popenoe collected partridgeberry in 1978 along the banks of the Loxahatchee River in Jonathan Dickinson State Park (1195, FTG). A small population persists there (R.E. Roberts, personal communication, 16 May 2001).

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor plants at Jonathan Dickinson State Park.

***Najas wrightiana* A. Braun
Wright's Waternymph**

South Florida Status: Critically imperiled. One occurrence in the Big Cypress National Preserve.

Taxonomy: Monocotyledon; Najadaceae.

Habit: Annual aquatic herb.

Distribution: South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Broward counties, and the Monroe County mainland.

South Florida Habitats: Brackish creeks, cypress swamps, and canals.

Protection Status: Not listed by any agency.

Identification: Distinguished from other species of *Najas* in South Florida by having leaves with small but conspicuous marginal teeth, tapering leaf bases, and fruits that are glossy and finely reticulate (Wunderlin 1998).

References: Long & Lakela, 1976; Godfrey & Wooten, 1979; Correll & Correll, 1982; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *N. flexilis* (Willd.) Rostk. & W. Schmidt, misapplied.

Historical Context in South Florida: Olga Lakela first collected Wright's waternymph in 1964 in a cypress swamp off Turner River Road east of Ochopee in Collier County (27796, USF). Lakela and F. Almeda made the next collection in 1968 about 16 miles to the west at "Remuda Ranch Estates" (31526, USF), a development now known as Port of the Islands. Haynes and Wentz (1974) reported the species as new to the United States based upon this collection. The collection was made in "road embankments along canals marginal to cypress swamps." In 1978, George N. Avery made a collection in a cypress strand along Loop Road in Big Cypress National Preserve (1972, FTG). In 1980, Renee Beymer made a collection in Halfway Creek at the Old Wooten's Indian Village (s.n., Big Cypress National Preserve Herbarium).

Durbin Tabb made a single collection in Broward County in 1978 at Indian Trace, a development in the northern part of the county

close to Water Conservation Area 2A (s.n., FTG). This collection was made in a canal, and it is not certain if it represents a native population.

Major Threats: Exotic pest plant invasions, hydrological modifications, off road vehicles.

Comments: *Haynes (in Flora of North America Editorial Committee, 2000) considered this to be introduced in Florida. Other authors, such as Godfrey and Wooten (1979) and Wunderlin (1998) consider it to be native.*

Preliminary recommendations:

- Survey Water Conservation Area 2A in Everglades and Francis S. Taylor Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Nothoscordum bivalve* (L.) Britton
Crowpoison**

South Florida Status: Critically imperiled. One occurrence at Six Mile Cypress Slough Preserve.

Taxonomy: Monocotyledon; Amaryllidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties to the central peninsula.

South Florida Distribution: Lee County, where it is disjunct from the nearest populations in Brevard County.

South Florida Habitats: Mesic flatwoods and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo.

References: Small, 1933a; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Allium bivalve* (L.) Kuntze.

Historical Context in South Florida: Paul C. Standley first collected crowpoison in 1916 near Fort Myers (2822, US). It was subsequently collected by Richard P. Wunderlin and others in 1980 in Fort Myers (8851, USF) and by Elliott Brown in 1984 north

of the sewer plant at Tamiami Village in North Fort Myers (s.n., USF). Plants could still be present at the Tamiami Village Flatwoods Site just north of Tamiami Village. In 1997, Bradley and Woodmansee found plants at the Six Mile Cypress Slough Preserve (773, FTG; 784, FTG, USF), which is located southeast of Fort Myers.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Tamiami Village Flatwoods Site.
- Map and monitor known stations on a regular basis.
- Acquire Tamiami Village Flatwoods Site.

***Nymphaea mexicana* Zucc.
Yellow Waterlily**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Arthur R. Marshall Loxahatchee National Wildlife Refuge) and one non-conservation area (Lake Okeechobee).

Taxonomy: Dicotyledon; Nymphaeaceae.

Habit: Perennial aquatic herb.

Distribution: Native to the southern United States and Mexico. Wunderlin (1998) reports it as occasional in Florida from the peninsula and from Wakulla County.

South Florida Distribution: Collier, Glades, Lee, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Lakes, rivers, and canals.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Conard, 1905; Small, 1933a; Wood, 1959; Long & Lakela, 1976; Ward, 1977; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Taylor, 1992; Flora of North America Editorial Committee, 1997; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *N. flava* Leitn.; *Castalia flava* (Leitn. ex A. Gray) Greene.

Historical Context in South Florida: Abram P. Garber first collected yellow waterlily in 1877 on the “Upper Miami River” (3141, NY). Garber also made a collection somewhere along Prairie Creek in 1877 (s.n., FLAS, US). Prairie Creek runs through Charlotte County, where it empties into Charlotte Harbor, but much of it is in De Soto County. It is possible that Garber’s collection was from De Soto County.

In 1913, John Kunkel Small and George K. Small collected yellow waterlily in Lake Okeechobee near Torrey Island in Palm Beach County (4154, NY). In 1997, Bradley and Woodmansee also made a collection in Lake Okeechobee, but in Glades County at the mouth of Fisheating Creek (417, FTG). Daniel F. Austin (1974) reported yellow waterlily for the Arthur R. Marshall Loxahatchee National Wildlife Refuge in Palm Beach County. It is presumably extant there, but needs to be vouchered.

L. Eleanor Scull made a collection in Collier County in 1937 in a pond at a golf course in Naples (s.n., FLAS), where it may have been introduced. Yellow waterlily also has been collected on Sanibel Island in Lee County, but it may be introduced there as well. In 1972, William C. Brumbach collected it where it had “escaped to a canal” (7886, NY). John Popenoe also observed it on Sanibel in 1973 in a ditch (Avery’s Notes, 11 October 1973). In 1980, yellow waterlily was collected in “a small pool” in a developed portion of North Fort Myers in Lee County by John Beckner and Walter Pagels (2443, USF). It is not clear whether or not it was cultivated or introduced at this station, or if it was persisting from a former natural occurrence. Yellow waterlily is reported from Corkscrew Swamp Sanctuary (Judd, 1994), which is located in both Collier and Lee counties, but this station needs to be verified.

A specimen that was collected by Olga Lakela (29674, USF) is labeled “Hugh Taylor Birch State Park. ...Primary hammock with extensions of subtropical flora.” This is most likely a labeling error.

Major Threats: Manipulations of water levels in Lake Okeechobee; off-target damage from exotic pest plant control programs.

Preliminary recommendations:

- Survey Arthur R. Marshall Loxahatchee National Wildlife Refuge and Corkscrew Swamp Sanctuary.
- Map and monitor known stations on a regular basis.

***Nyssa sylvatica* Marshall var. *biflora* (Walter) Sarg.
Swamp Tupelo**

South Florida Status: Critically imperiled. One occurrence at Caloosahatchee Regional Park.

Taxonomy: Dicotyledon; Nyssaceae.

Habit: Tree.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Glades and Lee counties.

South Florida Habitats: Riverside swamp forests.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a color photo; Tobe et al. (1998) has an illustration and color photos.

References: Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Godfrey, 1988; Burckhalter, 1992; Nelson, 1994; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *N. biflora* Walter; *N. ursina* Small.

Historical Context in South Florida: Leonard J. Brass first collected swamp tupelo in 1945 at "Hailpen Gully," somewhere along Fisheating Creek in Glades County (14808, ARCH, GH). It may be extant in the newly established Fisheating Creek Wildlife Management Area.

It is present at the Caloosahatchee Regional Park in Lee County. In 2000, Lee County biologist Roger Clark showed a single tree to Gann and Lee County biologist Rob Irving, although additional trees are known from another area of the park (R. Clark, personal communication, 13 January 2001). This station needs to be vouchered. Swamp tupelo is also reported for the Koreshan State

Historic Site in Lee County (Florida Park Service District 4, 1994d), but this report is thought to be in error, or represent cultivated plants. Judd (1994) reported it for Corkscrew Swamp Sanctuary, which is located in Lee and Collier counties, but this report needs to be verified.

Major Threats: Hydrological modifications; exotic pest plants; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Caloosahatchee Regional Park.
- Survey Corkscrew Swamp Sanctuary, Fisheating Creek Wildlife Management Area, and Koreshan State Historic Site.
- Map and monitor known stations on a regular basis.

***Oncidium ensatum* Lindl.
Florida Dancinglady Orchid**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, Mexico, and Central America.

South Florida Distribution: Collier and Miami-Dade counties, and the Monroe County mainland.

South Florida Habitats: Rockland hammocks, coastal berms, and strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has both illustrations and color photos; Chafin (2000) has both illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *O. floridanum* Ames; *O. sphacelatum* Lindl., misapplied.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Florida dancinglady orchid in 1903 between Cutler and Black Point in Miami-Dade County (980, NY). Small and Percy Wilson collected it again near Black Point in 1904 (s.n., NY, US). There is a Small specimen at New York Botanical Garden that is labeled from the Black Creek area (12670, NY), but it appears that this specimen was actually collected near Flamingo in Monroe County in Everglades National Park. There are no verifiable collections or observations of Florida dancinglady orchid from the Black Point area after 1904.

Alvah A. Eaton collected one specimen near Brown's Homestead in the Redland area of Miami-Dade County in 1903 (Ames, 1904a). Small made two other collections from hammocks on the Miami Rock Ridge, the first from Hattie Bauer Hammock in 1915 (2966, NY), most of which is now a Miami-Dade County conservation area, and the second from Horton Hammock, a hammock of uncertain locality, in 1916 (7274, NY).

Eaton also made a collection on Paradise Key in 1903 (Ames, 1904a), in what is now Everglades National Park. Small made the first collection on nearby Long Pine Key in 1909 (2945, NY), and it has been vouchered and observed for a number of hammocks in and around Long Pine Key and Paradise Key. Small collected it again in 1916 (7254, NY), and Olga Lakela collected it with Frank C. Craighead in 1963 (s.n., USF). George N. Avery observed it in eight hammocks on Long Pine Key from 1967-1978 (Avery's Notes). Roger L. Hammer estimates that there are fewer than 100 plants on Long Pine Key today (personal communication, 19 February 2001). Eaton also collected it at Coot Bay near Flamingo in Everglades National Park in 1905 (1372, AMES). It was collected in that same area by Small in 1925 (12668, NY), but has not been seen there since that time.

Eaton also collected Florida dancinglady orchid in the Fakahatchee Strand in 1904 (1114, AMES). Luer (1972) reported plants from the area, but it is not certain whether or not this station was in what is now Fakahatchee Strand Preserve State Park, the Florida Panther National Wildlife Refuge, or a private property. Austin et al. (1979, 1990), reported it for Fakahatchee Strand Preserve State Park, but this record was based upon Luer (1972).

It has not been seen in this area in many years, despite much botanical activity.

Sauleda and Adams (1989) reported Florida dancinglady orchid for the Big Cypress Swamp in both Collier and Monroe counties, and cited the Monument Road area in Big Cypress National Preserve as a locality where it was historically abundant. They further stated that changes in water flow in the Big Cypress swamp had led to its virtual demise there. No recent observations from Big Cypress National Preserve are known.

Major Threats: Poaching; exotic pest plant invasions; wild and prescribed fires during the dry season in Everglades National Park.

Comments: *This is one of the species that may be affected by the Everglades restoration. More water delivery south of main park road could have benefits for Florida dancinglady orchid, which requires moist organic soils and high humidity levels.*

Preliminary recommendations:

- Survey Florida Panther National Wildlife Refuge.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Consider reintroducing Florida dancinglady orchid to other sites within its historical range, including Hattie Bauer Hammock.
- Conduct research to determine the effects of the Everglades restoration on Florida dancinglady orchid.

***Oncidium undulatum* (Sw.) Salisb.
Mule-ear Orchid**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County and the Monroe County mainland.

South Florida Habitats: Coastal berms and rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has both illustrations and color photos; Chafin (2000) has both illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *O. luridum* Lindl., misapplied; *O. luridum* var. *guttatum* Lindl., misapplied.

Historical Context in South Florida: Alvah A. Eaton first collected mule-ear orchid in 1903 on Paradise Key in the Long Pine Key area of what is now Everglades National Park (Ames, 1904a). It was reported as scarce and subsequently was not collected there. Eaton also made a collection near Flamingo in 1905 (1328, AMES). John Kunkel Small and others collected more plants in the Flamingo area in 1923 (10881, NY), as did Harold N. Moldenke in 1930 (835a, NY), and Walter M. Buswell in 1943 (s.n., FLAS, USF) and 1945 (s.n., USF). Gann, Bradley and many others have observed plants in this region of the park in both Miami-Dade and Monroe counties. Roger L. Hammer estimates that there are fewer than 500 plants in Everglades National Park today (personal communication, 19 February 2001).

Mule-ear orchid was apparently collected first outside of Everglades National Park by John Kunkel Small and J.B. DeWinkeler in 1920 in a hammock at Buena Vista (9620, FLAS), north of present-day downtown Miami. No other plants from that area were vouchered or observed, but L. Eleanor Scull collected a second specimen labeled from “below Miami” in 1938 (s.n., FLAS). The locality data for both of these specimens is suspect, and both of these records could refer to plants originally collected in what is now Everglades National Park.

Hammer discovered a single plant in Fuchs Hammock just north of Homestead in 1977, a station visited that same year by George N. Avery and the members of the Native Plant Workshop (Avery's Notes, 30 August 1977, 7 September 1977). This plant was poached by April 1978 (Avery's Notes, 22 April 1978), before it came into flower (R.L. Hammer, personal communication, 19 February 2001). According to Chuck McCartney, Fred J. Fuchs,

Sr. probably placed this plant into Fuchs Hammock following his purchase of the hammock with the intention of turning it into an Orchid Jungle-like tourist attraction (personal communication, 21 February 2001).

Major Threats: Poaching; exotic pest plant invasions, especially Brazilian-pepper (*Schinus terebinthifolius*) and latherleaf (*Colubrina asiatica*); sea-level rise.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Brazilian-pepper and latherleaf in the Flamingo/Cape Sable area of Everglades National Park.
- Consider reintroducing mule-ear orchid to Paradise Key.
- Conduct research to determine the effects of sea-level rise on mule-ear orchid.

***Ophioglossum nudicaule* L. f.
Slender Adder's-tongue**

South Florida Status: Critically imperiled. One occurrence in Royal Palm Beach Pines Natural Area.

Taxonomy: Pteridophyte; Ophioglossaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to North America, the West Indies, Mexico, Central America, South America, and the Old World. Wunderlin (1998) reports it as occasional in Florida from the central panhandle to the peninsula.

South Florida Distribution: Broward, Charlotte, Lee, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Flatwoods, Indian middens, and presumably pine rocklands.

Protection Status: Not listed by any agency.

Identification: Nelson (2000) has an illustration; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1931b; Clausen 1938; Small, 1938; Lakela & Long, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *O. dendroneuron* E.P. St. John; *O. mononeuron* E.P. St. John; *O. nudicaule* var. *minus* R.T. Clausen; *O. nudicaule* var.

tenerum (Mett. ex Prantl) R.T. Clausen; *O. pumilio* E.P. St. John; *O. tenerum* Mett. ex Prantl.; *O. vulgatum* L. var. *nudicaule* (L. f.) D.C. Eaton.

Historical Context in South Florida: Abram P. Garber first collected slender adder's-tongue in 1878 in Miami (2259, MO), presumably in moist pinelands near the Miami River. In 1903, Alvah A. Eaton made a single collection from an Indian mound in Fort Lauderdale (s.n., GH). It was collected once in the vicinity of Fort Myers by Jeanette P. Standley in 1916 (354, FLAS, NY), and C.R. Jackson made a single collection from Charlotte County about three miles north of Punta Gorda in 1949 (s.n., FTG).

David Black first collected slender adder's-tongue in Palm Beach County in 1978 (317, FTG). The specimen was collected on a drained pond bottom on a private site that has most likely been developed (personal communication, 24 January 2001). Richard Moyroud also made a collection in Hypoluxo in a cleared pineland in 1986 (s.n., FTG). In 1996, Black found plants of slender adder's-tongue at Royal Palm Beach Pines Natural Area, which he photographed (personal communication, 24 January 2001). He has not seen plants there recently, but thinks that the plants might be underground most of the time, or that they may respond to disturbance. We are presuming that these plants are extant, but this station needs to be vouchered.

Major Threats: Exotic pest plant invasions.

Comments: *Slender adder's-tongue seems to be quite ephemeral in South Florida.*

Preliminary recommendations:

- Voucher plants at Royal Palm Beach Pines Natural Area.
- Map and monitor known stations on a regular basis.

***Opuntia cubensis* Britton & Rose
Bullsuckers**

South Florida Status: Critically imperiled. One occurrence at National Key Deer Refuge.

Taxonomy: Dicotyledon; Cactaceae.

Habit: Perennial terrestrial succulent herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal rock barrens.

Protection Status: Not listed by any agency.

Identification: Benson (1982) has a black and white photo of plants from Big Pine Key.

References: Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Benson, 1982; Wunderlin, 1998.

Synonyms: *O. ochrocentra* Small ex Britton & Rose.

Historical Context in South Florida: John Kunkel Small and others first collected bullsuckers in 1921 (s.n., NY) and 1922 (s.n., NY) on the southern end of Big Pine Key in Monroe County. These collections were presumably made in the vicinity of Cactus Hammock, which is now located within the boundaries of the National Key Deer Refuge. Ellsworth P. Killip collected it at the same location in 1935 (31423, US). It also was reported for Big Pine Key by Dickson et al. (1953) and by Franklin (1968). Austin et al. (1980a) listed it for National Key Deer Refuge. The last collections were made by Lyman D. Benson, probably in the 1970s (15368a, POM; 16576, POM) and are cited by Benson (1982). We have not seen these specimens. In 1982, Benson stated that bullsuckers was nearly extinct on the southeastern end of Big Pine Key, due to road building. In 2001, Bradley and Woodmansee observed a few plants at the Cactus Hammock station, but this station needs to be vouchered.

Major threats: Exotic pest plant invasions; damage from *Cactoblastis cactorum* larvae; sea-level rise.

Comments: *Members of the genus Opuntia in South Florida are affected by the larvae of the exotic moth Cactoblastis cactorum.*

Preliminary recommendations:

- Voucher plants at Cactus Hammock.
- Map and monitor known stations on a regular basis.
- Protect plants from the larvae of *Cactoblastis cactorum*.
- Review for listing by FDACS and FNAI.

***Panicum abscissum* Swallen
Cut-throat Grass**

South Florida Status: Critically imperiled. One occurrence at Yamato Scrub Natural Area.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as rare in the central peninsula.

South Florida Distribution: Palm Beach County. Reported for Glades County (Jue et al., 2001).

South Florida Habitats: Scrubby flatwoods.

Protection Status: Listed as endangered by FDACS and as rare by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration; Tobe et al. (1998) has photos and illustrations.

References: Hitchcock & Chase, 1950; Hall, 1978; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Cut-throat grass was collected first in 1993 by Donald R. Richardson in north Boca Raton in Palm Beach County (s.n., USF). It has been reported from several additional locations very close by, primarily along Military Trail, from Clint Moore Road south to Potomac Road. Most of these stations have been destroyed. Farnsworth (1998) discovered cut-throat grass at the Yamato Scrub Natural Area where it is extant. Bradley and Woodmansee observed this station in 1998. Fewer than 100 plants were seen. Cut-throat grass has been reported for the Fisheating Creek Conservation Easement in Glades County (Jue et al., 2001), but this report needs to be verified.

Major Threats: Hydrological modifications; exotic pest plant invasions; fire suppression.

Comments: *Cut-throat grass is an unusual scrubby flatwoods plant in that it requires constant moisture delivered along a seepage gradient. It may be declining, where it occurs, because*

of drainage and lowering of the water table. It is also very specific to certain soils.

Preliminary recommendations:

- Voucher plants at Yamato Scrub Natural Area.
- Survey Fisheating Creek Conservation Easement.
- Map known stations at least every three years.
- Monitor known stations at least every year.
- Conduct conservation biology and conservation horticulture studies.

Pecluma plumula (Humb. & Bonpl. ex Willd.)

M.G. Price

Plume Polypody

South Florida Status: Critically imperiled. Two occurrences in Everglades National Park.

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) reports it as frequent in peninsular Florida.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Rockland hammocks and mesic hammocks.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Chafin (2000) has a color photo; Nelson (2000) has color photos; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1931b; Small, 1938; Evans, 1968; Lakela & Long, 1976; Long & Lakela, 1976; Correll & Correll 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Polypodium plumula* Humb. & Bonpl. ex Willd.

Historical Context in South Florida: C.L. Pollard first collected plume polypody in 1898 on Key Largo (203, US), but it has not been collected or observed there since that time. Pollard (1899)

wrote that only a single plant was found on a dead tree trunk near the village of Aiken.

John Kunkel Small made the next collection in 1919 in Miami-Dade County in a hammock about 20 miles southwest of Royal Palm Hammock (9179, NY), in what is now Everglades National Park. Nellie C. Knappen (1929) also collected it there in 1928 (s.n., US). Volunteer botanist Rick Seavey has observed what appears to be the same station in a hammock southeast of Mahogany Hammock (personal communication, 24 January 2001). He estimates that fewer than 100 plants are present. Plume polypody also has been collected on Long Pine Key in Everglades National Park, beginning with a Walter M. Buswell collection in 1938 (s.n., FTG). Frank C. Craighead also collected it there in 1961 (s.n., FTG). Carol Lippincott discovered a population in a hammock on Long Pine Key, which she later showed to Rick Seavey (R. Seavey, personal communication, 24 January 2001). Seavey estimates that there are about 10 plants in that hammock.

Major Threats: Poaching; exotic pest plant invasions.

Comments: *More water delivery into the Long Pine Key area south of the main park road would probably help this species, as it requires relatively moist conditions and high humidity. However, an increase in water delivery into the area north of Long Pine Key and south of Mahogany Hammock could flood out the supporting trees and cause the extirpation of plume polypody.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Conduct research to determine the effects of the Everglades restoration on plume polypody.

***Peperomia rotundifolia* (L.) Kunth**
Yerba Linda

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Central America, South America, Africa, and Madagascar.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Not listed by any agency. Approved for listing by FDACS by the Florida Endangered Plant Advisory Council.

Identification: It is distinguished from other species of *Peperomia* in Florida by having succulent orbicular to round elliptic to subovate leaves to 12 mm long and 10 mm wide. The IRC Website has a color photo

References: Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: National Park Service biologist Tony Pernas discovered yerba linda in 1999 in the Loop Road area of Big Cypress National Preserve. Bradley, Pernas, and Amy Ferriter vouchered this station later in 1999 (2005, FTG, USF). Plants were observed to be abundant around a small pond in the center of a strand swamp on four trees of pop ash (*Fraxinus caroliniana*) and two trees of cocoplum (*Chrysobalanus icaco*).

Major Threats: Poaching; exotic pest plants; hydrological modification.

Comments: *This species was discovered after the publication of Wunderlin (1998).*

Preliminary recommendations:

- Map and monitor plants at Big Cypress National Preserve on a regular basis.
- Protect from poaching.
- List by FDACS. Review for listing by FNAI.

***Peperomia* species A (Unidentified)**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic herb.

Distribution: Unknown.

South Florida Distribution: Collier County in the Fakahatchee Strand.

South Florida Habitats: Strand swamps.

Protection Status: Not listed by any agency.

Identification: N/A.

References: N/A.

Synonyms: N/A.

Historical Context in South Florida: In April 2000, Roger L. Hammer and Don Keller found a species of *Peperomia* that was unfamiliar to them in Collier County in the Fakahatchee Strand Preserve State Park. A few weeks later Hammer showed these plants to Bradley. Fewer than 50 plants were found on several trees in a small area of strand swamp. The species has not been identified. Fruiting specimens need to be collected and sent to an expert for identification.

Major Threats: Poaching; exotic pest plant invasions.

Preliminary recommendations:

- Voucher fertile specimen and determine identity.
- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor plants at Fakahatchee Strand Preserve State Park on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten this species.
- Based upon determination, review for listing by FDACS and FNAI.

***Phoebanthus grandiflorus* (Torr. & A. Gray)**

S.F. Blake

Florida False Sunflower

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as frequent in Florida in the peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Scrub.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Wunderlin, 1998.

Synonyms: *Helianthella grandiflora* Torr. & A. Gray.

Historical Context in South Florida: Roy O. Woodbury first collected Florida false sunflower in 1989 at Jonathan Dickinson State Park in 1989 (s.n., FTG). The species was reported as being “rare on north side of park in pine scrub, moist to dry.” It is assumed to be extant there. Other reports of this species have been made for Loxahatchee Slough Natural Area in Palm Beach County (Farnsworth, 1994c) and for Corkscrew Regional Ecosystem Watershed in Collier County (Hilsenbeck, 1997). These reports are doubtful, due to a lack of appropriate habitat.

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Phoradendron rubrum* (L.) Griseb.
Mahogany Mistletoe**

South Florida Status: Critically imperiled. One occurrence at Dagny Johnson Key Largo Hammocks Botanical State Park.

Taxonomy: Dicotyledon; Viscaceae.

Habit: Perennial parasitic herb.

Distribution: Native to South Florida, the Bahamas, and Cuba.

South Florida Distribution: Monroe County Keys. Reported, but unverified, for Miami-Dade County.

South Florida Habitats: Rockland hammocks. It grows parasitically only on West Indian mahogany (*Swietenia mahagoni*).

Protection Status: Listed as endangered by FDACS and critically imperiled by FNAI.

Identification: The IRC Website has a color photo.

References: Cooley, 1963; Long & Lakela, 1976; Ward, 1978; Correll & Correll, 1982; Kellogg, 1986; Campbell, 1995; Nelson, 1996; Wunderlin, 1998; Coile, 2000; Gann, 2000.

Synonyms: None.

Historical Context in South Florida: J.M. Crevasse first collected mahogany mistletoe in 1941 on Key Largo from an unspecified station (s.n., FLAS). S.J. Lynch collected it again in 1944 on the “south end” of Key Largo (s.n., FLAS), but it has not been documented there since that time. Ray Garrett collected a specimen from an unspecified station on Key Largo in 1953 (s.n., FLAS).

In 1963, Frank C. Craighead discovered plants in a hammock south of Dispatch Slough and east of Old State Road 905 on North Key Largo (s.n., FLAS, FTG, USF). This station was observed first by Craighead during an aerial survey flown at 50 feet above the trees (Cooley, 1963) and corresponds to hammock L1/10b in Weiner (1980). George N. Avery searched for these plants without luck. Subsequently the hammock burned during a dry period. The plants at that station were assumed extirpated by the mid-1960s (Avery’s Notes).

Crafton Clift found the next station in 1976 in Crossroads Hammock (hammock L1/9 in Weiner 1980). There were several plants on one tree. Avery and Clift collected a specimen of these plants in May of that year (1243, FLAS), and material from these plants was accessioned at Fairchild Tropical Garden. By 1977, extensive logging was occurring in this hammock. Arthur H. Weiner and Karen Achor did not observe mahogany mistletoe during their survey of the hammock in June of that year (Weiner 1980). However, Avery and Florida Park Service biologist Renate H. Skinner collected branches of the Crossroads Hammocks host tree around 1980 after it had been poached (R.H. Skinner, personal communication, 18 April 2001).

Josef Nemeč discovered the next station on the edge of Avery Hammock (hammock L1/6 in Weiner 1980) along Dispatch Slough in March 1998. Gann and Florida Park Service biologist Janice A. Duquesnel verified this station in April 1999. More than 20 plants were growing on three trees. The smallest host tree died during late April or early May 1999. The Florida Park Service has mapped the three mahogany trees known to have hosted mahogany mistletoe, and is currently monitoring the two remaining

trees on a monthly basis. Gann, Duquesnel and others have conducted extensive surveys in Dagny Johnson Key Largo Hammocks Botanical State Park, but have been unable to locate additional plants. Gann (2000) recommended that the Florida Park Service consider augmenting mahogany mistletoe at Key Largo Hammock State Botanical Site, and this project was initiated in 2001.

The report of mistletoe from Miami-Dade County is based upon George Cooley's report of Craighead's observations flying over islands in what is now Biscayne National Park (Cooley, 1963). Craighead stated, "The mistletoe is here [Sands Key and Old Rhodes Key] also from what I could make out in flying over." These sightings were never verified on the ground. Surveys in 2001 by the authors have failed to locate any plants in Biscayne National Park.

Mahogany mistletoe is cultivated at Fairchild Tropical Garden, and techniques for establishing mistletoe on mahogany have been published by Rob Campbell (Campbell, 1995). Germplasm from the Crossroads Hammock station is maintained at Fairchild Tropical Garden (Accession #76-288).

Major Threats: Stochastic extinction (e.g., hurricane, severe drought); exotic pest plant invasions.

Other Comments: *Although Ward (1978) reports that mahogany mistletoe grows on other hardwoods in the Bahamas, Correll & Correll (1982) states that it is specific to Swietenia. With the exception of the occurrence at Avery Hammock, all records have indicated that mahogany mistletoe grows on large mahogany trees. It is important to note that the relatively small host tree that died in 1999 was unable to support mistletoe during a prolonged hot, dry period. Craighead (in Cooley 1963) reported that mahogany mistletoe eventually kills even large mahogany trees. It most easily can be seen during the dry season when West Indian mahogany drops its leaves.*

Preliminary recommendations:

- Continue surveys in Biscayne National Park.
- Continue mapping host trees on an annual basis.
- Continue monitoring plants on a monthly basis.

- Continue efforts to augment plants at Dagny Johnson Key Largo Hammocks Botanical State Park.
- Consider reintroducing mahogany mistletoe to other rockland hammocks on Key Largo outside of Dagny Johnson Key Largo Hammocks Botanical State Park, including Dove Creek Hammocks.
- Consider collecting and accessioning new germplasm from Avery Hammock station to augment existing *ex situ* material at Fairchild Tropical Garden.

***Pilosocereus bahamensis* (Britton) Byles & G.D. Rowley
Bahama Tree Cactus**

South Florida Status: Critically imperiled. One occurrence at John Pennekamp Coral Reef State Park.

Taxonomy: Dicotyledon; Cactaceae.

Habit: Tree.

Distribution: Native to South Florida and the Bahamas.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: This species is difficult to distinguish from *P. robinii*, and is considered by some (e.g. Anderson, 2001) to be conspecific with it (as *P. polygonus* (Lam.) Byles & G.D. Rowley). Britton & Rose (1937) has descriptions of *P. bahamensis* and the other South Florida taxa of *Pilosocereus*. Also, see *P. robinii* in Part 3 of this chapter. The IRC Website has a color photo

References: Britton & Rose, 1937; Correll & Correll, 1982; Adams & Lima, 1994b; Wunderlin, 1998; Coile, 2000.

Synonyms: *Cereus bahamensis* (Britton) Vaupel; *Cephalocereus bahamensis* Britton.

Historical Context in South Florida: Bahama tree cactus is known from a single clonal plant growing in a rockland hammock surrounded by a mangrove swamp in John Pennekamp Coral Reef State Park. Joseph O'Brien discovered this station in 1992 (s.n., FTG). Gann and Florida Park Service biologists Janice A. Duquesnel and James G. Duquesnel observed it in 1999. Gann took a geographical coordinate of the station. Some stems had been recently vandalized.

Major Threats: Vandalism; poaching; exotic pest plant invasions; stochastic extinction (e.g., hurricanes).

Comments: Wunderlin (1998) did not include *P. bahamensis* because no specimen was seen. Wunderlin & Hansen (2001) includes this species in the South Florida flora.

Preliminary recommendations:

- Map outline of plants on an annual basis.
- Monitor plants on a quarterly basis.
- Protect from poaching and vandalism.
- Establish an *ex situ* collection in case the plants are poached or vandalized.

***Pleurothallis gelida* Lindl.
Flor de Llantén**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton first collected flor de llantén in 1905 (1401, NY), presumably in what is now Fakahatchee Strand Preserve State Park. In 1968, a plant was collected there by C. Eugene Delchamps and accessioned by Fairchild Tropical Garden (Accession #68-186; Avery's Notes, 17 November 1968). George N. Avery, Roger L. Hammer, and many

others have observed this species over the years. Gann and Woodmansee observed plants in the Fakahatchee in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 100 plants in the Fakahatchee Strand (personal communication, 22 January 2001).

Frank C. Craighead attempted to introduce flor de llanten into the Long Pine Key area of Everglades National Park (Botanical Notes of Frank C. Craighead). George N. Avery, Maxie Simmons, and Glen Simmons observed a single plant in Deer Hammock in 1976. Avery discovered this plant dead following the freeze of January 19-20, 1977 (Avery's Notes, 11 May 1976, 25 February 1977). There is no indication that flor de llanten was ever native to Everglades National Park.

Major Threats: Poaching; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); hydrological modifications.

Preliminary recommendations:

- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control Old World climbing fern and other exotic pest plants that threaten flor de llanten.
- Consider augmenting population at Fakahatchee Strand Preserve State Park.
- Review FNAI rank.

***Polygonella gracilis* Meisn.**

Tall Jointweed

South Florida Status: Critically imperiled. One occurrence at Don Pedro Island State Park and adjoining private property.

Taxonomy: Dicotyledon; Polygonaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Broward, Charlotte, Collier, and Miami-Dade counties.

South Florida Habitats: Scrub, scrubby flatwoods, mesic flatwoods, and sandy pockets in pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Taylor, 1992; Nelson, 1996; Wunderlin, 1998.

Synonyms: *Delopyrum filliforme* Small; *Delopyrum gracile* (Meisn.) Small.

Historical Context in South Florida: Ferdinand Rugel first collected tall jointweed in 1846 in Miami (s.n., NY), presumably in sandy pine rocklands near the Miami River. Additional collections from Miami-Dade County were made in 1912 by John Kunkel Small between Miami and Coconut Grove (4089, NY), in 1929 by Harold N. Moldenke in northern Miami-Dade at Buena Vista (308a, NY), and in 1934 in Miami by Walter M. Buswell (s.n., FTG), probably between downtown Miami and Coral Gables. In 1903, Small and Joel J. Carter made the first collection in Broward County at Fort Lauderdale (1167, NY). Additional collections from the Fort Lauderdale area were made by Buswell in 1934 (s.n., FTG) and 1941 (s.n., FTG). Buckley & Hendrickson (1983a) reported tall jointweed for the Fort Lauderdale Executive Airport Gopher Tortoise Preserve, but this report needs to be verified. George N. Avery collected tall jointweed in Collier County on Horr's Island, adjacent to Marco Island, in 1970 (s.n., FTG). Bradley and Joseph O'Brien observed it there in 1996, but the island was undergoing rapid development. It is doubtfully extant on the island.

In 1979, Bruce F. Hansen and Donald R. Richardson collected tall jointweed near Cape Haze in Charlotte County (6838, USF). In 2000, Gann located the Hansen and Richardson station. The colony was split into two by State Road 775. The western side is now a mainland base for Don Pedro Island State Park. The eastern side was private property that was in the process of being developed. The Don Pedro Island State Park station needs to be vouchered.

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Don Pedro Island State Park.
- Survey Fort Lauderdale Executive Airport Gopher Tortoise Preserve.
- Map and monitor known stations on a regular basis.
- Consider restoring pine rocklands near the Miami River and reintroducing tall jointweed.

***Polygonum setaceum* Baldwin
Bog Smartweed**

South Florida Status: Critically imperiled. One occurrence at Nicodemus Slough.

Taxonomy: Dicotyledon; Polygonaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Throughout except for Martin County and the Florida Keys.

South Florida Habitats: Lake margins, cypress swamps, swales, and disturbed wet areas.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration.

References: Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Nelson, 1996; Wunderlin, 1998.

Synonyms: *Persicaria setacea* (Baldwin) Small.

Historical Context in South Florida: Although bog smartweed has been collected nearly throughout South Florida, few recent records are known. John Kunkel Small and George K. Small made the first collection in 1913 on the shores of Observation Island in Lake Okeechobee in Glades County (4406, NY). The authors conducted a series of surveys on Observation Island and other islands in Lake Okeechobee in 1997, but failed to locate any plants. In 1960, bog smartweed was collected by William P. Adams “ca 6 miles south of Brighton,” a station about nine miles northwest of Lake Okeechobee. In 1997, Bradley and

Woodmansee collected bog smartweed at Nicodemus Slough (444, FTG), a conservation area located just west of Lake Okeechobee in Glades County.

In 1915, Small and others made a collection near Royal Palm Hammock in Miami-Dade County (6642, NY), presumably in or near Taylor Slough in what is now Everglades National Park. In 1916, Small made a collection in the Everglades west of Coconut Grove (8054, NY), an area that has been completely developed. In 1918, Small made a collection in "Everglades along Tamiami Trail" (8836, NY), followed by Olga Lakela, who made an additional collection along Tamiami Trail in 1963 (26210, USF). The exact locations of the Tamiami Trail collections are not known, but it seems likely that bog smartweed was collected in or near the Shark River Slough in what is now Everglades National Park. Alan H. Herndon made an additional collection from Miami-Dade County in 1985 in the Redland area at a disturbed site covered with nursery trash (1231, NY). It does not appear that this collection represented a native population.

In 1925, Hugh O'Neill collected bog smartweed at the Belle Glade Experimental Station in Palm Beach County (s.n., FLAS). It was collected just east of this station in 1944 by "Tisdale, Townsend, & West" at the edge of a canal (s.n., FLAS). In 1947, John H. Davis, Jr. made the only known collection in Broward County "in Everglades" along US 27 at 26 Mile Bend (s.n., FLAS). This collection was made in either Water Conservation Area 2A or 3A. Bradley and Woodmansee conducted surveys of Water Conservation Area 2A in 1997, but did not observe bog smartweed. In 1947, Davis made a collection in the "Loxahatchee area" of Palm Beach County (s.n., FLAS). However, Austin (1974) did not report bog smartweed for Arthur R. Marshall Loxahatchee National Wildlife Refuge. Robert K. Godfrey and Grady W. Reinert made a collection in 1961 near Port Charlotte in Charlotte County (60959, FSU).

In 1964, Daniel B. Ward made a collection of bog smartweed at Pinecrest in Big Cypress National Preserve in Monroe County (3966, FLAS). In 1967, Olga Lakela made another collection in the same general area of Big Cypress National Preserve, this time south of Tamiami Trail and east of Monroe Station in Collier County (30654, USF). However, Black & Black (1980) did not

report this species for the park. William C. Brumbach made two additional collections in 1967 and 1968 on Sanibel Island in Lee County (5744, FLAS; 6484, FLAS).

Major Threats: Development; hydrological modifications; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. However, it may be more common than is indicated here. It may simply be misidentified as other Polygonum species.*

Preliminary recommendations:

- Survey the Pinecrest/Loop Road area of Big Cypress National Preserve, the Taylor Slough and Shark River Slough areas of Everglades National Park, and Water Conservation Area 3A in the Everglades and Francis S. Taylor Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Pseudophoenix sargentii* H. Wendl. ex Sarg.
Sargent's Cherry Palm**

South Florida Status: Critically imperiled. One occurrence at Biscayne National Park.

Taxonomy: Monocotyledon; Arecaceae.

Habit: Tree.

Distribution: Native to South Florida, the West Indies, Mexico, and Central America.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Rockland hammocks and coastal berms.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: *Pseudophoenix* is one of two native palm genera having pinnate leaves, the other genus being *Roystonea*. *Pseudophoenix* is distinguished from *Roystonea* in being of much smaller stature, and by having an inflorescence that emerges from among the leaves rather than below it (Wunderlin, 1998). Scurlock (1987) has color photos.

References: Small, 1933a; Ledin et al., 1959; Read, 1968; Long & Lakela, 1976; Ward, 1976; Little, 1978; Scurlock, 1987; Lippincott, 1992a; Nelson, 1994; Lippincott, 1995; Wunderlin, 1998; Coile, 2000; Flora of North America Editorial Committee, 2000.

Synonyms: *P. vinifera* (Mart.) Becc., misapplied.

Historical Context in South Florida: Commodore Ralph Munroe discovered Sargent's cherry palm in 1886 on Long Key in Monroe County (Munroe, 1930; Read, 1968), and Allan H. Curtiss vouchered it there in 1896 (5637, GH, NY, US). Also in 1886, Charles S. Sargent and Allan H. Curtiss discovered it on Elliott Key in Miami-Dade County (s.n., NY), where a total of six individuals were observed (Read, 1968). In 1923, a single tree was found on Sands Key by Wirth Munroe, which was vouchered by John Kunkel Small and John B. DeWinkeler (10770, GH; Ledin et al. 1959; Read, 1968). Excellent and detailed histories of the species in South Florida are provided by Ledin et al. (1959), Read (1968), and Lippincott (1992a, 1995). As reported by Read, as many as 200 individuals were found at a single time on Long Key and as many as 150 on Elliott Key.

John Kunkel Small (1922) reported Sargent's cherry palm from Upper Matecumbe Key, but the plants were transplants from Long Key.

A photograph taken by Clifton Adams in the herbarium of the Smithsonian Institution shows a single mature plant surrounded by native vegetation on Lower Matecumbe Key. A letter accompanying the photograph was written by David Fairchild to O.F. Cook. The letter described the photograph as having been taken in 1931, and indicates that Fairchild also saw the plant. We have not seen a discussion of this station elsewhere (e.g. Read, 1968), and cannot be certain that it was not a cultivated plant.

Unfortunately, Sargent's cherry palm became highly desirable as a landscape plant and plant collectors plundered the populations on Elliott Key and Long Key (Lippincott, 1992a). Other plants were destroyed on Elliott Key by settlers clearing land for pineapples and other fruit crops (Lippincott, 1992a). By 1966, George N. Avery was unable to locate any plants on Long Key, where he had

previously found the species (Botanical Notes of George N. Avery, 1 August 1966). A subsequent survey in 1990 by Fairchild Tropical Garden biologist Carol Lippincott and Florida Park Service biologist James G. Duquesnel was also in vain (Lippincott, 1992a).

While plants on Long Key were extirpated, a small population persisted on Elliott Key. Surveys by Biscayne National Park staff in the 1970s and 1980s resulted in the location of 29 plants (Lippincott, 1992a). By 1990, additional surveys by the staffs of the National Park Service, Fairchild Tropical Garden, and the Florida Park Service had recorded 47 plants (Lippincott, 1992a). In August 1992 Hurricane Andrew killed 19 of the tallest plants on Elliott Key (Lippincott, 1995), reducing the population to 28 plants.

Fairchild Tropical Garden maintains a collection of germplasm from South Florida, and has done extensive horticultural work on this species. In addition, Fairchild has worked with the National Park Service and the Florida Park Service to augment the population on Elliott Key and reintroduce a population on Long Key. Lippincott (1992a, 1995) gives excellent accounts of these translocation efforts. Fairchild Tropical Garden and Florida Park Service staffs continue to map and monitor both wild and translocated plants at both sites.

Major Threats: Poaching; exotic pest plant invasions.

Comments: *An unpublished paper written by R. Bruce Ledin disputes the nativity of this species. We have seen no evidence to suggest that Sargent's cherry palm was introduced.*

Preliminary recommendations:

- Continue mapping and monitoring of wild plants on Elliott Key.
- Continue augmentation project on Elliott Key.
- Continue reintroduction project on Long Key.

***Quercus xrolfsii* Small
Rolfs' Oak**

South Florida Status: Critically imperiled. One occurrence at County Line Scrub, Miami-Dade County.

Taxonomy: Dicotyledon; Fagaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida.

South Florida Distribution: Broward and Miami-Dade counties.

South Florida Habitats: Scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: This hybrid is not included in any modern keys. Small (1933) has a key of 42 species and hybrids of the southeastern United States.

References: Small, 1905; Small, 1933a; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Rolfs' oak in 1903 near Fort Lauderdale in Broward County (1244, NY). Small (1905) described it as a new species based upon this collection. Small collected it again in Fort Lauderdale in 1904 (s.n., FTG). While it has not been collected again in Broward County, Gann and Bradley collected it in extreme northern Miami-Dade County in 1996 at County Line Scrub (815, FTG), a scrubby flatwoods conservation area managed by Miami-Dade County.

Rolfs' oak has recently been reported for Rookery Bay National Estuarine Research Reserve in Collier County (Burch, 1998), but this report needs to be verified.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a hybrid between Q. chapmanii and Q. minima. Other collections have been made in Clay, Highlands, and Orange counties (Wunderlin & Hansen, 2001).*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Survey Rookery Bay National Estuarine Research Reserve.
- Review for listing by FNAI.

***Rhipsalis baccifera* (J.S. Mill.) Stearn
Mistletoe Cactus**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Dicotyledon; Cactaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America. It is also found in Tropical Africa and Sri Lanka.

South Florida Distribution: Miami-Dade County, and possibly the Monroe County mainland. Persisting or escaped from cultivation elsewhere.

South Florida Habitats: Coastal berms and rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Benson (1982) has a photo; the IRC Website has a color photo.

References: Small, 1933a; Small, 1935; Britton & Rose, 1937; Long & Lakela, 1976; Benson, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Rhipsalis cassutha* Gaertn.

Historical Context in South Florida: Charles A. Mosier first collected mistletoe cactus in 1923 in "Wallensteins Hammock, west of Kendall" in Miami-Dade County (s.n., NY, US). The exact location of this hammock is unknown, but this collection could have been in the vicinity of what is now Kendall Indian Hammocks Park.

Apparently, John Beckner and Roy O. Woodbury discovered mistletoe cactus in the Flamingo area of Everglades National Park in the 1950s (Ward, 1978). Frank C. Craighead collected the earliest known specimen from that region in 1958 (s.n., Everglades National Park herbarium). This collection was made at "Crocodile Point near Snake Bight." Craighead's unpublished notes indicate that this station was just a little south of West Lake. An additional specimen (photograph only) was collected by Lyman Benson in 1965 from "Snakebight Road, four mi. east of Flamingo" (16579, RSA). While this road is in Monroe County, he may have

actually been at Craighead's station east of the county line in Miami-Dade County. Around 1990, Rob Campbell discovered a single plant on a dead buttonwood tree on West Lake (Campbell, 1990), close to Craighead's station. John Ogden and Carol Lippincott vouchered this station in 1991 (46, FTG). Roger Hammer was present also on this trip (R.L. Hammer, personal communication, 10 August 2001). This is the only native population of mistletoe cactus known to exist in South Florida.

Fairchild Tropical Garden has a collection of germplasm from the West Lake plant (Accession #91-601). Mistletoe cactus is widely cultivated in peninsular Florida, and reports from stations other than Kendall and Everglades National Park are thought to represent plants persisting from cultivation, or perhaps naturalized populations from cultivated plants (e.g., Kral 49266, GH; Kral 70796, GH).

Major Threats: Poaching; stochastic events (e.g., hurricanes).

Preliminary recommendations:

- Survey Flamingo area of Everglades National Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Maintain *ex situ* collection of germplasm.
- Consider introducing a population to Kendall Indian Hammocks Park.

***Rhynchospora baldwinii* A. Gray
Baldwin's Beaksedge**

South Florida Status: Critically imperiled. One occurrence at Pal-Mar & Pal-Mar CARL Site.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the central peninsula.

South Florida Distribution: Charlotte, Lee, and Martin counties.

South Florida Habitats: Wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Gale, 1944; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Robert Kral first collected Baldwin's beaksedge in 1958, twelve miles east of Punta Gorda in Charlotte County (6535, USF). This collection was probably made inside of, or very close to, Fred C. Babcock-Cecil M. Webb Wildlife Management Area. In 1991, Steven L. Orzell and Edwin L. Bridges collected Baldwin's beaksedge in Martin County at the Pal-Mar CARL Site (16813, FTG). In 1997, Gann and Bradley collected it nearby in Palm Beach County at Pal-Mar, a South Florida Water Management District conservation area (1033, FTG; 1048, FTG). These two stations are considered to be the same occurrence.

Orzell and Bridges also made a collection in 1992 at the Westinghouse L & L property in the vicinity of Estero Bay State Buffer Preserve in Lee County (19402, USF). This property has been developed, but plants may be present at one or more mitigation sites (R. Irving, personal communication, 6 August 2001).

Major Threats: Drainage of wet flatwoods habitat; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve, Fred C. Babcock-Cecil M. Webb Wildlife Management Area, Pal-Mar Natural Area, and the Westinghouse L & L property.
- Map and monitor known stations on a regular basis.
- Continue acquisitions of unprotected portions of the Pal-Mar CARL Site.

***Rhynchospora fernaldii* Gale
Fernald's Beaksedge**

South Florida Status: Critically imperiled. One occurrence at Six Mile Cypress Slough Preserve.

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to Florida, Georgia, and Alabama. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Glades, and Lee counties.

South Florida Habitats: Mesic flatwoods and probably dry prairie.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Gale, 1944; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Mary Francis Baker first collected Fernald's beaksedge in 1917 in Alva (s.n., US), a town that is located in the vicinity of Caloosahatchee Regional Park in Lee County. In 1992, Steven L. Orzell and Edwin L. Bridges made a collection at the Westinghouse L & L property (19408, USF), in the vicinity of Estero Bay State Buffer Reserve. This property has been developed, but plants may be present in one or more mitigation sites (R. Irving, personal communication, 6 August 2001). In 1997, Bradley and Woodmansee collected Fernald's beaksedge at the Six Mile Cypress Slough Preserve near Fort Myers (795, FTG).

In 1942, John H. Davis made a collection in a "Serenoa prairie" east of Palmdale in Glades County (s.n., FLAS), in or near what is now Fisheating Creek Wildlife Management Area. In 1964, Olga Lakela made the only collection in Collier County along the Lake Trafford Road in Immokalee (27455, USF). In 1990, Orzell and Bridges made a collection in Charlotte County north of El Jobean (14876, USF), near what is now Charlotte Harbor State Buffer Preserve.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Caloosahatchee Regional Park, Charlotte Harbor State Buffer Preserve, the El Jobean station, Estero Bay State Buffer Reserve, the Westinghouse L & L property, and Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Rorippa floridana* Al-Shehbaz & Rollins
Florida Watercress**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Dicotyledon; Brassicaceae.

Distribution: Endemic to Florida. Wunderlin (1998) reports it as frequent in Florida from the western panhandle to the peninsula.

South Florida Distribution: Collier and Miami-Dade counties.

South Florida Habitats: Strand swamps and riverbanks.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Rollins, 1993; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Cardamine curvisiliqua* Shuttlew. ex Chapm.; *Nasturtium microphyllum* Boenn. ex Rchb., misapplied.

Historical Context in South Florida: Abram P. Garber first collected Florida watercress in 1877 along the Miami River (73, FLAS), a station that was subsequently destroyed. In 1960, William G. Atwater collected Florida watercress northwest of Copeland in the Fakahatchee Strand (M-175, FLAS), presumably in what is now Fakahatchee Strand Preserve State Park. Other collections were made in the Fakahatchee in 1969 by George N. Avery (2059, FLAS), in 1979 by Walter S. Judd (2163, FLAS), and in 1985 by Alan Herndon (1182, FLAS). Florida watercress is assumed to be extant in Fakahatchee Strand Preserve State Park.

Major Threats: Exotic pest plant invasions; hydrological modifications.

Preliminary recommendations:

- Map and monitor plants at Fakahatchee Strand Preserve State Park on a regular basis.

***Schizachyrium niveum* (Swallen) Gould
Pinescrub bluestem**

South Florida Status: Critically imperiled. One occurrence at Seabranh Preserve State Park.

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as rare in central Florida.

South Florida Distribution: Martin County, but still not vouchered.

South Florida Habitats: Scrub.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Hitchcock & Chase (1950) has an illustration; Chafin (2000) has illustrations and a color photo.

References: Hitchcock & Chase, 1950; Hall, 1978; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *Andropogon niveus* Swallen.

Historical Context in South Florida: Bradley and Woodmansee first observed pinescrub bluestem in 1998 at Seabranh Preserve State Park in Martin County (Bradley et al., 1999), but this station needs to be vouchered. Fewer than 100 plants were observed.

Major Threats: Exotic pest plant invasions; fire suppression.

Comments: *In a study of scrub sites throughout Martin County in 1998 (Bradley et al., 1999), this species only was seen at Seabranh Preserve State Park.*

Preliminary recommendations:

- Voucher plants at Seabranh Preserve State Park.

- Map and monitor known stations on a regular basis.

***Schizaea pennula* Sw.**
Ray Fern

South Florida Status: Critically imperiled. One occurrence at Arthur R. Marshall Loxahatchee National Wildlife Refuge.

Taxonomy: Pteridophyte; Schizaeaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, central Florida in Pinellas County, the West Indies, Central America, and South America.

South Florida Distribution: Miami-Dade and Palm Beach counties.

South Florida Habitats: Moist organic soils in Everglades tree islands and wet rockland hammocks.

Protection Status: Listed as endangered by FDACS and critically imperiled by FNAI.

Identification: Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has an illustration.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *S. germanii* (Fée) Prantl; *Actinostachys germanii* Fée; *Actinostachys pennula* (Sw.) Hook.

Historical Context in South Florida: Alvah A. Eaton first collected ray fern in 1904 in “intangled growth” along the Miami River (996, USF). Eaton (1906) reported that it was very scarce at that location. It was reported again in 1914 in Royal Palm Hammock in Everglades National Park (Small, 1938), but apparently it never was vouchered there.

Taylor R. Alexander rediscovered ray fern in 1972 on tree islands (bayheads) in Arthur R. Marshall Loxahatchee National Wildlife Refuge in Palm Beach County (Alexander, 1974). This population is extant and was last observed by Bradley and Woodmansee in 2000. It is estimated that fewer than 1,000 plants are present in the Loxahatchee National Wildlife Refuge.

Major Threats: Exotic pest plant invasions, specifically by Old World climbing fern (*Lygodium microphyllum*) which is rapidly invading tree islands in Loxahatchee National Wildlife Refuge and has been found in association with ray fern by Bradley and Woodmansee; off-target damage from exotic species control efforts; hydrological modifications; wildfire.

Comments: *This is one of the species that may be affected by the Everglades restoration.*

Preliminary recommendations:

- Survey tree islands in Arthur R. Marshall National Wildlife Refuge.
- Map individual tree islands known to contain ray fern at least every three years.
- Monitor individual tree islands at least every year.
- Control Old World climbing fern (*Lygodium microphyllum*) and other exotic pest plants without causing off-target damage to ray fern.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct research to determine the effects of the Everglades restoration on ray fern.

***Schoenocaulon dubium* (Michx.) Small
Florida Feathershank**

South Florida Status: Critically imperiled. One occurrence in Jonathan Dickinson State Park.

Taxonomy: Monocotyledon; Liliaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in peninsular Florida.

South Florida Distribution: Broward, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods and scrub.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Frame, 1990; Taylor, 1998; Wunderlin, 1998.

Synonyms: *Schoenocaulon gracile* A. Gray.

Historical Context in South Florida: Roy O. Woodbury and Walter M. Buswell first collected Florida feathershank in 1942 in the vicinity of Pompano Beach in northern Broward County (s.n., FTG). Ann Buckley and Ted Hendrickson collected it in 1984 in the same general area of Broward County in Deerfield Beach (33, FTG). Both of these stations probably have been destroyed. In 1977, Daniel F. Austin made a collection at Jonathan Dickinson State Park in Martin County (s.n., FAU), followed by John Popenoe in 1980 (1907, USF). In 1997, Bradley and Woodmansee collected it along the Loxahatchee River Corridor in the Palm Beach County portion of Jonathan Dickinson State Park (94, FTG). Florida feathershank has been reported for Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties, but this report needs to be verified.

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Scleria ciliata* Michx.
var. *pauciflora* (Muhl. ex Willd.) Kük.
Fewflower Nutrush**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Fred C. Babcock-Cecil M. Webb Wildlife Management Area) and one non-conservation area (Pal-Mar CARL Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: The eastern United States, Cuba, Mexico, and Central America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Lee, and Martin counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Distinguished from other varieties of *S. ciliata* by having achene bodies that are ridged or papillate instead of reticulate, 1-2 mm long, and 6 tubercles (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Core, 1936; Fairey, 1967; Fairey, 1969; Long & Lakela, 1976; Godfrey & Wooten, 1979; Kessler, 1987; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *S. pauciflora* Muhl. ex Willd.; *S. pauciflora* var. *caroliniana* (Willd.) A.W. Wood.

Historical Context in South Florida: Leonard J. Brass first collected fewflower nutrush in 1964 in Collier County northeast of Naples in the Golden Gate Estates area (33362, USF). This station has probably been destroyed. In 1990, Steven L. Orzell and Edwin L. Bridges made a collection about 0.5 miles east of Estero Bay near Bonita Springs in Lee County (15197, FTG, USF), in or near what is now Estero Bay State Buffer Preserve. Orzell and Bridges made another collection in 1991 at the Pal-Mar CARL Site in Martin County (16851, FTG). It has also been reported for Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date), but this report needs to be verified. Gann and Bradley collected it in 1995 at the Fred C. Babcock-Cecil M. Webb Wildlife Management Area in Charlotte County (53, FTG).

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve and Jonathan Dickinson State Park.
- Map and monitor known stations on a regular basis.
- Continue CARL acquisitions to expand Estero Bay State Buffer Preserve and Pal-Mar.

***Scutellaria arenicola* Small
Florida Scrub Skullcap**

South Florida Status: Critically imperiled. One occurrence at Collier-Seminole State Park.

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as frequent in the peninsula.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Small, 1933a; Epling, 1942; Godfrey & Wooten, 1981; Taylor, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Albert S. Hitchcock first collected Florida scrub skullcap in 1900 in Fort Myers (277, NY). Alvah A. Eaton made another collection there in 1904 (1153, AMES). Epling (1942) cited an additional specimen by Eaton, probably in 1905 (1410), but we have not located this specimen. Jeanette P. Standley also collected Florida scrub skullcap in Lee County in the Mullock Creek area in 1917 (440, US). This station is in the vicinity of what is now Estero Bay State Buffer Preserve. In 1982, George N. Avery collected Florida scrub skullcap at Collier-Seminole State Park (2350, FTG). J. Weber also collected it there in 1991 (CS0026, USF).

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve.
- Map and monitor known stations on a regular basis.

***Spiranthes costaricensis* Rchb. f.
Costa Rican Lady's-tresses**

South Florida Status: Critically imperiled. One occurrence at Everglades National Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, and Central America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: *Beloglottis costaricensis* (Rchb. f.) Schltr.

Historical Context in South Florida: John Beckner discovered Costa Rican lady's-tresses in 1953 in or around Long Pine Key in Everglades National Park (Luer, 1972). It was collected on Long Pine Key by George N. Avery in 1980 (2215, FTG), and by Richard G. Reimus and Chuck McCartney in 1991 (s.n., FTG). Avery observed Costa Rican lady's-tresses in five hammocks in the vicinity of Long Pine Key from 1980 to 1983 (Avery's Notes, 1980-1983). It can still be found in at least four hammocks in Everglades National Park (Hammer, 2001). Avery reported one other station of Costa Rican lady's-tresses in 1982 (Avery's Notes, 19 February 1982, 22 December 1982). He found plants growing at Camp Owaissa Bauer, a Miami-Dade County park. About ten plants were present in 1982 (Avery's Notes, 1982), and Chuck McCartney photographed plants there in 1983 (personal communication, 21 February 2001). No subsequent reports from that station have been made despite numerous attempts to find these plants by Roger L. Hammer (Hammer, 2001) and others.

Major Threats: Exotic pest plant invasions; poaching.

Preliminary recommendations:

- Continue surveys at Camp Owaissa Bauer.
- Map and monitor known stations on a regular basis.

***Sporobolus compositus* (Poir.) Merr.
var. *clandestinus* (Biehler) Wipff & S.D. Jones
Hidden Dropseed**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Everglades National Park), and one non-conservation area (Navy Wells #2).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to Hillsborough County.

South Florida Distribution: Miami-Dade County, where it is disjunct from the nearest populations in Hillsborough County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase 1950; Hall, 1978; Wunderlin, 1998.

Synonyms: *S. clandestinus* (Biehler) Hitchc.

Historical Context in South Florida: Alvah A. Eaton first collected hidden dropseed in 1903 on “Border of prairies, South of Cutler” (225, US). It was rediscovered, unwittingly, in 1982 when George N. Avery collected an undetermined grass on Long Pine Key in Everglades National Park (2351, FTG). It remained unidentified until Bradley discovered a population of an unknown grass at a private pine rockland fragment known as Navy Wells #2 in 1997 (729, FTG). Bradley, who had seen Avery’s unidentified specimen, recognized that it was the same. He called the specimens to the attention of Gerald “Stinger” Guala, keeper of the Fairchild Tropical Garden herbarium, who correctly identified them. In 2000, Bradley and Gann observed the colony discovered by Avery in Everglades National Park. The plants at this station are growing along the side of a firebreak road at the edge of a pine rockland.

Major Threats: Habitat destruction at Navy Wells #2; road maintenance on Long Pine Key; fire suppression; exotic pest plant invasions; management error.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Acquire Navy Wells #2.

***Stylisma abdita* T. Myint
Showy Dawnflower**

South Florida Status: Critically imperiled. One occurrence in one conservation area (Rookery Bay National Estuarine Research Reserve) and fragmented occurrences on several private properties in Collier County.

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to Florida. Wunderlin (1998) records it as rare in peninsular Florida.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Scrub.

Protection Status: Listed as endangered by FDACS and as imperiled to rare by FNAI.

Identification: There are five species of *Stylisma* in Florida. *S. abdita* is distinguished by having leaves that are less than 2 cm long, rather than over 2 cm long (Wunderlin 1998).

References: Myint, 1966; Long & Lakela, 1976; Austin & Burch, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Alan R. Smith and Tin Myint first collected showy dawnflower in 1961 (627, FLAS) in Naples. Myint (1966) subsequently described the species. Showy dawnflower was overlooked in Collier County until Jim Burch began making collections in the late 1980s and early 1990s in both Collier and Lee counties. The status of the species in southwest Florida was reported by Austin & Burch (1992). Burch collected it on Marco Island in 1990 (213, Collier County Natural Resources Division Herbarium), the Naples area many times from 1987 (s.n., FAU) to 1991 (423, Collier County Natural Resources Division Herbarium), and the Pelican Bay area many times in 1990 and 1991 (e.g. s.n., USF). Burch made the first collection in Lee County in 1987 in Bonita Springs (s.n., FAU). Burch made another collection in Bonita Springs in 1990 (s.n., FAU). In 2001 Burch found plants at the Rookery Bay National Estuarine Research Reserve (personal communication, 14 January 2002).

While showy dawnflower has been collected or observed on many sites in Collier and Lee counties in the last 15 years, Burch believes that most plants have either been destroyed or will be destroyed in the near future. Burch estimates that between 12 and 15 scrub fragments may remain with the species in Collier County, and it may no longer be extant in Lee County (personal communication, 14 January 2002).

Major Threats: Habitat destruction at private stations.

Preliminary recommendations:

- Survey scrub sites in Collier County and southern Lee County.
- Map and monitor known stations on a regular basis.

***Tephrosia angustissima* Shuttlew. ex Chapm.
var. *curtissii* (Small ex Rydb.) Isely
Curtiss' Hoarypea**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Hollywood North Beach Regional Park) and one non-conservation area (Lumms Park).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in the central peninsula.

South Florida Distribution: Broward, Hendry, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Coastal strand and, probably, flatwoods.

Protection Status: Listed as endangered by FDACS (as *T. angustissima*) and as critically imperiled by FNAI.

Identification: *T. angustissima* is distinguished from other species of *Tephrosia* in Florida by having a glabrous style (Wunderlin, 1998). The variety *curtissii* is distinguished from other varieties of *T. angustissima* by being minutely strigose and having leaflets 2-8 times longer than wide (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Shinnery, 1962b; Long & Lakela, 1976; Austin, 1980; Isely, 1982; Isely, 1990; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *T. curtissii* (Small ex Rydb.) Shinnery; *T. leptostachya* DC., misapplied; *T. seminole* Shinnery; *Cracca curtissii* Small ex Rydb.

Historical Context in South Florida: Allan H. Curtiss first collected Curtiss' hoarypea in 1895 on beach ridges near the Jupiter Inlet in northern Palm Beach County (5561, FLAS, NY). Austin et al. (1980b) reported it for South Beach Park and Red Reef Park in Boca Raton based upon surveys conducted in 1979. Between 100 and 200 plants were observed at South Beach Park, while only four plants were observed at Red Reef Park. Curtiss' hoarypea is not thought to be currently present at either site. Austin has searched for plants at South Beach Park, but has not been able to find any specimens (personal communication, 10 March 2001). In 1984, Jerry Derenthal collected a specimen near

both of these sites, at Spanish River Park (1, FAU), where its status is unknown.

In 1986, Ted Hendrickson and Ann Buckley collected Curtiss' hoarypea at Hollywood North Beach Regional Park in Broward County (501, FTG). Gann and Bradley observed this occurrence in 1995. Plants were growing along a roadside in a disturbed coastal strand. While this site is considered a conservation area (Jue et al., 2001), it is used primarily for beach access.

In 1999, Gary Hunt reported to Bradley that he knew of a population of Curtiss' hoarypea at Lummus Park on Miami Beach. Hunt had known of this station for several years. Bradley observed this station in 1999 (2039, FTG). Fewer than 100 plants were growing in open sand behind beach dunes. Lummus Park is a recreational park with a renourished beach and a very narrow restored beach dune system.

In 1919, Perley Poore Sheehan made a single collection of Curtiss' hoarypea in Hendry County at Godden's Mission, now in the Big Cypress Seminole Indian Reservation (848, NY). It was this specimen that Shinnars (1962b) used as the type for his *T. seminole*, a species that later was placed into synonymy under *T. angustissima* var. *curtissii*.

Major Threats: Habitat destruction at Hollywood North Beach Regional Park and Lummus Park; exotic pest plant invasions, especially beach naupaka (*Scaevola sericea*); coastal erosion; trampling.

Preliminary recommendations:

- Survey Red Reef Park, South Beach Park, and Spanish River Park.
- Map and monitor known stations on a regular basis.
- Develop conservation agreement with the City of Miami to restore and maintain a viable population of Curtiss' hoarypea.
- Control beach naupaka and other exotic pest plants that threaten Curtiss' hoarypea.
- Study feasibility of reintroducing Curtiss' hoarypea to other stations within its historical range.

***Tephrosia chrysophylla* Pursh**
Scurf Hoarypea

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Lee, Martin, and Miami-Dade counties.

South Florida Habitats: Flatwoods and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; Wood, 1949; Isely, 1990; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Cracca carpenteri* Rydb.; *Cracca chapmanii* (Vail) Small; *Cracca chrysophylla* (Pursh) Kuntze.

Historical Context in South Florida: Albert S. Hitchcock collected scurf hoarypea first in 1900 in Fort Myers in Lee County (81, NY). Walter M. Buswell collected it again in Fort Myers in 1930 (s.n., FTG). In 1948, Roy O. Woodbury made the only collection in Miami-Dade County at Cutler (s.n., FTG), in the vicinity of Deering Estate at Cutler and Ludlam Pineland Tract. In 1978, John Popenoe collected scurf hoarypea at Jonathan Dickinson State Park in Martin County (778, FTG), where it is assumed to be extant.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Consider restoring pine rocklands near the Miami River and introducing scurf hoarypea.

***Tephrosia hispidula* (Michx.) Pers.
Sprawling Hoarypea**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain and piedmont. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Lee and Martin counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Distinguished from other species of *Tephrosia* in South Florida by having petioles equaling to or shorter than the length of the lowest leaflets, racemes not foliose, fruits short villous, and upper stem and leaf rachis with spreading trichomes (Wunderlin, 1998). Wunderlin (1998) has a key to the seven species of *Tephrosia* in Florida.

References: Chapman, 1883; Small, 1933a; Wood, 1949; Isely, 1990; Wunderlin, 1998.

Synonyms: *Cracca hispidula* (Michx.) Kuntze.

Historical Context in South Florida: Edgar T. Wherry first collected sprawling hoarypea in 1930 south of Fort Myers in Lee County (s.n., PH). It has been reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in both Lee and Collier counties, but this report needs to be verified. In 1976, John Popenoe collected sprawling hoarypea at Jonathan Dickinson State Park in Martin County (648, FTG). Roy O. Woodbury collected it there again in 1989 (s.n., FTG, USF), where it is assumed to be extant. It has been reported for the Loxahatchee Slough Natural Area (Farnsworth, 1994c), but this station needs to be verified.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary and Loxahatchee Slough Natural Area.
- Map and monitor known stations on a regular basis.

***Thelypteris grandis* A.R. Sm.
Stately Maiden Fern**

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS.

Identification: Nelson (2000) has color photos; the IRC Website has a color photo.

References: Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: Clifton E. Nauman and Daniel F. Austin first collected stately maiden fern in 1978 in Fakahatchee Strand Preserve State Park (557, USF). Nauman and others made additional collections in 1980 (s.n., USF) and 1981 (1418, USF). Florida Park Service biologist Mike Owen estimates that there are fewer than 100 plants in the Fakahatchee Strand (personal communication, 25 January 2001).

Major Threats: Poaching; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); hydrological modifications.

Preliminary recommendations:

- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

- Control Old World climbing fern (*Lygodium microphyllum*) and other exotic pest plants that threaten stately maiden fern.
- Review for listing by FNAI.

***Thelypteris serrata* (Cav.) Alston**
Toothed Lattice-vein Fern

South Florida Status: Critically imperiled. Two occurrences in Jonathan Dickinson State Park.

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) reports it as occasional in Florida in the central and southern peninsula.

South Florida Distribution: Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Hydric hammocks, rockland hammocks, and riverine swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: *Thelypteris serrata* and *T. reticulata* are very close in appearance and are dissimilar from other species of *Thelypteris* in South Florida. Of the two, *T. serrata* has significantly narrower pinnae (up to 3.5 cm vs. up to 6 cm wide in *T. reticulata*). Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Liogier & Martorell, 2000; Chafin, 2000; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Meniscium serratum* Cav.

Historical Context in South Florida: J.W. Harshberger first collected toothed lattice-vein fern in 1912 on the southern shore of Lake Okeechobee (1937, NY), probably in northwestern Palm Beach County. This station has been long destroyed, and no plants have been collected or observed in that area since that time. A second station in Palm Beach County represents a large population along the Loxahatchee River in both Palm Beach and Martin counties, now within Jonathan Dickinson State Park. This

population was first vouchered by John Popenoe in 1972 (s.n., FTG). Popenoe vouchered this population again in 1981 (2177, FTG), and Bradley and Woodmansee collected the most recent specimen in 1997 (52, FTG). Fewer than 3,000 plants are thought to be present in the park. Woodmansee, Sandra Vardaman, and Gwen Burzycki discovered an additional station at the South Fork St. Lucie River site in Jonathan Dickinson State Park in Martin County in 2000 (588b, FTG). The Loxahatchee River station and the South Fork of the St. Lucie River stations are considered to be separate occurrences.

Thomas Darling, Jr. made the first collection in Miami-Dade County in 1959 near the intersection of Quail Roost Drive and S.W. 154 Avenue (s.n., US), apparently along the edge of an old transverse glade. This same station was apparently vouchered again by Frank C. Craighead in 1960 (s.n., FLAS), and subsequently observed by John Popenoe (Avery's Notes, 19 February 1968). Avery visited this station in 1975, but only was able to locate plants of the closely related *T. reticulata* (Avery's Notes, 3 April 1975). Gann attempted to locate this site in the late 1990s, but it had apparently been destroyed for agriculture.

The remaining verifiable stations for toothed lattice-vein fern are all in Everglades National Park in and around Royal Palm Hammock near the park's main entrance. Craighead made the first collection in the park in 1960 in a cypress head without definite locality (s.n., FLAS). Pam Krauss collected the next specimen in April 1979, in the understory of an abandoned agricultural field just east of Pine Island (567, FTG). The overstory was Brazilian-pepper (*Schinus terebinthifolius*). George N. Avery visited this station in June 1979, and observed several plants (Avery's Notes, 8 June 1979). He revisited the station in 1983 with Roland Eves, who took photographs of the plants at that station (Avery's Notes, 2 April 1983). This station needs to be surveyed and nearby habitats explored for plants growing in more natural conditions.

Major Threats: Exotic pest plant invasions; hydrological modifications; habitat modifications (clearing of Brazilian-pepper in Everglades National Park without protecting or translocating populations of toothed lattice-vein fern); poaching.

Comments: *John Kunkel Small apparently never saw live plants of T. serrata. The only plants he was aware of, through 1938, were the plants collected along Lake Okeechobee. Gann and Bradley observed plants along the Fisheating Creek in Highlands County in 1996, in the vicinity of what is now Fisheating Creek Wildlife Management Area.*

Preliminary recommendations:

- Survey Everglades National Park in the vicinity of Pine Island and Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- If plants are found in disturbed areas in Everglades National Park, consider translocating to a more natural habitat (e.g., cypress dome) in the vicinity of Pine Island.

***Trichomanes holopterum* Kunze
Entire-winged Bristle Fern**

South Florida Status: Critically imperiled. One occurrence at Big Cypress National Preserve.

Taxonomy: Pteridophyte; Hymenophyllaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Collier County, and the Monroe County mainland.

South Florida Habitats: Strand swamps and cypress swamps; epiphytic on cypress (*Taxodium*) trunks, decaying logs, and stumps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has a photo; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Delchamps, 1966; Lakela & Long, 1976; Long & Lakela, 1976; Nauman, 1986b; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000, Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: Richard and Rhoda Stone first observed entire-winged bristle fern in 1964 in what is now Big Cypress National Preserve (Delchamps, 1966). C. Eugene Delchamps vouchered it that same year near Monroe Station (s.n., FLAS). It was collected again in the same general area in both Collier and Monroe counties by Daniel B. Ward (5307, FLAS), Robert W. Long (1688, USF), and George N. Avery (957, FTG). Clifton E. Nauman and John Popenoe made the last collection in 1986 (1783, FTG). Bradley and Gil Nelson observed this population in 1998. Fewer than 100 plants were present, but many more plants could be present in nearby areas. This area needs to be thoroughly surveyed and mapped.

Major Threats: Hydrological modifications; exotic pest plant invasions; recreational off-road vehicle use; wild hog damage.

Comments: *Wunderlin and Hansen (2000) states that mature sporophytes are uncommon, but that gametophyte colonies are relatively common and extensive.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Trichostigma octandrum* (L.) H. Walter
Hoopvine**

South Florida Status: Critically imperiled. One occurrence in Everglades and Francis S. Taylor Wildlife Management Area.

Taxonomy: Dicotyledon; Phytolaccaceae.

Habit: Herbaceous vine.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Broward and Collier counties, and the Monroe County Keys.

South Florida Habitats: Shell mounds, rockland hammocks, and bayheads.

Protection Status: Listed as endangered by FDACS.

Identification: Correll & Correll (1982) has an illustration.

References: Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000, Austin, 2001.

Synonyms: None.

Historical Context in South Florida: Joseph H. Simpson first collected hoopvine in 1891 on Chokoloskee Island (238, US), presumably in a hammock on a shell mound. It was collected there again in 1916 by John Kunkel Small (7718, NY), in 1969 by George N. Avery (739, FTG), and in 1982 by Donovan S. Correll (53231, FTG, NY, USF). The last remnants of natural areas on that island have been developed, and it almost certainly is extirpated there. In 1921, Small and Paul Matthaus collected hoopvine in a rockland hammock on Pumpkin Key in Monroe County (9904, FLAS, NY). Small (1923) writes of the discovery of hoopvine at that location. Avery collected it there again in 1970 (739A, FTG). Portions of this private island were later developed, and it may be extirpated there, but this station should be surveyed. In 1930, Harold N. Moldenke made a collection in Miami in “low swampy ground along roadside” (3703, NY). This is the only collection known from Miami-Dade County, and it is uncertain where this specimen was collected. Black & Black (1980) reported hoopvine for Big Cypress National Preserve based upon a personal communication with George N. Avery. Avery’s notes make no mention of observing hoopvine in the Big Cypress, but hoopvine was reported again in 1982 for Hammock C in the Pinecrest region of site (Gundersen & Loope, 1982b), an area that Avery helped to inventory.

An additional mainland station was discovered in 2000 by Michael R. Anderson in Water Conservation Area 3A in Broward County (s.n., USF, FLAS; Austin, 2001), part of the Everglades and Francis S. Taylor Wildlife Management Area. The plants were found growing on four tree islands dominated by *Acer rubrum*. This is apparently the only extant occurrence in Florida. Fewer than 50 plants are thought to be present at this station (M.R. Anderson, personal communication, 23 February 2001).

Threats: Exotic pest plant invasions; manipulation of water levels in Water Conservation Area 3A.

Comments: *This is one of the species that may be affected by the Everglades restoration.*

Preliminary recommendations:

- Survey the Pinecrest Region of Big Cypress National Preserve and Pumpkin Key.
- Map and monitor known stations on a regular basis.
- Acquire Pumpkin Key.
- Consider restoring shell mounds hammocks on Chokoloskee Island and reintroducing hoopvine.
- Conduct research to determine the effects of the Everglades restoration on hoopvine.
- Review for listing by FNAI.

***Tropidia polystachya* (Sw.) Ames**
Young Palm Orchid

South Florida Status: Critically imperiled. One occurrence at Alice Wainwright Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as extirpated by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Ames, 1904a; Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000.

Synonyms: *Tropidia eatonii* Ames.

Historical Context in South Florida: Ferdinand Rugel first collected young palm orchid in 1846 in Miami (s.n., US), presumably in Brickell Hammock, which was located just south of present-day downtown Miami. Allan H. Curtiss vouchered it again in Brickell Hammock in 1897 (5949, AMES), followed by Alvah A. Eaton in 1903 (s.n., AMES, NY) and 1905 (1185, AMES), and by John Kunkel Small in 1906 (2565a, NY). Brickell Hammock has been devastated by development, and only small fragments remain. Young palm orchid is still known from a remnant of Brickell Hammock at Alice Wainwright Park, which is managed by the City of Miami. In 1975, Roger L. Hammer found a few plants

there, which were subsequently observed by George N. Avery (Avery's Notes, 12 March 1975). In 1980, the City of Miami built a nature trail right through the colony, but City of Miami naturalist Ralph Beaudry reported that 10-12 plants remained after the trail had been completed (Avery's Notes, 29 April 1980). In 1989, Hammer and Carol Lippincott surveyed the site and counted six plants (Hammer, 1997). After Hurricane Andrew in 1992, it was thought that young palm orchid was extirpated in South Florida, but in 1998 Chuck McCartney observed three plants at Alice Wainwright Park (Hammer, 2001). Since that time, Hammer has discovered a fourth plant (Hammer, 2001), and a small colony is thought to persist there.

In 1904, Alvah A. Eaton collected young palm orchid in Castellow Hammock, now part of Castellow Hammock Park, reporting "a few plants only" (Ames, 1904a). Despite a great deal of botanical activity in this hammock, no other plants have been reported. In 1915, Small and Charles A. Mosier made a collection in Brogdon Hammock (6326, NY), a hammock of uncertain locality that has probably been destroyed. In 1922, Small and others collected young palm orchid at Warwick Hammock (10732, NY), which is located along Old Cutler Road to the north of what is now Deering Estate at Cutler. This hammock was subsequently subdivided and developed for single-family residences. Gann surveyed hammock fragments in this subdivision in 1995, but did not find any plants of young palm orchid.

Major Threats: Management error; exotic pest plant invasions; vandalism; poaching.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching and vandalism.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting population at Alice Wainwright Park.
- Consider introducing young palm orchid to other sites within its historical range, including Bill Sadowski Park, Castellow Hammock Park, Deering Estate at Cutler, Simpson Park, and Vizcaya Museum and Gardens.
- Review FNAI rank.

***Vaccinium arboreum* Marshall**
Sparkleberry

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Hickey Creek Mitigation Park Wildlife and Environmental Area), and in one non-conservation area (FDOT property on Alligator Creek in Charlotte County).

Taxonomy: Dicotyledon; Ericaceae.

Habit: Tree.

Distribution: Native to the southeastern coastal plain and piedmont. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Charlotte, Hendry, Lee and Martin counties.

South Florida Habitats: Mesic hammocks and scrub.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has an illustration; Nelson (1996) has an illustration and a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey, 1988; Nelson, 1994; Nelson, 1996; Wunderlin, 1998.

Synonyms: *Batadendron arboreum* (Marshall) Nutt.

Historical Context in South Florida: Albert S. Hitchcock first collected sparkleberry in 1900 in Alva in Lee County (192, NY), in the vicinity of what is now Caloosahatchee Regional Park. In 1930, Harold N. Moldenke made a collection in the same general area east of Owanita (1015, NY). It was reported near Owanita at Hickey Creek Mitigation Park Wildlife and Environmental Area (Florida Game and Fresh Water Fish Commission and Lee County, 1994), and was observed there by Gann and Lee County biologists Roger Clark and Rob Irving in 2001. This station needs to be vouchered. Walter M. Buswell made an additional collection near Fort Myers in 1931 (s.n., NY). Robin Huck also made a collection in 1986 at a private scrub site east of Bonita Springs (4074, FLAS). The species also is reported for the Koreshan State Historic Site (Florida Park Service District 4, 1994d) but this report has not been confirmed.

In 1957, the only collection from Hendry County was made by Leonard J. Brass at Fort Denaud in a hammock on the bank of the Caloosahatchee River (29028, ARCH).

In 1965, Olga Lakela made a collection in Charlotte County in a "Hammock along creek and berm in white sand scrub, FL 31," probably north of Bermont. In 1996, Gann and Bradley found sparkleberry in a mesic hammock along Alligator Creek just off I-75 at the Alligator Creek Pignut Hickory Site, which is owned by the Florida Department of Transportation. Bradley vouchered this station in 1998 (1289, FTG). Fewer than 100 plants are known to exist here.

Bruce E. Tatje made a single collection in Martin County in 1977, along State Road 714 west of Palm City (s.n., FAU). Sparkleberry also has been reported for the J.W. Corbett Wildlife Management Area in Palm Beach County by Cox (1988) and by Robson & Cox (1988). Since no specimens have been located from Palm Beach County, these reports should be verified.

Major Threats: Development; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Hickey Creek Mitigation Park Wildlife and Environmental Area.
- Survey Caloosahatchee Regional Park, J.W. Corbett Wildlife Management Area, Koreshan State Historic Site, and the Bonita Beach station.
- Designate and manage Alligator Creek Pignut Hickory Site as a conservation area.
- Map and monitor known stations on a regular basis.

***Vanilla phaeantha* Rchb. f.**
Leafy Vanilla

South Florida Status: Critically imperiled. One occurrence at Fakahatchee Strand Preserve State Park.

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial vine.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: This is one of three leafy vanilla orchids in South Florida. Besides *V. phaeantha*, *V. inodora* is native (see above), and *V. mexicana*, the commercial vanilla, is exotic. Luer (1972) has illustrations and color photos of all three species.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Alvah A. Eaton first collected leafy vanilla in 1904 in the Fakahatchee Strand (1129, NY), now part of Fakahatchee Strand Preserve State Park. It has been observed there by a number of botanists. Florida Park Service biologist Mike Owen estimates that there are about 1,000 plants in the Fakahatchee Strand (personal communication, 7 February 2001). Leafy vanilla also has been reported for Big Cypress National Preserve (Black & Black, 1980), but this report needs to be verified.

The Everglades National Park records (Avery & Loope, 1980b, 1983; Reimus 1996, 1999) are based upon plants translocated from the Fakahatchee Strand by Craighead (Hammer, 2001). None of these plants are thought to be extant, and there is no indication that leafy vanilla was ever part of the flora of Everglades National Park.

Major Threats: Poaching; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); hydrological modifications.

Preliminary recommendations:

- Continue ongoing surveys in Fakahatchee Strand Preserve State Park.
- Survey Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

- Control Old World climbing fern (*Lygodium microphyllum*) and other exotic pest plants that threaten leafy vanilla.
- Review FNAI listing.

***Xyris platylepis* Chapm.
Tall Yelloweyedgrass**

South Florida Status: Critically imperiled. One occurrence at Jonathan Dickinson State Park.

Taxonomy: Monocotyledon; Xyridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Collier, Glades, Lee, and Martin counties.

South Florida Habitats: Flatwoods and pond margins.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Kral, 1960b; Kral, 1966b; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: None.

Historical Context in South Florida: Albert S. Hitchcock first collected tall yelloweyedgrass in 1900 in Fort Myers (359, NY, US). It has been reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in both Lee and Collier counties, but this report needs to be verified. In 1962, Leonard J. Brass collected tall yelloweyedgrass along the Hall Branch of Fisheating Creek in Glades County (32915, USF), in or near the newly acquired Fisheating Creek Wildlife Management Area. In 1964, Olga Lakela made a collection in a swampy ditch along Lake Trafford Road west of Immokalee in Collier County (27465, USF). In 1995, Edwin L. Bridges and Randy L. Mears made a collection in Jonathan Dickinson State Park in Martin County (23971, FTG, USF). It also has been reported for Dupuis Reserve (Woodbury, no date), which is located in Martin and Palm Beach counties, but this report needs to be verified.

Major Threats: Exotic pest plant invasions; fire suppression; hydrological modifications; habitat destruction.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Corkscrew Swamp Sanctuary, Dupuis Reserve, and Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

Part 3. Other Critically Imperiled Plants

***Adiantum melanoleucum* Willd.
Fragrant Maidenhair**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Everglades National Park; Harden Hammock), and one government owned non-conservation area (Troop 69 Boy Scout Site).

Taxonomy: Pteridophyte; Adiantaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Walls of limestone sinkholes in rockland hammocks.

Protection Status: Listed as endangered by FDACS and critically imperiled by FNAI.

Identification: Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Ward, 1978; Correll & Correll, 1982; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liohier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: John J. Soar discovered fragrant maidenhair in South Florida prior to 1916 (letter from J. K. Small to John J. Soar, November 28, 1917, Florida State Archives, Tallahassee). John Kunkel Small made the first collections in 1916 (7338, FLAS, US) and 1917 (8130, US) on Long Pine Key in what is now Everglades National Park. After over forty years, Frank C. Craighead made the next collection of the Long Pine Key plants in 1960 (s.n., ARCH, US). Thomas Darling, Jr. (1962) visited this station in 1960 with Craighead a short time after Hurricane Donna had struck. Darling remarked that nearly all of the ferns were destroyed. Those remaining were badly scalded. Craighead vouchered this station again in 1963 (s.n., USF). Apparently all of the collections on Long Pine Key have been made from the same hammock. George N. Avery observed two plants in this hammock in 1976, on the wall of a single limestone

sinkhole (Avery's Notes, 11 May 1976). Don Keller observed plants at this station in 1987 and 1988 (personal communication, 8 February 2001). Eight plants were the most he ever observed there. Rick Seavey, a volunteer botanist at Everglades National Park, observed plants at this station, both prior to Hurricane Andrew (1992), and again in 1993 (personal communication, 26 January 2001). Roger L. Hammer observed this station in 2000, and reports that only two or three plants were present (personal communication, 27 January 2001).

Mary Ann Bolla and Joyce W. Gann discovered a second station at Cox Hammock in 1981 (Avery's Notes, 6 July 1981). This hammock is privately owned and is divided into two ownerships; the eastern portion is operated as the Monkey Jungle, and the western portion is part of the Possum Trot Nursery. Fragrant maidenhair was found in the western portion of the hammock, but no one has looked for it there in many years. This station needs to be surveyed.

Alan Cressler collected fragrant maidenhair at Harden Hammock, now a Miami-Dade County conservation area, in 1989 (s.n., FTG). He observed ten plants. Don Keller also observed plants there in 1989 (personal communication, 8 February 2001). He counted eight plants in two large clumps. Hammer surveyed this station in January 2001, but found only four plants (personal communication, 26 January 2001).

Bradley discovered a fourth station in 1994 at a county-owned property used as a Boy Scout facility about 2.5 miles south of Cox Hammock (49, FTG). Originally, eight plants were found, but that population had been reduced to a single plant as of 1998. Bradley observed this same plant again in 2000.

At last count, there were seven or eight known plants remaining in South Florida.

Major Threats: Habitat destruction or degradation at the Boy Scout facility; poaching; exotic pest plant invasions; off-target damage from exotic species control efforts; long-term drainage on the Miami Rock Ridge.

Comments: *This is one of the species that may be affected by the Everglades restoration. In general, more water delivery into the Long Pine Key area south of the main park road would probably help this species, as it requires relatively moist conditions and high humidity. However, impoundment of water to the north by main park road may impede any additional water from reaching the habitat of this fern.*

Preliminary recommendations:

- Survey Cox Hammock station.
- Map plants at known stations on an annual basis.
- Monitor known stations on a quarterly basis.
- Protect from poaching.
- Ensure that exotic pest plant control programs at Harden Hammock do not harm fragrant maidenhair.
- Develop conservation agreement with Boy Scout Troop 69. Provide technical assistance to help manage the population at Boy Scout Troop 69 Site.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology research and conservation horticulture studies.
- Consider augmenting known populations at Everglades National Park, Harden Hammock, and Boy Scout Troop 69 Site.
- Consider reintroducing fragrant maidenhair to other sites within its historical range.
- Conduct research to determine the effects of the Everglades restoration on fragrant maidenhair.
- Promote a higher regional water table on the Miami Rock Ridge.

***Agalinis filifolia* (Nutt.) Raf.
Seminole False Foxglove**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Jonathan Dickinson State Park; Savannas Preserve State Park).

Taxonomy: Dicotyledon; Scrophulariaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Lee, Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Mesic flatwoods, scrubby flatwoods, and pine rocklands.

Protection Status: Not listed by any agency.

Identification: There are 11 species of *Agalinis* in Florida, all of which are fairly similar. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Pennell, 1935; Long & Lakela, 1976; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *A. pulchella* Pennell; *Gerardia filifolia* Nutt.

Historical Context in South Florida: Abram P. Garber collected Seminole false foxglove in 1877 in “Everglades. Miami” (s.n., NY), presumably in sandy pine rocklands near the Miami River. Mary Francis Baker collected it in 1917 in Alva in Lee County (119, US), in the vicinity of what is now the Caloosahatchee Regional Park. It was reported for freshwater wetlands at Cayo Costa Island (Herwitz, 1977), but was not found in surveys from 1990 through 1992 (Herwitz et al., 1996). This may represent a misidentification of *A. fasciculata*, which is more typical of this habitat.

In 1961, Olga Lakela collected Seminole false foxglove in the vicinity of Murdock in Charlotte County (24672, USF). While it is possible that Seminole false foxglove is still present there, the entire Murdock area has been dissected with roads and development, making its presence there improbable. Lakela also collected it in 1964 off Lake Trafford Road in the vicinity of Immokalee in Collier County (27804, USF). It was reported for the Kissimmee Billy area, now in Big Cypress National Preserve (anonymous, no date.g), but we have been unable to verify this report. In 1976, Donald R. Richardson made the only known collection from Palm Beach County, about three miles west of Boca Raton at St. Andrews Dome (s.n., FAU).

In 1977, Bruce E. Tatje made the first collection of Seminole false foxglove in Martin County west of Hobe Sound (17288, FAU). John Popenoe collected it in Martin County in 1978 along the Kitching Creek nature trail at Jonathan Dickinson State Park (1365, USF). Bradley and Woodmansee observed it in Jonathan Dickinson State Park along the Loxahatchee River in Palm Beach County. The Palm Beach County station needs to be vouchered.

In 1998, Bradley and Woodmansee also found it at Savannas Preserve State Park in Martin County (1229, FTG).

It has been reported erroneously from a number of other places including the Florida Keys – It can be keyed to *A. maritima*.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. However, it is an annual that may often be overlooked. It flowers in the summer and fall, when surveys should be conducted.*

Preliminary recommendations:

- Voucher plants at Palm Beach County station in Jonathan Dickinson State Park.
- Survey the Murdock area in Charlotte County, the vicinity of Lake Trafford Road in Collier County, the Kissimmee Billy Strand area in Big Cypress National Preserve, the St. Andrews Dome area of Palm Beach County, and Caloosahatchee Regional Park.
- Map and monitor known stations on a regular basis.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing Seminole false foxglove.

***Agalinis obtusifolia* Raf.
Tenlobe False Foxglove**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Jonathan Dickinson State Park; National Key Deer Refuge).

Taxonomy: Dicotyledon; Scrophulariaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida from the peninsula west to the central and western panhandle.

South Florida Distribution: Charlotte, Collier, Lee, and Martin counties, and the Monroe County Keys.

South Florida Habitats: Flatwoods and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor has a color photo.

References: Small, 1933a; Pennell, 1935; Long & Lakela, 1976; Avery & Loope, 1980a; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Wunderlin, 1998.

Synonyms: *A. erecta* Pennell; *A. keyensis* Pennell; *A. tenella* Pennell; *Gerardia obtusifolia* (Raf.) Pennell; *Gerardia tenella* (Pennell) Pennell.

Historical Context in South Florida: Albert S. Hitchcock first collected tenlobe false foxglove in 1900 in flatwoods in Fort Myers (244, US). Harold N. Moldenke collected it again in Fort Myers in 1930 (984, NY). In 1917, Jeanette P. Standley made a collection southeast of Fort Myers in the "Mullock Creek District" (436, US), in the vicinity of what is now Estero Bay State Buffer Reserve. In 1919, John Kunkel Small and John B. DeWinkeler made a collection in the Naples area in Collier County (9158, NY). Olga Lakela vouchered an additional station in Collier County near Immokalee in 1967 (30815, USF). It also has been reported for the Fakahatchee Strand Preserve State Park (Austin et al. 1990), but this was based upon a misidentified specimen of *A. fasciculata*. In 1946, O.E. Frye made the first and only collection in Charlotte County at an unspecified location (s.n., FLAS). Gann and Bradley observed Seminole false foxglove at Fred C. Babcock-Cecil M. Webb Wildlife Management Area in 1996, but this station needs to be vouchered.

John Kunkel Small made the first collection on Big Pine Key in Monroe County in 1912 (3808, NY; 3987, NY). A number of additional collections were made from this island: Small & Small 5049, NY; Small et al. 10177, NY; Lakela 27912, USF; Lakela 29280, USF; Poppleton & Shuey s.n., USF; Semple & Semple 1744, USF; Musselman & Harris 5035, USF; and Avery 2180, USF, NY. It is extant in the National Key Deer Refuge on Big Pine Key, where it is relatively frequent (J. Hays, personal communication, 26 February 2001).

It also has been reported for Jonathan Dickinson State Park (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be present there, but needs to be vouchered.

Major Threats: Fire suppression, especially in the National Key Deer Refuge; exotic pest plant invasions; hydrological modifications.

Comments: *Tenlobe false foxglove (sensu Wunderlin, 1998) is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It flowers in the summer and fall, when surveys should be conducted. The population on Big Pine Key has been described as an endemic to that island, A. keyensis. While that taxon is currently considered conspecific with A. obtusifolia by Wunderlin (1998), it may represent a distinct variety (J. Hays, personal communication, 7 March 2000).*

Preliminary recommendations:

- Voucher plants at Fred C. Babcock-Cecil M. Webb Wildlife Management Area and Jonathan Dickinson State Park.
- Survey Estero Bay State Buffer Reserve.
- Map and monitor known stations on a regular basis.

***Amorpha herbacea* Walter
var. *crenulata* (Rydb.) Isely
Crenulate Leadplant**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas and one non-conservation area (A.D. “Doug” Barnes Park, & adjacent privately owned Amorpha Railroad Site; Coral Pines Park; Matheson Hammock Park; Tropical Park).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Shrub or sub-shrub.

Distribution: Endemic to South Florida.

Southern Florida Distribution: Miami-Dade County.

Southern Florida Habitats: Pine rocklands, especially in the ecotone with marl prairie.

Protection Status: Listed as endangered by USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Nelson (1996) has an illustration; Chafin (2000) has illustrations and a color photo; U.S. Fish and Wildlife Service (2000) has color photos.

References: Small, 1933a; Long & Lakela, 1976; Avery & Loope, 1980a; Isely, 1990; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *A. crenulata* Rydb.

Historical Context in South Florida: James G. Cooper first collected crenulate leadplant in 1859 at Fort Dallas (s.n., NY), which was located north of the Miami River within the present-day Miami. It has been collected or observed a number of times from the Charles Deering Estate at Cutler (Small, 1916b, as *A. caroliniana*) north to Lemon City (W.E. Safford s.n., US), which was located north of present-day downtown Miami around N.E. 60th Street. Other historical collections were made in 1877 by Abram P. Garber, in 1903 by John Kunkel Small and Joel J. Carter (718, NY), in 1910 by S.C. Hood (71869, FLAS), in 1910 by O. Rodham (s.n., US), in 1912 by Small (4001, NY), in 1913 by Small and George K. Small (4621, NY), in 1915 by John Kunkel Small and others (s.n., FLAS), in 1927 by Harold N. Moldenke (3600, NY), in 1930 by Moldenke (514a, NY; 561, NY), in 1937 by L. Eleanor Scull (s.n., FLAS), in 1966 by R. Broom (201, FLAS, FSU), in 1967 by George N. Avery (s.n., FLAS), in 1968 by Avery (445, FLASW), and in 1976 by Pam Krauss (s.n., FTG). Most of the historical stations have been destroyed.

Four occurrences are extant. The largest is at A.D. “Doug” Barnes Park and an adjacent privately-owned property known as the Amorpha Railroad Site. Bradley and Woodmansee recently counted nearly 1,000 plants between the two sites (Fisher, 2000). The plants at the private parcel are regularly mowed. Steven R. Hill vouchered this occurrence in 1975 (3073, FTG). The second largest occurrence is at Tropical Park, where Bradley and Woodmansee recorded 85 plants (Fisher, 2000). Bian Tan and Nina Raymond vouchered this station in 1990 (22, FLAS). The two remaining sites, Coral Pines Park and Matheson Hammock Park, have but 13 plants between them (Fisher, 2000). Both of these stations need to be vouchered. Fairchild Tropical Garden has introduced an experimental population at the Charles Deering Estate at Cutler (Fisher, 2000). At the present time, no recruitment has been observed.

A review of the conservation status and scientific research can be found in U.S. Fish and Wildlife Service (2000). Fairchild Tropical Garden has conducted conservation horticulture studies on, and maintains an *ex situ* collection of, crenulate leadplant. In 2000, Fairchild Tropical Garden mapped, tagged, and recorded data on exposure to sunlight, height, spread, and reproductive status of all known plants at all known stations, with the exception of the private parcel adjacent to A.D. “Doug” Barnes Park (Fisher, 2000).

Crenulate leadplant is widely cultivated in Miami-Dade County, but is not known to have naturalized outside of its natural range.

Major Threats: Fire suppression; habitat destruction at the Amorpha Railroad Site; exotic pest plant invasions; habitat degradation.

Comments: *Historically, crenulate leadplant was associated with the ecotone between pine rockland and marl prairie and it may have been negatively affected by the lowering of the freshwater table on the Miami Rock Ridge. This especially may affect recruitment of seedlings. During the 2000 monitoring period, little to no seedling recruitment was recorded (Fisher, 2000).*

Preliminary recommendations:

- Voucher plants at Coral Pines Park and Matheson Hammock Park.
- Continue ongoing mapping and monitoring.
- Acquire Amorpha Railroad Site and incorporate into A.D. “Doug” Barnes Park.
- Continue maintenance of *ex situ* collection of germplasm at Fairchild Tropical Garden.
- Continue ongoing conservation biology research and conservation horticulture studies at Fairchild Tropical Garden.
- Continue reintroduction at Deering Estate at Cutler.
- Consider augmenting known populations at Coral Pines Park and Matheson Hammock Park.

***Amphitecna latifolia* (Mill.) A.H. Gentry
Black Calabash**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas (Alice Wainwright Park; John D. MacArthur Park; Sewell Park; Simpson Park).

Taxonomy: Dicotyledon; Bignoniaceae.

Habit: Tree or large shrub.

Distribution: South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade and Palm Beach counties.

South Florida Habitats: Coastal hammocks.

Identification: Sargent (1922) has an illustration.

Protection Status: Not listed by any agency.

References: Sargent, 1894; Small, 1933a; Long & Lakela, 1976; Little, 1978; Gentry, 1980; Richardson, 1984; Austin, 1992; Austin, 1995; Nelson, 1994; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Crescentia cucurbitina* L., *Crescentia obovata* Benth., *Enallagma latifolia* (Mill.) Small.

Historical Context in South Florida: James G. Cooper first collected black calabash in 1859 at Fort Dallas (s.n., NY; Sargent, 1894), which was located north of the Miami River within the present-day Miami. Other early collections were made from “Miami” or “shore of Bay Biscayne” by Abram P. Garber in 1877 (59, NY; 69, NY), and Allan H. Curtiss in 1897 (5838, NY). Some of these collections probably were from Brickell Hammock, south of the Miami River. Specimens definitely were collected in Brickell Hammock as early as 1911 by John Kunkel Small and others (3293, NY), and as late as 1969 by Robert W. Long (2829, USF). Other specimens were collected in 1920 by J.P. Young (413, US) and Harold N. Moldenke (721, NY). Plants still are present in fragments of Brickell Hammock at Sewell Park, where Bradley observed a single tree in 2000, at Alice Wainwright Park, where it was recorded by Roger L. Hammer (1996a), and at Simpson Park, where it was first reported by John Popenoe in 1973 (Avery’s Notes, 4 June 1973). Also, Popenoe reported plants to be present in a private property adjacent to Vizcaya, but much of that

hammock was damaged in the early and middle 1990s. Plants may no longer be present there.

Black calabash also was known from along the Little River in Miami-Dade County, about 5 miles north of Brickell Hammock. Joseph H. Simpson first collected it there in 1892 (540, NY, US), and Nathaniel L. Britton collected it there in 1904 (451, NY). This area has been completely developed.

Small and others also made a single collection in “Freeman Hammock, Arch Creek Prairie” in 1915 (6767, NY), a station about 4 miles farther north. In 1999, Woodmansee observed a cultivated plant at Enchanted Forest Park, which is located next to what is now Arch Creek Park.

In 1904, Small made a single collection on the western side of Elliott Key in Miami-Dade County (s.n., NY). Despite a great deal of botanical activity on the island, this is the only report known from that island.

In 1916, Small also made a collection in a hammock west of the historical train station at Kendall in southern Miami-Dade County (7872, NY), possibly at what is now Kendall Indian Hammocks Park. This is the only report we have seen from that area.

In 1975, Donald R. Richardson and Daniel F. Austin discovered black calabash for the first time outside of Miami-Dade County (Richardson, 1984; Austin, 1992). This population was found on a shell mound at John D. MacArthur Beach State Park in Palm Beach County, and was vouchered by Richardson in 1977 (s.n., FAU) and again in 1984 by Richard E. Roberts (s.n., USF). This station was observed in 1998 by Gann and Florida Park Service biologist Janice A. Duquesnel.

Black calabash is widely cultivated in southeastern Florida, including at several conservation areas. At present, it is not known to have naturalized outside of its historical range.

Major Threats: Exotic pest plant invasions.

Comments: *Considerable debate has focused on the nativity of this species in Florida. Austin (1992, 1995) provides excellent*

reviews of this debate, and further fuels the fire. We feel that the species is native based upon the abundance of herbarium specimens, from 1859 through the early 1900s, from many regions of Miami-Dade County. Further support for the nativity of this species is presented by Austin (1995) in which plants were reported to fruit regularly, even in the apparent absence of the species' primary pollinators, nectivorous bats, which do not occur in Florida. The species may have been utilized and cultivated by the Tequesta tribe of Native Americans.

Preliminary recommendations:

- Survey Elliott Key in Biscayne National Park.
- Map and monitor known stations on a regular basis.
- Conduct conservation biology research and conservation horticulture studies, especially regarding pollination and dispersal.
- Consider augmenting known populations at Alice Wainwright Park, Sewell Park, and Simpson Park.
- Consider introducing other populations within its historical range, at Arch Creek Park, Enchanted Forest Park, Kendall Indian Hammocks Park, and Vizcaya Museum and Gardens.
- Review for listing by FDACS and FNAI.

***Anemia wrightii* Baker
Wright's Pineland Fern**

South Florida Status: Critically imperiled. One occurrence in two conservation areas (Everglades National Park & Frog Pond/L-31 N Transition Lands).

Taxonomy: Pteridophyte; Schizaeaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida, the Bahamas, and Cuba.

South Florida Distribution: The southern Miami Rock Ridge and adjacent rocky marl prairies.

South Florida Habitats: Rocky marl prairie and pine rocklands; lithophytic on exposed limestone and walls of limestone sinkholes.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Mickel, 1981; Correll & Correll, 1982; Nauman, 1987a; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Nelson, 2000.

Synonyms: None.

Historical Context in South Florida: Frank C. Craighead first collected Wright's pineland fern in 1962 at "Simmon Camp" in Everglades National Park (s.n., Everglades National Park herbarium), presumably at one of Glen Simmons' hunting camps (see Simmons & Ogden, 1998). George N. Avery and others collected it again in 1976 along Context Road in the rocky glades west of the Homestead General Aviation Airport (1698, FTG). Essentially, all of the known plants of Wright's pineland fern are from a single population that runs from Long Pine Key in Everglades National Park in a northeasterly direction through the Frog Pond/L-31 N Transition Lands north to the Context Road area, most of which is now in Everglades National Park. Many collections have been made through 1997, when Bradley and Woodmansee recorded it for the Frog Pond/L-31 N Transition Lands just east of Everglades National Park (358, FTG). Other collections have been made by Avery (1896, FLAS; 2012, FTG), A.M. Wooten (601, USF), John Popenoe (1158, FTG, NY), Rick and Jean Seavey (847, Everglades National Park herbarium), Donovan S. Correll (50112, FTG; 50113, FTG), and A.M. Evans (s.n., NY; 4978, NY). Several hundred, to a few thousand, plants are thought to be present.

Major Threats: Exotic pest plant invasions, especially in the Frog Pond/L-31 N Transition Lands; fire suppression, especially in the Frog Pond/L-31 N Transition Lands; hydrological modifications; poaching.

Comments: *This is one of the species that may be affected by the Everglades restoration. Most of the population of Wright's pineland fern is found north of the main park road and major changes in water delivery to that area could either improve or disrupt favorable environmental conditions for this species. Close monitoring of this situation is required.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

- Control exotic pest plants in the Frog Pond/L-31 N Transition Lands.
- Conduct prescribed burns in the Frog Pond/L-31 N Transition Lands.
- Conduct research to determine the effects of the Everglades restoration on Wright's pineland fern.

***Arisaema triphyllum* (L.) Schott**
Jack-in-the-Pulpit

South Florida Status: Critically imperiled. Three occurrences in five conservation areas (Jonathan Dickinson State Park & Riverbend Park; Kiplinger; Peck Lake Park & Seabranck Preserve State Park).

Taxonomy: Monocotyledon; Araceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) records it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Baygalls and riverine swamps.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Taylor (1998) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Taylor, 1992; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: *A. acuminatum* Small.

Historical Context in South Florida: Albert S. Hitchcock (1902) first reported jack-in-the-pulpit for Fort Myers. Harold N. Moldenke also reported it from the Bonita Beach area of Lee County in 1944.

Olga Lakela made the first collection from Collier County in 1964 northwest of Naples at Little Hickory Pass (27997, USF). Lakela collected it again north of Little Hickory Pass close to the Lee County line in 1964 (28244, USF), and again in 1969 at Little Hickory Pass (31818, USF). James N. Burch made two collections in the Pelican Bay area in 1987 (177, Collier County

Natural Resources Department herbarium; 446, Collier County Natural Resources Department herbarium), and M. Kirby made a single collection in the Emerald Bay area in 1991 (446, Collier County Natural Resources Department herbarium). It is uncertain whether or not plants are still present in Collier County.

Mark Jablonski first collected jack-in-the-pulpit in Martin County in 1976 in the Stuart area (s.n., FAU). In 1977, Bruce E. Tatje made a collection west of Palm City (s.n., FAU). Tatje made another collection in 1977 south of Palm City (s.n., FAU), near what is now Kiplinger, a Martin County Park. In 1999, Woodmansee observed jack-in-the-pulpit at Kiplinger, but this station needs to be vouchered. Also, it is present in a baygall area, which spreads through two conservation areas in the vicinity of Peck Lake at Seabranche Preserve State Park and Peck Lake Park. Bradley and Woodmansee recorded it for Seabranche Preserve State Park in 1997, but this station needs to be vouchered. Bradley and Woodmansee recorded it for Peck Lake Park in 1998. Woodmansee vouchered the Peck Lake Park station in 1999 (418, FTG). Jack-in-the-pulpit is also reported for the Dupuis Reserve (Woodbury, no date), which is located in Martin and Palm Beach Counties, but this report needs to be verified.

In 1993, Steven L. Orzell and Edwin L. Bridges collected jack-in-the-pulpit along the Loxahatchee River at Riverbend Park in Palm Beach County (21230, USF). It was vouchered there again by Bradley in 1999 (1975, FTG). It has been reported for Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the park (Roberts et al., in prep.). It is assumed to be present, but needs to be vouchered.

Major Threats: Exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*) at Riverbend Park; wild hog damage; drainage of wetland habitats; sea-level rise in the vicinity of Peck Lake and at Kiplinger.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. The aboveground portions of this species are seasonally present and it may have been overlooked at additional stations. It flowers in the spring through summer, when surveys should be conducted.*

Preliminary recommendations:

- Voucher plants at Jonathan Dickinson, Kiplinger, and Seabranck Preserve State Park.
- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.
- Continue control of Old World climbing fern at Riverbend Park and Jonathan Dickinson State Park.
- Control Old World climbing fern at Kiplinger and Peck Lake Park.

***Aristida purpurascens* Poir. var. *virgata* (Trin.) Allred
Trinius Threawn**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Corkscrew Regional Ecosystem Watershed; Jonathan Dickinson State Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee and Martin counties.

South Florida Habitats: Depression marshes.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Godfrey & Wooten, 1979; Allred, 1986; Wunderlin, 1998.

Synonyms: *A. virgata* Trin.

Historical Context in South Florida: Edwin L. Bridges and Randy L. Mears first collected trinius threawn in 1995 in a depression marsh in Jonathan Dickinson State Park in Martin County (23902, USF). In 1997, Loran Anderson observed plants in Lee County in the Flint Pen Strand section of what is now Corkscrew Regional Ecosystem Watershed (Anderson, 1997), but this occurrence needs to be vouchered.

Major Threats: Exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*); wild hog damage; drainage of depression marsh habitat; fire suppression.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It may be overlooked at other sites. It flowers in the fall, when surveys should be conducted.*

Preliminary recommendations:

- Voucher plants at Corkscrew Regional Ecosystem Watershed.
- Survey other depression marshes in Martin County.
- Map and monitor known stations on a regular basis.

***Asimina tetramera* Small
Fourpetal Pawpaw**

South Florida Status: Critically imperiled. Three occurrences in six conservation areas (Carlin Park, Juno Dunes Natural Area, Jupiter Inlet Natural Area & Jupiter Ridge Natural Area; Jonathan Dickinson State Park; Savannas Preserve State Park in Martin County).

Taxonomy: Dicotyledon; Annonaceae.

Habit: Shrub.

Distribution: Endemic to Martin and Palm Beach counties. It has been reported for St. Lucie County (USFWS, 2000), but this seems to be in error.

South Florida Habitats: Scrub and scrubby flatwoods.

Protection Status: Listed as endangered by USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Nelson (1996) has an illustration; Taylor (1998) has a color photo; Chafin (2000) has illustrations and color photos; U.S. Fish and Wildlife Service (2000) has an illustration and a color photo.

References: Small, 1926a; Small, 1933a; Kral, 1960a; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *Pityothamnus tetramerus* (Small) Small.

Historical Context in South Florida: John Kunkel Small first collected fourpetal pawpaw in 1924 in scrub near the St. Lucie

River estuary in Martin County (s.n., NY). This specimen was designated the type when Small (1926) described it as a new species. Since this collection, it has been found at numerous stations in Palm Beach and Martin counties, from the northern edge of Martin County (Garland, 1992), south to just north of West Palm Beach (Kral 5372, FSU, US), a range of nearly 40 miles. Other historical collections were made in 1924 by Small (11586, NY), in 1925 by Small (12677, NY), in 1926 by Small and others (12922, NY), in 1956 by Robert Kral (2235, FSU; 2516, FLAS, FSU; 2517, FLAS, FSU, USF), in 1957 by Kral (3963, FSU), in 1958 by Kral (6547, USF), and in 1975 by John A. Churchill (754231, FTG). Almost all of the historical stations have been destroyed.

In Martin County, fourpetal pawpaw is currently known from two conservation areas. It was collected at Jonathan Dickinson State Park in 1976 by John Popenoe (611, FTG), and in 1979 by "B.T." and Pam Krauss (s.n., FAU). Recently, 220 plants were recorded there (USFWS, 2000). It is known also from the Savannas Preserve State Park just south of the St. Lucie County line (Garland, 1992). The authors have observed this occurrence as recently as 2000. Fewer than 10 plants are present at this station, which is the northernmost station for the species.

In Palm Beach County, fourpetal pawpaw occurs in four conservation areas. It was collected at the Juno Dunes Natural Area in 1983 by Richard Moyroud (s.n., 1983), and in 1991 by Steven L. Orzell and Edwin L. Bridges (16912, FTG). Bradley and Woodmansee observed this occurrence in 1997. It is known also from the Jupiter Ridge Natural Area where it was reported by Steve Farnsworth (1994b). This occurrence was observed by Gann in 1995, but it needs to be vouchered. Bradley and Woodmansee observed these plants in 2000. Fourpetal pawpaw is also present at Jupiter Inlet Natural Area (USFWS, 2000; S. Farnsworth, personal communication, 10 April 2001) and Carlin Park (USFWS, 2000), but both of these stations need to be vouchered.

A number of additional small, privately owned stations may be extant in both Palm Beach and Martin counties (USFWS, 2000). A significant amount of research has been conducted on fourpetal

pawpaw. This research is reviewed in U.S. Fish and Wildlife Service (2000).

Major Threats: Fire suppression, especially at the Savannas Preserve State Park; exotic pest plant invasions; habitat destruction.

Preliminary recommendations:

- Voucher plants at Carlin Park, Jupiter Inlet Natural Area, and Jupiter Ridge Natural Area.
- Survey historical stations recorded by FNAI in 1988 as recommended in U.S. Fish and Wildlife Service (2000).
- Map and monitor known stations on a regular basis.
- Continue conservation biology and conservation horticulture studies.
- Consider augmenting known populations, especially at Savannas Preserve State Park.
- Consider introducing fourpetal pawpaw to other sites within its historical range.

***Asplenium verecundum* Chapm. ex Underw.
Modest Spleenwort**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Castellow Hammock Park; Fuchs Hammock Preserve), and one non-conservation area (Warwick Hammock).

Taxonomy: Pteridophyte; Aspleniaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to Florida and Cuba. Wunderlin & Hansen (2000) report is as occasional in Florida in the northern and central peninsula west to the central panhandle, and Miami-Dade County.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Moist, exposed limestone in rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has color photos; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee,

1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *A. myriophyllum* (Sw.) Roth ex Mertens, misapplied.

Historical Context in South Florida: Modest spleenwort was collected several times in the mid-to-late 1800s in Florida, but none of these specimens can be definitely attributed to South Florida (e.g., Chapman, s.n., NY; Rugel, s.n., NY). Isaac Holden made the first collection that can be attributed to South Florida in 1887 at Brickell Hammock (s.n., NY). Several other collections were made in Brickell Hammock in the late 1800s and early 1900s (Munroe s.n., NY; Britton 91, NY; and Small & Carter s.n., FTG). John Kunkel Small and others made the last collection in Brickell Hammock in 1911 (3270, NY).

Alvah A. Eaton collected modest spleenwort in Castellow Hammock, now located within Castellow Hammock Park, in 1903 (s.n., NY). It has been collected there a number of times since then (e.g. Small & Carter 2384, NY; Buswell s.n., FTG; Tomlinson 6-5-62B, FTG; Long 1870, USF; and Avery 1314, FTG). Small and others also collected it in adjacent Ross Hammock (6484, NY), part of which is located within Castellow Hammock Park. The Castellow Hammock Park population is extant and has been observed several times by Roger L. Hammer, Gann and Bradley. Hammer, Director of Castellow Hammock Park, estimates that there are fewer than 50 plants present today (personal communication, 7 February 2001). In 1915, Small and Charles A. Mosier made a collection in Cox Hammock (5520, NY, FTG), which is located less than a mile from Castellow Hammock. Harold N. Moldenke made another collection there in 1930 (645a, NY), but this population has not been observed in several decades.

Small and Mosier also collected modest spleenwort in Fuchs Hammock in 1915 (5492, NY), which is now part of Fuchs Hammock Preserve. Donovan S. Correll collected it again at Fuchs Hammock in 1936 (6094, NY), as did Carol Weymouth and Everett Skinner in 1968 (s.n., FTG). George N. Avery observed five or six sporulating plants there in 1981 (Avery's Notes, 11 November 1981), and Alan Cressler observed several colonies in 1993 (Cressler, 1993). Bradley observed several dozen plants

there in 2000. Don Keller observed plants in nearby Meissner Hammock in 1987 (personal communication, 8 February 2001), but plants at this station appear to be extirpated. Small made one collection in 1915 at Shields Hammock (6944, NY), which was located to the west of the present-day city of Homestead, but this hammock has been destroyed.

In 1922, Small and others made a collection at Warwick Hammock, which is located along Old Cutler Road to the north of the Deering Estate at Cutler (10731, US). In 1959, Frank C. Craighead and Monroe R. Birdsey made another collection along Old Cutler Road (s.n., FTG), presumably at the same location. This hammock was later subdivided and developed for single-family residences. In 1995, Gann found plants there that were persisting on exposed limestone in a private garden (s.n., FTG). About 25 plants were observed. Subsequently this property was sold. While the status of the plants at this station is unknown, modest spleenwort may be present on other properties in Warwick Hammock.

Small made one last collection in 1923 in Addison Hammock, now part of the Deering Estate at Cutler (11104, NY). While modest spleenwort has not been collected there since that time, Donovan S. Correll and others made a collection of *A. xbiscaynianum* in 1974, suggesting that modest spleenwort may have been present (see *Asplenium xbiscaynianum* account in Part One of this Chapter). Don Keller reports that he observed a few plants in Addison Hammock in 1987 (personal observation, 8 February 2001), but no one has seen any plants recently, despite a great deal of botanical activity.

Major Threats: Long-term drainage on the Miami Rock Ridge; exotic pest plant invasions; off-target damage from exotic pest plant control programs; habitat degradation and destruction at Warwick Hammock; poaching.

Comments: *A. verecundum* may be conspecific with *A. myriophyllum* of the West Indies and South America (*Flora of North America* Editorial Committee, 1993; Nelson, 2000). Modest spleenwort is one of the parents of the endemic Biscayne spleenwort (*A. xbiscaynianum*), which is discussed in Part 1 of this chapter. Due to the lowering of the regional freshwater table, it

does not seem feasible to attempt to reintroduce modest spleenwort to Brickell Hammock at this time.

Preliminary recommendations:

- Survey Warwick Hammock.
- Map and monitor known stations on a regular basis.
- Develop conservation agreements with the Warwick Hammock station owners, and provide technical assistance.
- Conduct conservation biology and conservation horticulture studies.
- Consider augmenting known populations.
- Consider reintroducing modest spleenwort to other sites within its historical range, including the Deering Estate at Cutler.
- Consider introducing modest spleenwort to other sites within its historical range.
- Promote a higher regional water table on the Miami Rock Ridge.

***Aster reticulatus* Pursh
Pinebarren Aster**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas (Bessemer; Danforth; Jonathan Dickinson State Park; Kiplinger).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades, Lee, and Martin counties.

South Florida Habitats: Wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Taylor (1998) has a color photo; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Doellingeria reticulata* (Pursh) Greene.

Historical Context in South Florida: Walter M. Buswell first collected pinebarren aster in 1932 in Lee County without specific locality data (s.n., FTG). Hilsenbeck (1997) reported it for Corkscrew Regional Ecosystem Watershed (CREW) in Lee County, but this record needs to be verified. Daniel B. Ward and others collected it once in Glades County in 1960 west of Palmdale (3-12, FLAS), in or near the newly acquired Fisheating Creek Wildlife Management Area.

In 1988, Roy O. Woodbury first collected pinebarren aster in Martin County at Jonathan Dickinson State Park, where it is assumed to be extant. Edwin L. Bridges and Steven L. Orzell also collected pinebarren aster in Martin County in 1993, just southwest of Palm City (21267, USF). Woodmansee collected it twice in 1999 at two Martin County parks: Bessemer (441, FTG), and Kiplinger (258, FTG). In 2000, Woodmansee also collected pinebarren aster at Danforth (479, FTG), another Martin County park.

Major Threats: Fire suppression; exotic pest plant invasions; wild hog damage; hydrological modifications, especially drainage of wet flatwoods habitat.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It flowers in the spring, when surveys should be conducted.*

Preliminary recommendations:

- Survey Corkscrew Regional Ecosystem Watershed, Fisheating Creek Wildlife Management Area, and Palm City station.
- Map and monitor known stations on a regular basis.

***Aster tortifolius* Michx.
Dixie Aster**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Corkscrew Regional Ecosystem Watershed; Jonathan Dickinson State Park; Kiplinger), and one non-conservation area (Lake Trafford Flatwoods Site).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Broward, Collier, Glades, Lee, Martin, and Miami-Dade counties.

South Florida Habitats: Flatwoods, sandhills, and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Taylor (1998) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Taylor, 1992; Wunderlin, 1998.

Synonyms: *Sericocarpus acutisquamosus* (Nash) Small; *Sericocarpus bifolius* Porter; *Sericocarpus tortifolius* (Michx.) Nees.

Historical Context in South Florida: Albert S. Hitchcock first collected Dixie aster in Lee County in 1900 in Fort Myers (165, NY). Harold N. Moldenke collected it again in Lee County at Coconut in 1930 (5893, NY). Elliott Brown made a single collection in 1985 just south of the North Fort Myers Library (s.n., USF). This station has probably been destroyed, but this area should be surveyed.

John Kunkel Small first collected Dixie aster in Miami-Dade County in 1904 near Arch Creek in the northern part of the county (2206, NY). In 1913, Small and George K. Small made another collection in Miami-Dade County in pinelands south of the Miami River (4751, FLAS, NY). The last collection made in Miami-Dade was by R. Bruce Ledin in 1947 in what is now Little Havana (s.n., FLAS). It is apparently extirpated in Miami-Dade County.

In 1962, George Cooley and others made a collection in Collier County just south of Naples (9083, USF), and in 1967 Olga Lakela made a collection northeast of Naples in Palm River Estates (30070, USF). Durbin Tabb also collected Dixie aster in the North Naples area in 1979 (s.n., USF). No additional collections from the Naples area are known, but the area should be surveyed. In 1965, Olga Lakela made a collection in the vicinity of Immokalee (29267, USF). Bradley made a single collection in 1998 in a mesic flatwoods fragment along Lake Trafford Road in Immokalee (1878, FTG, USF). Hilsenbeck (1997) reported it for Corkscrew Regional

Ecosystem Watershed (CREW) in Lee County. Woodmansee observed plants in CREW in Collier County in 2000.

William L. McCart made a collection in 1969 in Glades County four miles east of Palmdale (11029, FLAS), in the vicinity of the recently acquired Fisheating Creek Wildlife Management Area.

Donovan S. Correll and Helen B. Correll collected Dixie aster in Broward County in 1973 in the Tamarac area south of the Fort Lauderdale Executive Airport (40199, NY). This is the only report known from Broward County, where it is probably extirpated.

Bradley and Woodmansee made the first collection in Martin County in 1997 (594, FTG), along the Loxahatchee River in Jonathan Dickinson State Park, although John Popenoe (1981) had previously reported it for the park. In 1999, Woodmansee made another collection in Martin County at Kiplinger, a Martin County park (351, FTG). Fewer than 10 plants were observed.

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction at Immokalee site.

Comments: *Based upon the large number of collections, this species may be more common than we think. It is possible that, following additional surveys, Dixie aster could be down-ranked to imperiled in South Florida.*

Preliminary recommendations:

- Voucher plants at CREW.
- Survey Fisheating Creek Wildlife Management Area, and the vicinity of Naples, Fort Myers, and North Fort Myers.
- Map and monitor known stations on a regular basis.
- Acquire Lake Trafford Flatwoods Site.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing Dixie aster.

***Bartonia paniculata* (Michx.) Muhl.
Twining Screwstem**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Jonathan Dickinson State Park; Pal-Mar).

Taxonomy: Dicotyledon; Gentianaceae.

Habit: Annual terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as occasional in Florida from the northern peninsula west to the central and western panhandle.

South Florida Distribution: Martin, and Palm Beach counties.

South Florida Habitats: Wet and mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: There are three species of *Bartonia* in South Florida: *B. paniculata*, *B. virginica* (see treatment below in this chapter), and *B. verna*. *B. verna* has corolla lobes 5-10 mm long, while *B. paniculata* and *B. virginica* have corolla lobes 1-5 mm long; *B. paniculata* has blunt anthers while *B. virginica* has apiculate anthers (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Gillett, 1959; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *B. lanceolata* Small; *B. tenella* Muhl. ex Willd.

Historical Context in South Florida: Roy O. Woodbury first collected twining screwstem in 1988 at Jonathan Dickinson State Park in Martin County (s.n., FTG). In 1997, Gann and Bradley collected it at Pal-Mar in Palm Beach County (1041b, FTG). Bradley and Woodmansee also vouchered this population in 1997 (679, FTG).

Major Threats: Fire suppression; exotic pest plant invasions; wild hog damage; drainage of its flatwoods habitat.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It is extremely inconspicuous and may prove to be more common following additional surveys. It was completely overlooked in South Florida until 1988, and was even unknown in central Florida until fairly recently (Gillett, 1959; Wunderlin, 1982).*

Preliminary recommendations:

- Survey Pal-Mar Natural Area and un-acquired portions of Pal-Mar CARL Site.
- Map and monitor known stations on a regular basis.

***Bartonia virginica* (L.) Britton et al.
Yellow Screwstem**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas and one non-conservation area (Big Cypress National Preserve; Jonathan Dickinson State Park; Pal-Mar & Pal-Mar CARL Site).

Taxonomy: Dicotyledon; Gentianaceae.

Habit: Annual terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Collier, Martin, and Palm Beach counties.

South Florida Habitats: Mesic and wet flatwoods.

Protection Status: Not listed by any agency.

Identification: There are three species of *Bartonia* in South Florida, *B. paniculata* (see treatment above in this chapter), *B. virginica*, and *B. verna*. *B. verna* has corolla lobes 5-10 mm long, while *B. paniculata* and *B. virginica* has corolla lobes 1-5 mm long; *B. paniculata* has blunt anthers while *B. virginica* has apiculate anthers (Wunderlin, 1998).

References: Small, 1933a; Gillett, 1959; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Ruben P. Sauleda first collected yellow screwstem in 1979 west of Palm City in Martin County (3195, USF). This site has probably been developed. Steven L. Orzell and Edwin L. Bridges made the next collection in Martin County in 1991 within the Pal-Mar CARL Site (18261, FTG). Gann and Bradley vouchered yellow screwstem at Pal-Mar in 1997 (1041a, FTG). Pal-Mar and Pal-Mar CARL Site are adjacent and these two stations are considered to be the same occurrence. In 1998, Bradley collected yellow screwstem at Jonathan Dickinson State Park in Martin County (1326, FTG).

Yellow screwstem is also present in the Bear Island area of Big Cypress National Preserve, where Bradley collected it in 1997 (1068, FTG, USF) and 1998 (1593, FTG).

Major Threats: Fire suppression; exotic pest plant invasions; hydrological modifications; recreational off-road vehicle use in Big Cypress National Preserve; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. However, it is an extremely inconspicuous plant that may prove to be more common following additional field surveys. It was completely overlooked in South Florida until 1979, and was even unknown in central Florida until fairly recently (Gillett, 1959; Wunderlin, 1982).*

Preliminary recommendations:

- Survey Pal-Mar Natural Area.
- Map and monitor known stations on a regular basis.
- Acquire unprotected portions of the Pal-Mar CARL Site.

***Basiphyllaea corallicola* (Small) Ames
Carter's Orchid**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Deering Estate at Cutler; Everglades National Park; National Key Deer Refuge), and one non-conservation area (Naranja School Board Pineland).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1910; Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Hammer, 1992g; McCartney, 1991; McCartney, 1992b; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Martin, 2001.

Synonyms: *B. angustifolia* Schltr; *Carteria corallicola* Small.

Historical Context in South Florida: John Kunkel Small, Alvah A. Eaton, and Joel J. Carter first collected Carter's orchid in 1903 in Long Prairie in Miami-Dade County (s.n., AMES). Only two plants were found (Small, 1910), and both, apparently, were collected. In 1906, Small found two additional plants about two miles south of this station (Small, 1910). It was this specimen that Small designated as the type of *Carteria corallicola* (Small, 1910). Long Prairie was located within the present day cities of Homestead and Florida City, but it has been destroyed.

Frank C. Craighead discovered Carter's orchid in the eastern part of Long Pine Key in Everglades National Park in or before 1971 (Avery's Notes, 21 November 1971; Martin, 2001). Chuck McCartney apparently rediscovered this station in 1988 (McCartney, 1991). Only one plant was observed. Everglades National Park biologist James Snyder found a second station on Long Pine Key in 1982, which was vouchered by George N. Avery that same year (2375, FTG, SEL). Snyder's station was apparently located about 1/8 mile from Craighead's station (Avery, 1982 in Martin, 2001). In 1987, Alan Herndon discovered an additional station in western Long Pine Key (McCartney, 1991). A single specimen was accidentally cut during a research project. This specimen was deposited in the Everglades National Park herbarium (Herndon 1779). An additional station in western Long Pine Key was discovered in 1999 by Andrew Martin and Richard G. Reimus (Martin, 2001). Three fertile stems were observed. It is unclear how close Herndon's station and Martin's station are to each other.

Gann and others discovered a new population at Deering Estate at Cutler in 1991 (Hammer, 1992g). Roger L. Hammer vouchered the population in 1991 (s.n., FTG), and Hammer and Carol Lippincott observed an estimated 50 plants at that station that same year (Hammer, 2001). The plants were growing in a firebreak road, and in leaf litter in an adjacent fire-suppressed pine rockland. Chuck McCartney vouchered this station again in 1995 (55, SEL). Hammer also observed six plants at the Miami-Dade County School Board pineland property in Naranja in 1993 (Hammer, 2001), but this station needs to be vouchered.

Herndon first discovered Carter's orchid outside of Miami-Dade County in 1988 on Big Pine Key (McCartney, 1991), presumably in the National Key Deer Refuge. Herndon found only a single plant, so he did not voucher this station. In 1988, Herndon showed the plants to Chuck McCartney, who collected a voucher specimen (18, SEL). Fourteen plants were observed at this time (McCartney, 1991). Joseph O'Brien observed plants nearby on Big Pine Key at the Boss Tract in 1991 (Hammer, 1992g), but this station was not vouchered. The Boss Tract is now managed as part of the National Key Deer Refuge. No recent observations of plants from either station are known, but they are assumed to be extant.

Major Threats: Fire suppression; exotic pest plant invasions, especially by Burmared (*Neyraudia reynaudiana*).

Comments: *This is one of the species that may be affected by the Everglades restoration if more water is delivered into the Long Pine Key area.*

Luer (1972) considered B. corallicola as an endemic of South Florida and the Bahamas. Ackerman (1995) placed B. angustifolia Schltr. into synonymy with B. corallicola, extending the range of the species into Cuba, Hispaniola, and Puerto Rico.

Preliminary recommendations:

- Voucher plants at Audubon Society's Boss Tract and Naranja School Board Pineland.
- Map and monitor known stations on a regular basis.
- Acquire Naranja School Board Pineland.
- Conduct research to determine the effects of the Everglades restoration on Carter's orchid.

***Bourreria cassinifolia* (A. Rich.) Griseb.
Pineland Strongback**

South Florida Status: Critically imperiled. Eight occurrences in six conservation areas (Camp Owaissa Bauer; Everglades National Park; Ingram Pineland; Larry and Penny Thompson Park; National Key Deer Refuge; Ned Glenn Nature Preserve) and two non-conservation areas (Old Dixie Pineland; USDA Subtropical Horticulture Research Station).

Taxonomy: Dicotyledon; Boraginaceae.

Habit: Shrub.

Distribution: Native to South Florida and Cuba.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Pine rocklands and rockland hammock edges.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Long & Lakela, 1976; Tomlinson, 1980; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected pineland strongback in 1909 in pinelands east of Naranja in Miami-Dade County (2818, NY), in the vicinity of what is now the Homestead Air Reserve Base. Many collections and observations have been made in Miami-Dade County since then, from as far south as Long Pine Key in Everglades National Park (Craighead s.n., USF) to as far north as the USDA Subtropical Horticulture Research Station, where it has been observed by Bradley.

This species is currently extant on seven sites in Miami-Dade County, four of which are conservation areas. Frank C. Craighead first collected it on Long Pine Key in Everglades National Park in 1959 (s.n., Everglades National Park herbarium), and it was observed there as recently as 2000 by the authors and others. Fewer than 100 plants are thought to be present there. It was discovered in the Richmond Pine Rocklands at Larry and Penny Thompson Park in 1978 by George N. Avery (Avery's Notes, 3 September 1978), and was observed there as recently as 2000 by Bradley and Woodmansee. Fewer than 100 plants are present. This station needs to be vouchered. Avery found it at Camp Owaissa Bauer in 1983 (Avery's Notes, 9 March 1983), and it was observed there as recently as 2001 by Roger L. Hammer (personal communication, 5 March 2001). One plant is known to

be present, and it needs to be vouchered. Bradley vouchered it at the Ned Glenn Nature Preserve in 1995 (104, FTG). Fewer than 10 plants are present there. In 2000, Bradley found one plant at Ingram Pineland, but this station needs to be vouchered.

Of the private sites in Miami-Dade County, the Old Dixie Pineland is the most important as it contains the largest population of pineland strongback in South Florida. This station was first observed by Hammer in 1989 (personal communication, 5 March 2001). Bradley vouchered this station in 1995 (186, FTG). Bradley and others have observed several hundred plants there as recently as 2000. This site should be acquired, but it is in the path of a major transportation corridor, and probably will be destroyed. Another important site is the USDA Subtropical Horticulture Research Station where George N. Avery recorded it in 1974 (Avery's Notes, 19 May 1974). Bradley observed it there as recently as 1996. Fewer than 10 plants were present. This site is severely threatened by development, and needs to be vouchered. Pineland strongback also was reported for Navy Wells #2 (anonymous, no date.a), a private pine rockland being considered for acquisition by Miami-Dade County, but this report needs to be verified.

Avery discovered pineland strongback outside of Miami-Dade County on Big Pine Key in Monroe County in 1962 (Avery's Notes, 15 September 1962). The station was reported to be located between the Blue Hole and Koehn's subdivision. Frank C. Craighead vouchered this population later that year (s.n., Everglades National Park herbarium). Subsequent collections, presumably from the same location on Big Pine, were made by Daniel B. Ward and others in 1964 (4289, FSU), and by W.L. Stern and others in 1970 (2892, FTG). Avery made a number of observations on Big Pine between 1962 and 1976 (Avery's Notes, 1962-1976), from the station noted above and from a station he referred to as "Cassinifolia Hammock," an unknown location. T. Ann Williams observed the Koehn's subdivision population in March 2001 within the National Key Deer Refuge (personal communication, 9 March 2001). Three plants were seen.

Major Threats: Habitat destruction at the Old Dixie Pineland and the USDA Subtropical Horticulture Research Station; fire suppression; exotic pest plant invasions.

Comments: *Bradley has observed pineland strongback at a pineland across the street from the Gifford Arboretum at the University of Miami in Coral Gables. This species has been cultivated at the Arboretum, and it is likely that the population across the street from the Arboretum is naturalized from the Gifford Arboretum plants. Pineland strongback is also cultivated in other locations in Miami-Dade County.*

Preliminary recommendations:

- Voucher plants at Camp Owaissa Bauer, Ingram Pineland, Larry and Penny Thompson Park, and USDA Subtropical Horticulture Research Station.
- Survey Navy Wells #2.
- Map and monitor known stations on a regular basis.
- Acquire Old Dixie Pineland. Develop conservation agreement with the USDA Subtropical Horticulture Research Station, and provide technical assistance.
- Consider introducing pineland strongback to other sites within its historical range, including Bill Sadowski Park and Deering Estate at Cutler.
- Determine status in Cuba.

***Burmannia biflora* L.
Bluethread**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas and one non-conservation area (Bessemer; Jonathan Dickinson State Park; Pal-Mar & Pal-Mar CARL Site).

Taxonomy: Monocotyledon; Burmanniaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Wet and mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: There are three species of *Burmannia* in Florida. *B. biflora* can be distinguished from the other two by having blue flowers.

References: Chapman, 1883; Small, 1933a; Jonker, 1938; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: G.L. Foster first collected bluethread in 1964 at Bonita Springs in Lee County (s.n., USF). In 1966, Olga Lakela collected it north of Immokalee in Collier County (30056, USF). In 1976, John Popenoe and Daniel F. Austin collected bluethread in Martin County at Jonathan Dickinson State Park (735, FTG). Bradley observed it there in 1997. Steven L. Orzell and Edwin L. Bridges collected bluethread once in 1991 at the Pal-Mar CARL Site in Martin County (18262, FTG). In 1997, Bradley and Woodmansee collected it nearby in Palm Beach County at Pal-Mar (686, FTG), a South Florida Water Management District conservation area. In 1993, Orzell and Bridges collected it at a private site in Martin County near Port Salerno (21254, USF), but it is not known if this station has been developed. In 1999, Woodmansee collected it nearby at Bessemer, a Martin County conservation area (439, FTG). Bluethread was also reported for Dupuis Reserve (Woodbury, no date), but this station needs to be verified. Dupuis Reserve is located in both Palm Beach and Martin counties.

Major Threats: Fire suppression; drainage of flatwoods habitats; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. However, bluethread is easily overlooked in the field and may be more common than it appears.*

Preliminary recommendations:

- Survey Dupuis Reserve, Pal-Mar Natural Area, and the Port Salerno station.
- Map and monitor known stations on a regular basis.
- Acquire unprotected portions of the Pal-Mar CARL Site.

***Caesalpinia major* (Medik.) Dandy & Exell**
Yellow Nicker

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Biscayne National Park; Vizcaya Museum and Gardens), and one non-conservation area (Plantation Key residential development).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Vine.

Distribution: Pantropical.

South Florida Distribution: Martin, Miami-Dade, and Palm Beach counties and the Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Very similar to *C. bonduc*, but lacking the large foliaceous stipules and having yellow rather than gray seeds. Scurlock (1987) has photos of both species.

References: Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Isely, 1982; Scurlock, 1987; Isely, 1990; Nelson, 1996; Wunderlin, 1998; Coile, 2000; Liogier and Martorell, 2000.

Synonyms: *C. bonduc* of Long & Lakela, not (L.) Roxb.; *C. globulorum* Bakh. f. & P. Royen; *Guilandina bonduc* of Small (1933a), not L.; *Guilandina ovalifolia* of Small (1933a), not (Urban) Britton.

Historical Context in South Florida: Abram P. Garber first collected yellow nicker in the 1880s in Miami (s.n., FLAS), presumably in Brickell Hammock. The next collection made in Miami-Dade County was not until 1992, when Carol Lippincott and Randy Tate collected it at the Vizcaya Museum and Gardens (s.n., FTG), a fragment of historical Brickell Hammock. Yellow nicker is extant there, and was observed in 1996 by Bradley and Miami-Dade County biologists Roger L. Hammer and Linda McDonald. It is possible that a single large clonal individual is present.

A number of collections and observations are known for the Florida Keys. In 1941, John H. Davis, Jr. collected yellow nicker on Barracuda Key (s.n., FLAS), an island northwest of Sugarloaf Key in Great White Heron National Wildlife Refuge. In 1954, Leonard J. Brass collected it on Key Largo (29010, FLAS), where

George N. Avery observed it several times between 1964 and 1967 (Avery's Notes, 1964-1967). Avery's station is now part of John Pennekamp Coral Reef State Park, but Gann has been unable to locate it there despite numerous searches. Avery discovered yellow nicker on Elliott Key in what is now Biscayne National Park in 1966 (Avery's Notes, 18 May 1966). Gann and Bradley observed this population in 1996, and Bradley and Woodmansee observed plants there in 2001. Avery also found it in Biscayne National Park on Totten Key in 1971 (Avery's Notes, 28 January 1971), but Gann and Bradley have thus far been unable to locate this population during inventory work there in 2001. Both of these stations need to be vouchered. In 1998, Bradley observed a population on Plantation Key that had been previously discovered by Wayne Hoffman. Fewer than 10 plants were seen in a hammock fragment in a residential development, a site that is not a good candidate for acquisition. Yellow nicker has been reported from other islands in the Florida Keys, including Big Coppitt Key and Lower Matecumbe Key by Scurlock (1987), and from Teatable Hammock on Upper Matecumbe Key (National Audubon Society, 1992). These stations need to be surveyed.

Two collections were made outside of Miami-Dade and Monroe counties. In 1924, John Kunkel Small and others collected yellow nicker on sand dunes south of Delray Beach in Palm Beach County (s.n., FLAS) and in 1954 Roy S. Rood collected it on Jupiter Island in Martin County (4, FLAS). No recent sightings or collections are known from either county.

Major Threats: Exotic pest plant invasions; habitat destruction; off-target damage from exotic pest plant control programs.

Comments: *This species was confused in the literature with C. bonduc (L.) Roxb. by Small (1933a) and Long & Lakela (1976). Dandy and Exell (1938) describe the correct application of the names C. bonduc and C. major. In addition, Small used a different genus, Guilandina, for these species, and attributed two names, G. bonduc and G. ovalifolia, to what is now known as C. major. Unlike C. bonduc, C. major is not a colonizer of disturbed sites.*

Preliminary recommendations:

- Voucher plants at Elliott Key and Totten Key in Biscayne National Park. If possible, voucher private site on Plantation Key.
- Survey Barracuda Key in the Great White Heron National Wildlife Refuge, Totten Key in Biscayne National Park, Big Coppitt Key, Lower Matecumbe Key, and Teatable Hammock on Upper Matecumbe Key. Continue surveys in appropriate habitats within historical range, including John Pennekamp Coral Reef State Park.
- Map and monitor known stations on a regular basis.
- Acquire Teatable Hammock on Upper Matecumbe Key.
- Control exotic pest plants, while preventing off-target damage to yellow nicker. This is especially critical at Vizcaya Museum and Garden where yellow nicker could easily be extirpated due to management error.
- Consider augmenting population at Vizcaya Museum and Gardens.
- Consider reintroducing or introducing yellow nicker to other sites within its historical range, including Lake San Pedro Hammocks on Plantation Key, Red Reef Park in southern Palm Beach County, and The Nature Conservancy's Blowing Rocks Preserve on Jupiter Island in Martin County.
- Review for listing by FNAI.

***Campsis radicans* (L.) Seemann ex Bureau
Trumpet Creeper**

South Florida Status: Critically imperiled. Two native occurrences in two conservation area (Caloosahatchee Regional Park; La Belle Nature Park).

Taxonomy: Dicotyledon; Bignoniaceae.

Habit: Vine.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as common in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Hendry and Lee counties.

South Florida Habitats: Mesic hammocks.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Nelson (1996) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Bell & Taylor, 1982; Nelson, 1996; Wunderlin, 1998.

Synonyms: *Bignonia radicans* L.; *Tecoma radicans* (L.) DC.

Historical Context in South Florida: Apparently, trumpet creeper has not been vouchered in South Florida. The earliest reports of this species were made in 1994, when it was reported for the Koreshan State Historic Site in Lee County (Florida Park Service District 4, 1994d), and Corkscrew Swamp Sanctuary (Judd, 1994). Both of these occurrences could represent cultivated plants. In 2000, Gann observed plants at the Caloosahatchee Regional Park in mesic hammock along the Caloosahatchee River in Lee County. This population appears to be an historical occurrence, and needs to be vouchered. Bradley also observed trumpet creeper in 2000 in a mesic hammock along the Caloosahatchee River at the La Belle Nature Park in Hendry County. This also appeared to be a naturally occurring population. Plants may also be present in the Fisheating Creek Wildlife Management Area in Glades County. Gann and Bradley have observed plants along Fisheating Creek in Highlands County.

Trumpet creeper is a temperate species that is widely cultivated in Florida, but has apparently not naturalized outside of its historical range.

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. No vouchers exist for South Florida in Florida herbaria (see Wunderlin and Hansen, 2001). South Florida specimens may be at the New York Botanical Garden or the Smithsonian Institution, and these herbaria should be searched.*

Preliminary recommendations:

- Voucher plants at Caloosahatchee Regional Park and La Belle Nature Park.
- Survey Corkscrew Swamp Sanctuary, Koreshan State Historic Site, and Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Campyloneurum costatum* (Kunze) C. Presl
Tailed Strap Fern**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Corkscrew Swamp Sanctuary; Fakahatchee Strand Preserve State Park).

Taxonomy: Pteridophyte; Polypodiaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Collier and Miami-Dade counties.

South Florida Habitats: Rockland hammocks and strand swamps.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification Aides: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Polypodium costatum* Kunze.

Historical Context in South Florida: Alvah A. Eaton first collected tailed strap fern in 1904 in the Fakahatchee Strand (1135, GH). Walter M. Buswell collected it again in 1937 (s.n., USF). Although Buswell's labels for the Fakahatchee cite the location as "Big Cypress" or "Big Cypress Hammock," his collections during this period are from what is now Fakahatchee Strand Preserve State Park. Several other collections of tailed strap fern have been made from the Fakahatchee including those by Leonard J. Brass (15803, ARCH), George N. Avery (1678, FTG), and Clifton E. Nauman (332, USF; 545, USF). Florida Park Service biologist Mike Owen estimates that there are fewer than 1,000 plants in the park (personal communication, 22 January 2001).

Tailed strap fern was observed at Corkscrew Swamp Sanctuary by Roger L. Hammer in 1989 (personal communication, 7 February

2001). Walter Judd (1994) also reported it for this station, but this occurrence needs to be vouchered. It is assumed to be extant.

Apparently, tailed strap fern was collected first in Miami-Dade County by L. Eleanor Scull in Timms Hammock in 1938 (s.n., FLAS). Timms Hammock is now part of the Miami-Dade County park, Camp Owaissa Bauer. Gertrude Peterson made another collection in nearby Hattie Bauer Hammock between 1934 and 1940 (s.n., FLAS), but the specimen is without a date. Most of Hattie Bauer Hammock is now a Miami-Dade County conservation area.

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions, especially Old World climbing fern (*Lygodium microphyllum*).

Preliminary recommendations:

- Voucher plants at Corkscrew Swamp Sanctuary.
- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Control *Lygodium microphyllum*.
- Consider reintroducing tailed strap fern to other sites within its historical range, including Timms Hammock in Camp Owaissa Bauer and Hattie Bauer Hammock.
- Review FNAI rank.

***Carex gigantea* Rudge
Giant Sedge**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Big Cypress National Preserve; Fakahatchee Strand Preserve State Park; Six Mile Cypress Slough Preserve).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, and Miami-Dade counties, and the Monroe County mainland.

South Florida Habitats: Cypress domes and strand swamps.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Paul C. Standley first collected giant sedge in 1916 near Fort Myers (3008, US). He made another collection there in 1927 (52549, NY). These were the only known records for the species in Lee County until 1997, when Bradley and Woodmansee observed it at the Six Mile Cypress Slough Preserve near Fort Myers. This station needs to be vouchered.

In 1917, John Kunkel Small made a collection in the Okaloacoochee Slough (8318, NY). It is unknown where Small actually made this collection. Portions of this slough are found in both Collier and Hendry counties, within Big Cypress National Preserve, the Florida Panther National Wildlife Refuge, Okaloacoochee Slough State Forest, Okaloacoochee Slough Wildlife Management Area, and on private lands. George N. Avery (1976) also reported giant sedge from the Devil's Garden area of Hendry County.

A number of collections have been made in Fakahatchee Strand Preserve State Park. The first collection was made by Frank C. Craighead in 1966 (s.n., FTG). Other collections were made in 1966 by Olga Lakela (30006, USF), in 1967 by Lakela (30744, USF), in 1975 by Steven R. Hill (2745, FTG), and in 1985 by Ruben P. Sauleda (8779, USF). It is presumably extant there.

Giant sedge also has been collected in a number of localities in and around Big Cypress National Preserve. The first collection was from the Pinecrest area by C.R. Jackson in 1949 (s.n., FTG). It was vouchered in the same general area by David and Sally Black in 1978 (177, FTG). Robert W. Long collected it in 1966 in Gator Hook Strand (1692, USF), which is located to the west of Pinecrest and south of Monroe Station, and P. Silverstone made a collection in the vicinity of Monroe Station in 1964 (96, FTG). Another collection was made in the Kissimmee Billy Strand area

by Donovan S. and Helen B. Correll in 1976 (47126, FTG). Black & Black (1980) reported giant sedge as uncommon in Big Cypress National Preserve.

A single collection was made in Miami-Dade County in 1965 by R. Metzger (188, USF). The collection was made in a disturbed area, and may not represent a native population.

Major Threats: Exotic pest plant invasions; hydrological modifications; recreational off-road vehicle use in Big Cypress National Preserve; wild hog damage.

Comments: *Because of the difficulty in identifying Carex species, other stations may remain unreported.*

Preliminary recommendations:

- Voucher plants at Six Mile Cypress.
- Survey Okaloacoochee Slough in Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Okaloacoochee Slough State Forest, Okaloacoochee Slough State Forest, and the Devil's Garden area in Hendry County.
- Map and monitor known stations on a regular basis.

***Catesbaea parviflora* Sw.
Smallflower Lilythorn**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Bahia Honda State Park; National Key Deer Refuge)

Taxonomy: Dicotyledon; Rubiaceae.

Habit: Shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal berms and pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Ward, 1978; Correll & Correll, 1982; Scurlock, 1987; Nelson,

1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *C. parviflora* var. *septentrionalis* Krug & Urban.

Historical Context in South Florida: John Loomis Blodgett first collected smallflower lilythorn between 1838 and 1853 on Big Pine Key (s.n., NY). Many other collections have been made from Big Pine Key, where it is still present (e.g. Brumbach 9544, FSU, FTG, NY, USF). Gann observed plants in 2000 in the vicinity of the Blue Hole, within the National Key Deer Refuge.

Allan H. Curtiss first collected it on Bahia Honda Key in the 1880s (1130, NY), and it has been collected there a number of times (e.g. Long et al. 2613, FSU). It is extant on Bahia Honda in Bahia Honda State Park, where it is frequent on coastal berms. Gann, Bradley and Florida Park Service biologist Janice A. Duquesnel have observed these plants as recently as 2001.

Major Threats: Exotic pest plant invasions; sea-level rise.

Preliminary recommendations:

- Survey appropriate habitats within historical range, including private sites on Big Pine Key.
- Map and monitor known stations on a regular basis.

***Celtis pallida* Torr.
Spiny Hackberry**

South Florida Status: Critically imperiled. Two known occurrences in two conservation areas (Mound Key Archaeological State Park; J.N. "Ding" Darling National Wildlife Refuge).

Taxonomy: Dicotyledon; Ulmaceae.

Habit: Shrub.

Distribution: Native to South Florida, the West Indies, southwestern North America (including Mexico), Central America, and South America.

South Florida Distribution: Lee County.

South Florida Habitats: Shell mounds.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Nelson (1996) has an illustration; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Ward, 1978; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *Momisia pallida* (Torr.) Planch. ex Small.

Historical Context in South Florida: Abram P. Garber first collected spiny hackberry in 1878 on an island in Estero Bay (45, NY), probably at what is now Mound Key Archaeological State Park (Ward, 1978). It was collected there by George N. Avery and others in 1973 (1466, FTG), and several times in 1974 by Susan Todd (s.n., FSU, USF). It is extant on Mound Key, and was observed there in 2001 by Gann and Florida Park Service biologists R. "Bobby" Hattaway and Sally Braem. Only two plants were seen during a brief survey, and a thorough survey of the island is needed.

William C. Brumbach collected spiny hackberry on Sanibel Island at J.N. "Ding" Darling National Wildlife Refuge in 1972 (7856, USF). Richard P. Wunderlin and others also vouchered it there in 1978 (6248, FTG, USF). Brumbach made an additional collection from Sanibel Island that may have been from the Refuge in 1978 (9618, FTG, NY, USF). The locality data given is "near exit #10 from the Darling Sanctuary." Gann observed plants at the refuge in 2001.

In 1981, Bruce F. Hansen and others collected spiny hackberry on Big Panther Key west of Pine Island (8356, FTG, USF). This station is protected within the Pine Island Sound Aquatic Preserve, but it is unknown whether or not plants still occur there. Herwitz (1977) reported spiny hackberry for Cayo Costa Island in Cayo Costa State Park, but was unable to find any plants in surveys from 1990 through 1992 (Herwitz et al. 1996). Gann and Florida Park Service biologist R. "Bobby" Hattaway made a brief search of the reported station in 2001, but were unable to locate any plants. Spiny hackberry is apparently extirpated there.

Major Threats: Exotic pest plant invasions.

Comments: Chapman (1883) improperly attributed Garber's 1878 collection of *C. pallida* to *Trema micrantha*, also in the *Ulmaceae*.

Preliminary recommendations:

- Survey Big Panther Key in Pine Island Sound Aquatic Preserve.
- Map and monitor known stations on a regular basis.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology and conservation horticulture studies.
- Consider reintroducing spiny hackberry to Cayo Costa Island in Cayo Costa State Park.
- Consider reintroducing or introducing other populations within historical range.

***Ceratopteris pteridoides* (Hook.) Hieron.
Water Horn Fern**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Jonathan Dickinson State Park).

Taxonomy: Pteridophyte; Parkeriaceae.

Habit: Perennial aquatic herb.

Distribution: Native to peninsular Florida, Louisiana, the West Indies, Central America, and South America. It also has been recorded in Vietnam. Wunderlin & Hansen (2000) reports it as occasional in Florida in Alachua County and the central and southern peninsula.

South Florida Distribution: Charlotte, Martin, and Miami-Dade counties.

South Florida Habitats: The natural habitat is cypress swamps, and slow-moving streams and rivers. It is now primarily found in ditches and canals.

Protection Status: Not listed by any agency.

Identification: There are two species of *Ceratopteris* in South Florida – *C. pteridoides* and the exotic *C. thalictroides* (L.) Brongn. Flora of North America Editorial Committee (1993) has illustrations of both *C. pteridoides* and *C. thalictroides*; Nelson (2000) has a color photo of *C. pteridoides*; the IRC Website has a color photo.

References: Small, 1938; Lloyd, 1974; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.
Synonyms: None.

Historical Context in South Florida: Walter M. Buswell first collected water horn fern in 1938 in Coral Gables in Miami-Dade County (s.n., FTG). In the early 1990s, Roger L. Hammer and Don Keller discovered it in a ditch at Shark Valley in Everglades National Park (Hammer, 1994). Hammer and Keller have returned several times in an attempt to find this population without success (R.L. Hammer, personal communication, 31 January 2001).

Gann and Bradley first collected water horn fern in Charlotte County in 1995 at the Fred C. Babcock-Cecil M. Webb Wildlife Management Area (10, FTG). The plants were floating in a ditch. Gann found additional plants in a canal north of Bermont on SR 31 in 2000. Several dozen sporulating plants were observed.

Water horn fern also is present at Jonathan Dickinson State Park in Martin County where it is growing on the edge of a cypress strand (R.E. Roberts, personal communication, 31 January 2001). This station needs to be vouchered.

It has been reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in Collier and Lee counties, and Dupuis Reserve (Woodbury, no date), which is located in Martin and Palm Beach counties, but both of these stations need to be verified.

Major Threats: Exotic pest plant invasions; herbicide spraying in canals and ditches.

Preliminary recommendations:

- Voucher plants in Jonathan Dickinson State Park.
- Survey Corkscrew Swamp Sanctuary and Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Chamaesyce deltoidea* (Engelm. ex Chapm.) Small
subsp. *adhaerens* (Small) Herndon
Redland Sandmat**

South Florida Status: Critically imperiled. Four occurrences in five conservation areas (Andrew Dodge Memorial Pineland, Black Creek Forest, Goulds Pineland, & Institute for Regional Conservation Preserve; Camp Owaissa Bauer), and two non-conservation areas (Naranja School Board Property; Old Dixie Pineland). Additional plants are present on private lands in the Goulds area.

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by USFWS (as *C. deltoidea* subsp. *deltoidea*), as endangered by FDACS (as *C. deltoidea*), and as critically imperiled by FNAI.

Identification: Distinguished from other subspecies of *Chamaesyce deltoidea* in having prostrate or appressed stems and uncinat appressed hairs on the upper surface of the leaves (Herndon, 1993).

References: Small, 1933a; Long & Lakela, 1976; Avery & Loope, 1980a; Dade County Department of Environmental Resources Management, 1993b; Herndon, 1993; Coile, 2000; USFWS, 2000.

Synonyms: *C. adhaerens* Small; *C. deltoidea* subsp. *deltoidea* of authors, in part.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Redland sandmat in 1903 between Cutler and Camp Longview (860, NY). Camp Longview was historically located to the west of present-day Florida City. Small and Carter made the next collection in 1906 between Peter's Prairie and Homestead (2531, NY). It was this collection that Small (1927) designated as his type of *Chamaesyce adhaerens*. Since the above collections, Redland sandmat has been collected and observed numerous times from S.W. 216 Street (by Bradley) south to S.W. 288 Street (Herndon 339, FTG) in Miami-Dade County, although most of its historical habitat has been destroyed.

Redland sandmat is now known from four occurrences within its historical range.

The largest concentration is in the Goulds area, where it is protected at several conservation areas. Bradley vouchered plants at Goulds Pineland in 1998 (1807, FTG). We estimate that there are several hundred plants at that station. Plants also are present at Black Creek Forest, where Bradley observed plants in 1992. This station needs to be vouchered. There is a small population at The Institute for Regional Conservation Preserve in southern Goulds, where the authors have observed plants as recently as 2001. Fewer than 100 plants are present there. Redland sandmat also is present at the Andrew Dodge Memorial Pineland (Klein & Bradley, 1996), where Gann and Bradley have observed fewer than 10 plants. Both The Institute for Regional Conservation Preserve and Andrew Dodge Memorial Pineland stations need to be vouchered. Additional plants occur on private pine rockland fragments in the Goulds area, some of which should be considered for acquisition.

Lloyd L. Loope (1979) and others reported Redland sandmat for Camp Owaissa Bauer several miles to the southwest of Goulds, and it has been collected and reported for pinelands surrounding Camp Owaissa Bauer (e.g., Herndon 399, FTG; Houghton s.n., FTG; Popenoe 658, FTG). Roger L. Hammer observed six plants there in 2001 (personal communication, 26 March 2001). George N. Avery observed plants at what is now Ingram Pineland in 1979 (Avery's Notes, 27 October 1979), a station that was vouchered by Alan Herndon in 1980 (339, FTG). Bradley conducted a vascular plant inventory of the site in 2000, but failed to locate any plants.

Two important non-conservation areas are the School Board property next to the Florida Turnpike in Naranja (Avery's Notes, 27 June 1979), and the Old Dixie Pineland in Naranja (anonymous, 1994a). Plants at both of these stations are assumed to be extant, but need to be vouchered. The Old Dixie Pineland is located within a future transportation corridor, and will probably be destroyed.

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction.

Comments: *Wunderlin (1998) places this into synonymy with C. deltoidea subsp. deltoidea. We follow Herndon (1993).*

Preliminary recommendations:

- Voucher plants at Andrew Dodge Memorial Pineland, Black Creek Forest, Institute for Regional Conservation Preserve, Naranja School Board Property, and Old Dixie Pineland.
- Survey Ingram Pineland.
- Map and monitor known stations on a regular basis.
- Acquire Old Dixie Pineland and pine rockland fragments in Goulds.
- Designate and manage Naranja School Board Property as a conservation area.
- Conduct conservation biology and conservation horticulture studies.

***Chamaesyce deltoidea* (Engelm. ex Chapm.) Small
subsp. *serpyllum* (Small) D.G. Burch
Florida Keys Sandmat**

South Florida Status: Critically imperiled. One occurrence at National Key Deer Refuge, Terrestris Preserve, & adjacent non-conservation areas.

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: This can be distinguished from other subspecies of *Chamaesyce deltoidea* by having irregularly twisted trichomes instead of uncinatate trichomes (Wunderlin, 1998).

References: Small, 1933a; Long & Lakela, 1976; Avery & Loope, 1980a; Herndon, 1993; Wunderlin, 1998; Bradley & Gann, 1999b; Coile, 2000.

Synonyms: *C. serpyllum* Small.

Historical Context in South Florida: John Kunkel Small first collected Florida Keys sandmat in 1912 on Big Pine Key (3768,

NY). It has been collected and observed numerous times since then, but only on Big Pine Key. Florida Keys sandmat is extant at the National Key Deer Refuge, The Nature Conservancy's Terrestrial Preserve (J. O'Brien, personal communication, 1991) and, presumably, on other properties on Big Pine Key. Gann observed plants at the National Key Deer Refuge in 2000. An estimated 1,000-10,000 plants are extant on Big Pine Key (Bradley & Gann, 1999b).

Major Threats: Fire suppression; exotic pest plant invasions; habit destruction; sea-level rise.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Acquire additional habitat and incorporate it into National Key Deer Refuge.
- Conduct conservation biology and conservation horticulture studies.
- Encourage USFWS to list *Chamaesyce deltoidea subsp. serpyllum*.

***Chromolaena frustrata* (B.L. Rob.)**

R.M. King & H. Rob.

Florida Keys Thoroughwort

South Florida Status: Critically imperiled. Four occurrences in two conservation areas (Lignumvitae Key Botanical State Park; Long Key State Park) and three non-conservation areas (Big Munson Island; North Layton Hammock; Teatable Hammock).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Monroe County.

South Florida Habitats: Coastal rock barrens, edges of rockland hammocks, and coastal berms.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Ledin, 1951; Long & Lakela, 1976; Avery & Loope, 1980a; Cronquist, 1980; Wunderlin, 1998; Bradley & Gann, 1999b; Chafin, 2000; Coile, 2000.

Synonyms: *Eupatorium frustratum* B.L. Rob.; *Eupatorium heteroclinium* Griseb., misapplied; *Osmia frustrata* (B.L. Rob.) Small.

Historical Context in South Florida: John Loomis Blodgett first collected Florida Keys thoroughwort between 1838 and 1853 on Big Pine Key (s.n., NY). Frank C. Craighead collected it again on Big Pine Key in 1955 (s.n., FLAS), but it has not been recorded there since that time. Allan H. Curtiss collected the type specimen in the late 1800s on Lignumvitae Key (1195, NY, GH, FLAS), now within Lignumvitae Key Botanical State Park. It has been collected and observed there a number of times, including by George N. Avery in 1964 (Avery's Notes, 7 March 1964), by C.P. Sreemadhaven in 1971 (4906, USF), and by Bradley in 1995 (458, FTG). Gann and Florida Park Service biologist Janice A. Duquesnel observed fewer than 100 plants there in 2000.

Alvan W. Chapman made another early collection in 1875 on Long Key (20023, US), where two extant stations are known. The first is at Long Key State Park, where Ann Buckley and Ted Hendrickson first vouchered it in 1986 (322, FTG). Gann and Duquesnel observed fewer than 100 plants there in 2000. In 1998, Bradley observed Florida Keys thoroughwort on Long Key on the edge of privately owned North Layton Hammock. In 1892, Joseph H. Simpson made the first collection on Upper Matecumbe Key (565, NY). John Kunkel Small and Nathaniel L. Britton made a collection there in 1919 (9329, NY), Craighead made another collection there in 1962 (s.n., USF), and Olga Lakela vouchered the station again in 1968 (31601, FTG, USF). Plants are extant on Upper Matecumbe Key on the edge of privately owned Teatable Hammock, where Bradley observed them in 1998. Fewer than 10 plants were seen.

Florida Keys thoroughwort also was collected and observed at a number of sites in the Florida Keys where it is apparently extirpated. John H. Davis, Jr. made a collection in 1940 on Boca Grande Key (s.n., FLAS), which is located to the west of Key West in what is now Key West National Wildlife Refuge. Gann and Bradley surveyed this island in 1996, but did not observe any plants. Avery observed plants on Knight's Key in 1962 (Avery's Notes, 21 November 1962), a station that was vouchered in 1979

by Donovan S. Correll (50973, FTG, USF). Harold N. Moldenke made a collection on Lower Matecumbe Key in 1930 (623, NY), and Walter M. Buswell collected a single specimen on Key Largo in 1930 (s.n., FTG). In 2001, Bradley made a collection on Big Munson Island where it was abundant in rockland hammocks and a coastal rock barren (2128, FTG). This site is owned by the Boy Scouts of America.

Small (1918, 1919) reports finding this in 1916 at “Madeira,” to the east of Flamingo in what is now Everglades National Park. Small and John B. DeWinkeler vouchered a population between West Lake and Flamingo in 1921 (9995, NY). George N. Avery observed it twice in that region in 1977, once on the west side of Buttonwood Canal, and once south of West Lake (Avery’s Notes, 9 May 1977, 10 May 1977). R. Bruce Ledin made two collections to the west of that area in 1947, the first from “Stream Bank, above Cape Sable” (s.n., FLAS) and the second from “Cape Sable” (s.n., FTG). Harold N. Moldenke (1944) also reported it for the Turner River Mound in the Ten Thousand Islands area in Everglades National Park, but this station apparently was never vouchered. Despite Avery & Loope’s statement that it could be quite common on the mainland in Everglades National Park (Avery & Loope, 1980a), it may be extirpated there (Reimus, 1999).

Major Threats: Exotic pest plant invasions; habitat destruction; management error; sea-level rise.

Comments: *At Lignumvitae Key Botanical State Park, Florida Keys thoroughwort apparently is now limited to a small area immediately adjacent to a trail that is regularly mowed. It was formerly known from around the historic house. Gann and Duquesnel were unable to locate plants near the historic house in recent surveys, and it may have been extirpated there through the regular mowing and “weed-eating” of the area. Extreme care should be exercised to prevent the loss of Florida Keys thoroughwort from its type locality.*

Preliminary recommendations:

- Voucher plants at Teatable Hammock.
- Survey Cape Sable region of Everglades National Park.
- Encourage USFWS to list *Chromolaena frustrata*.
- Map and monitor known stations on a regular basis.

- Acquire North Layton Hammock and Teatable Hammock.
- Develop conservation agreement with Boy Scouts of America to manage a viable population of Florida Keys thoroughwort on Big Munson Island, and provide technical assistance.
- Prevent extirpation at Lignumvitae Key Botanical State Park.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology and conservation horticulture studies.
- Consider introducing Florida Keys thoroughwort to other sites within its historical range, including the Klopp Tract, Lignumvitae Key Botanical State Park on Lower Matecumbe Key.

***Cienfuegosia yucatanensis* Millsp.
Yucatan Flymallow**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas and two non-conservation areas (Klopp Tract, Lignumvitae Key Botanical State Park; Long Key State Park, Long Key Layton Coastal Rock Barren, & North Layton Hammock; Windley Key Fossil Reef Geological State Park).

Taxonomy: Dicotyledon; Malvaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, and Mexico in the Yucatan.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal rock barrens, margins of tidal swamps, and edges of rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1933a; Fryxell, 1969; Scurlock, 1987; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *C. heterophylla* (Vent.) Garcke, misapplied.

Historical Context in South Florida: John Loomis Blodgett first collected Yucatan flymallow between 1838 and 1853 on Lignumvitae Key (s.n., NY). It was subsequently reported or

collected from Windley Key, where it needs to be vouchered, south to Key West (Chapman s.n., US). It is extirpated on Key West, Grassy Key (Curtiss 398, US), and Lignumvitae Key.

In 1892, Joseph H. Simpson made a collection on Long Key (469, GH, NY, US), where it was vouchered again in 1964 by Olga Lakela (27938, FLAS, USF). George N. Avery observed it there in 1966, noting that there were "large stands of this here" (Avery's Notes, 19 April 1966). It is extant on that island at three stations. The first is at Long Key State Park, where Avery vouchered it in 1971 (1084, FTG). Gann, Bradley and Florida Park Service biologist Janice A. Duquesnel observed plants there as recently as 2000. A few hundred plants were estimated to be present. It also has been observed in both Long Key Layton Coastal Rock Barren and North Layton Hammock, two privately owned parcels that are adjacent to each other on Long Key. Bradley and Wayne Hoffman observed plants there in 1998. Close to 1,000 plants were estimated to be present. This is the largest extant colony of Yucatan flymallow.

John Kunkel Small made a collection on Lower Matecumbe Key in 1917 (8392, FSU, NY), a station that was vouchered again by several collectors: Small and others in 1925 (11599, FLAS, FSU, GH, NY); Walter M. Buswell in 1933 (s.n., ARIZ); and George N. Avery in 1965 (s.n., FLAS, GH). Gann and Duquesnel rediscovered it on that island at the Klopp Tract, Lignumvitae Key Botanical State Park in 2000. Fewer than 100 plants were observed. This station needs to be vouchered. Development of the Klopp Tract as a support facility for Lignumvitae Key Botanical State Park threatens this population of Yucatan flymallow.

Yucatan flymallow also has been observed at Windley Key Fossil Reef Geological State Park, where it needs to be vouchered. Karen Achor first reported it there in 1982 (in Weiner 1980, as appended). J. Paul Scurlock reported plants there in 1987, as did Curtis R. Kruer in 1992. Gann, Duquesnel, and Bradley observed plants there as recently as 1999. Fewer than 100 plants were seen in and around a small coastal rock barren.

Major Threats: Habitat destruction at the Long Key Layton Rock Barren site, North Layton Hammock, and Klopp Tract, Lignumvitae

Key Botanical State Park; exotic pest plant invasions; sea-level rise.

Comments: *The population at Windley Key is found in and around an extremely small coastal rock barren and some research to determine management options for this unique and critically important site are encouraged.*

Preliminary recommendations:

- Voucher plants at Klopp Tract, Lignumvitae Key Botanical State Park and Windley Key Fossil Reef Geological State Park.
- Map and monitor known stations on a regular basis.
- Acquire Long Key Layton Coastal Rock Barren and North Layton Hammock sites.
- Study management options at Windley Key Fossil Reef Geological State Park.
- Ensure that development of facilities at Klopp Tract does not harm Yucatan flymallow.
- Consider reintroducing Yucatan flymallow to other sites within its historical range, including Lignumvitae Key Botanical State Park.
- Consider introducing Yucatan flymallow to other sites within its historical range, including Little Hamaca Park.

***Croton lobatus* L.
Lobed Croton**

South Florida Status: Critically imperiled. Five occurrences in four conservation areas and three non-conservation areas (Camp Owaissa Bauer; Everglades National Park; Fuchs Hammock Preserve; Pine Ridge Sanctuary & privately owned Nixon-Lewis Hammock; privately owned Little Cox Hammock & privately owned portions of Ross Hammock).

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida, central Florida (in Manatee and Pinellas counties), the West Indies, Mexico, Central America, South America, and tropical Africa.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammock margins and gaps, and pine rocklands.

Protection Status: Not listed by any agency.

Identification: There are 12 species of *Croton* in Florida. Wunderlin (1998) has a key. The leaves of *C. lobatus* are 3-5 lobed.

References: Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Frank C. Craighead apparently first collected lobed croton in South Florida in 1962 (s.n., USF). This collection was made in Fuchs Hammock, now part of Fuchs Hammock Preserve. John Popenoe later collected it at Fuchs Hammock in 1971 (148, FTG). In 1966, George N. Avery observed lobed croton at Timms Hammock in Camp Owaissa Bauer, a Miami-Dade County park (Avery's Notes, 4 August 1966). In 1977, Avery and others found one plant of this species at a site near downtown Miami along the Florida East Coast Railway tracks (1743, FTG). This station is just north of Simpson Park and was formerly part of Brickell Hammock. The plant was found in a spot where a cut was made through a limestone hill.

Alan H. Herndon collected it once in Everglades National Park in 1988 (s.n., FTG). The plants were found in a pine rockland adjacent to a hammock on Long Pine Key. A prescribed fire had burned this site about seven weeks before the collection was made, and Herndon reported that there was a massive germination of seeds with seedlings abundant at that time. It has apparently not been seen there since that time.

Gann observed plants in the early 1990s at the privately owned Little Cox Hammock, the seedlings germinating a few weeks after a prescribed fire had burned through the edge of the rockland hammock. Surveys in subsequent years failed to locate any plants. Around 1995, Bradley made an observation of plants in a privately owned portion of Ross Hammock, which is in the vicinity of Little Cox Hammock and adjacent to Castellow Hammock Park. These two stations are considered to be the same occurrence.

Lobed croton also was observed at the Pine Ridge Sanctuary sometime before 1998 by Barbara Glancy. It was vouchered there by Bradley in 1998 (1596, FTG), where it was growing in and along the edge of a pine rockland. Bradley also collected it near Pine Ridge Sanctuary at the privately owned Nixon-Lewis Hammock in 1998 (1843, FTG). This hammock had been almost completely destroyed and the plants were growing around its edge, partly in a fallow agricultural field.

Major Threats: Fire suppression around rockland hammock margins; exotic pest plant invasions; habitat destruction.

Comments: *This is an extremely ephemeral annual herb that most often appears following disturbance, including fire. Surveys for this species should be conducted at different seasons over a period of several years. South Florida specimens have been collected in March, June, July, and September. Ferdinand Rugel collected a specimen in Manatee County in 1845 (311, NA), showing that this species is not a recent immigrant to Florida. A collection made by Ferdinand Rugel in 1849 (6779, US), labeled "Florida," may have been collected in Cuba or elsewhere. Rugel apparently did not collect in Florida in 1849.*

Preliminary recommendations:

- Voucher known stations whenever plants are present.
- Survey appropriate habitats within historical range following fires or other disturbances.
- Map known stations whenever plants are present.
- Monitor known stations following fires or other disturbances.
- Acquire Little Cox Hammock.
- Review for listing by FDACS and FNAI.

***Croton michauxii* G.L. Webster**
Rushfoil

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Frenchman's Forest Natural Area; Juno Dunes Natural Area; Savannas Preserve State Park)

Taxonomy: Dicotyledon; Euphorbiaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods and scrub, along the ecotone with depression marshes or other freshwater wetlands.

Protection Status: Not listed by any agency.

Identification: There are 12 species of *Croton* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Wunderlin, 1998.

Synonyms: *Crotonopsis linearis* Michx.

Historical Context in South Florida: Hugh O'Neill first collected rushfoil in 1928 just west of Ortona in Glades County (s.n., FLAS). In 1967, R.R. Smith made a collection in Glades County in the Palmdale area near Fisheating Creek (1632, FLAS), in what may now be the Fisheating Creek Wildlife Management Area. In 1972, Robert Kral made a collection west of Jensen Beach in Martin County (48066, NY). It was observed in this vicinity in 1997 by Gann and Bradley at the Savannas Preserve State Park.

In 1996, Gann and Bradley made the first known collection in Palm Beach County at Frenchman's Forest Natural Area (808, FTG). The plants were growing on the edge of a depression marsh. Several hundred plants were observed. Bradley and Woodmansee collected rushfoil in 1997 at Juno Dunes Natural Area in Palm Beach County (312, FTG), in the ecotone between scrubby flatwoods and a depression marsh. Several hundred plants were observed there as well.

Major Threats: Exotic pest plant invasions; hydrological modifications; fire suppression.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. A specimen of this species at FLAS collected by Allan H. Curtiss (2526) is labeled "Pease [sic] Creek, Southwest Florida." Someone later added the writing "Charlotte County" to the specimen. A duplicate at US does not have this writing. Very little of the Peace River, which is what Curtiss was referring to, is*

actually in Charlotte County. Most of the river is to the north of our area, and we feel that the specimen was incorrectly attributed to Charlotte County.

Preliminary recommendations:

- Survey Fisheating Creek area, including Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Ctenitis submarginalis* (Langsd. & Fisch.) Ching
Brown-hair Comb Fern**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Deering Estate at Cutler; Fakahatchee Strand Preserve State Park) and one non-conservation area (Strawberry Fields Hammock).

Taxonomy: Pteridophyte; Dryopteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, central Florida (Hardee and Seminole counties), Louisiana, the West Indies (Hispaniola), Mexico, Central America, and South America.

South Florida Distribution: Broward, Collier, Miami-Dade, and Palm Beach counties. It has not been vouchered for Miami-Dade County.

South Florida Habitats: Mesic-hydric hammocks, rockland hammocks, and strand swamps.

Protection Status: Listed as endangered by FDACS.

Identification: There are two species of *Ctenitis* in South Florida. *C. submarginalis* can be distinguished from *C. sloanei* in that its leaf blades are 1-pinnate-pinnatifid vs. 2- to 4-pinnate-pinnatifid in *C. sloanei* (Wunderlin & Hansen, 2000). Tobe et al. (1998) has a color photo and an illustration; Nelson (2000) has color photos; the IRC Website has a color photo.

References: Small, 1933a; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Thelypteris submarginalis* (Langsd. & Fisch.) Small ex R.P. St. John.

Historical Context in South Florida: John Kunkel Small and others first collected brown-hair comb fern in 1926 in a hammock near Belle Glade in Palm Beach County (s.n., NY). It has not been collected in that area since that time.

The next station to be discovered was in the Fakahatchee Strand in Collier County, in what is now Fakahatchee Strand Preserve State Park. Walter M. Buswell made the first collection there in March 1933, with the locality given as “Big Cypress Swamp, W. of Deep Lake, Fla.” (s.n., NY). Buswell made several subsequent collections there in June 1933 (s.n., FTG, USF), in 1934 (s.n., FTG, USF), and in 1937 (s.n., FTG, USF). Other collections have been made by J.R. Lorenz (s.n., FTG), George N. Avery (1146, FTG; 2329, FTG), Clifton E. Nauman and others (284, USF), Bruce E. Tatje and Jane H. Thompson (141, USF), David and Sally Black (s.n., FTG), and John Beckner (s.n., FTG).

Thomas Darling, Jr. (1962) first reported brown-hair comb fern for the Miami area. However, it has yet to be vouchered in Miami-Dade County. Two stations are currently extant. The first is at the Deering Estate at Cutler, where it was reported first on a plant list for the site (Fairchild Tropical Garden, 1990c). Alan Cressler found two patches of plants in close proximity to each other in 1993 while conducting a survey for rare ferns following Hurricane Andrew in 1992 (Cressler, 1993). Approximately 30 plants were found during this survey. Don Keller found a third patch there in the late 1990s but that patch has since disappeared (personal communication, 30 January 2001).

A second station in Miami-Dade County is at the privately owned Strawberry Fields Hammock in southern Miami-Dade County. Don Keller, Alan Cressler, and Carol Lippincott discovered this station on Thanksgiving Day, 1989 (D. Keller, personal communication, 8 February 2001). Keller visited the site again in the late 1990s, and three or four plants were observed. Bradley observed more than 10 plants at this station in 2001.

In Broward County, Clifton E. Nauman and J.A. Nauman made the first collection in “Cypress Creek Hammock” in 1978 (384, USF; 385, USF), now in the Fern Forest Nature Center, which is managed by Broward County. Austin et al. (1979) reported

several plants present, but that it was rare at the site. It is assumed to be present.

Major Threats: Exotic pest plant invasions; poaching; hydrological modifications; wild hog damage.

Preliminary recommendations:

- Voucher plants at Deering Estate at Cutler and Strawberry Fields Hammock.
- Map and monitor known stations on a regular basis.
- Acquire Strawberry Fields Hammock.
- Protect from poaching.
- Consider restoring hammocks in the Belle Glade area and reintroducing brown-hair comb fern.
- Review for listing by FNAI.

***Cupania glabra* Sw.
American Toadwood**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (National Key Deer Refuge; Great White Heron National Wildlife Refuge), and one non-conservation area (Cupania Hammock).

Taxonomy: Dicotyledon; Sapindaceae.

Habit: Tree.

Distribution: Native to South Florida, the West Indies, and Central America.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1994) has a color photo; Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Long & Lakela, 1976; Little, 1978; Ward, 1978; Tomlinson, 1980; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: John Loomis Blodgett first collected American toadwood between 1838 and 1853 on Big Pine

Key (Blodgett s.n., NY). Blodgett's specimen was unidentified until Nathaniel L. Britton studied the specimen and determined it to be *Cupania glabra* (Britton, 1901). It was not rediscovered until 1921 when Charles Torrey Simpson found it on Big Pine Key (Small, 1924). It was vouchered later that year by John Kunkel Small and others (10198, NY). T. Ann Williams observed plants on Big Pine Key from the 1970s through the 1990s (personal communication, 6 March 2001). American toadwood is present on Big Pine Key at Watson Hammock in National Key Deer Refuge. Ellsworth P. Killip made the first collection that can be definitely attributed to this station in 1951 (40877, US). Several other collections were made from Watson Hammock including one by Steven R. Hill in 1984 (13387, NY). Bradley and Woodmansee observed plants there in 2001.

The next station to be discovered was at Cupania Hammock, a privately owned site on Summerland Key, where George N. Avery found a few plants in 1964 (Avery's Notes, 27 September 1963). Robert W. Long vouchered this station in 1967 (2470, USF). According to Kruer (1992), it is common here and this is the second largest population in the Keys, after Watson Hammock.

In 1965, a few plants were found by Lois and Stan Kitching on Johnston Key in the Great White Heron National Wildlife Refuge (Avery's Notes, 20 February 1965). Avery observed a few plants at this station later that year. Kruer (1992) reported three small trees at this site. American toadwood is assumed to be extant at this station, but needs to be vouchered.

Major Threats: Habitat destruction; exotic pest plant invasions; sea-level rise.

Preliminary recommendations:

- Voucher plants at Johnston Key.
- Map and monitor known stations on a regular basis.
- Acquire Cupania Hammock.

***Cuscuta exaltata* Engelm.
Tall Dodder**

South Florida Status: Critically imperiled. Four occurrences in five (or six) conservation areas (Jupiter Ridge Natural Area & Juno

Dunes Natural Area; Jupiter Inlet Lot 13 and/or Jupiter Inlet Natural Area; Rocky Point Hammock; Yamato Scrub Natural Area).

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to Florida and Texas. Wunderlin (1998) reports it as rare in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Scrub and scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration; the IRC Website has a color photo.

References: Yuncker, 1932; Small, 1933a; Austin, 1980; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Palm Beach County biologist Steve Farnsworth first reported an unknown *Cuscuta* species for several sites in northern Palm Beach County: Jupiter Inlet Tract (Farnsworth, 1993c), part of which is now Jupiter Inlet Natural Area and part of which is now Jupiter Inlet Lot 13; Jupiter Ridge Natural Area (Farnsworth, 1994b); and, Juno Dunes Natural Area (Farnsworth, 1995a). Daniel F. Austin observed these plants and reported that they were all *C. exaltata* (personal communication, 3 April 2001). In July 2001, Chris Lockhart observed plants at the Juno Dunes Natural Area (personal communication, 25 July 2001), a station that was vouchered by Lytton Musselman in 2001 (personal communication, 14 January 2002). Plants at Jupiter Ridge Natural Area are assumed to be present, as are plants at the Jupiter Inlet Tract, although both the Jupiter Inlet Natural Area and Jupiter Inlet Lot 13 need to be surveyed.

In 1998, Bradley and Woodmansee discovered tall dodder at Yamato Scrub Natural Area in southern Palm Beach County (1006, FTG, USF). A single large patch of plants was observed growing parasitically on oaks (*Quercus* spp.) in a recently cleared firebreak. Austin observed this station in April 2001, and saw two-dozen or more seedlings (personal communication, 5 April 2001).

Also in 1998, Bradley and Woodmansee discovered tall dodder in Martin County in scrubby flatwoods at Rocky Point Hammock, a Martin County park (1206, FTG). A single patch was observed growing parasitically on *Quercus myrtifolia*.

Major Threats: Exotic pest plant invasions; fire suppression.

Comments: *Tall dodder is parasitic on a variety of hardwood hosts (Godfrey & Wooten 1981). It flowers in the summer through fall, so surveys should be conducted during this time period. It appears to be an extremely ephemeral species, sometimes disappearing for years at a time (D.F. Austin, personal communication, 3 April 2001).*

Preliminary recommendations:

- Voucher plants at Jupiter Inlet Tract and Jupiter Ridge Natural Area.
- Voucher all stations each year plants are present.
- Survey Jupiter Inlet Natural Area and Jupiter Inlet Lot 13.
- Map known stations whenever plants are present.
- Monitor known stations on a quarterly basis.
- Conduct conservation biology research.
- Determine status in Florida and Texas.
- Review for listing by FDACS and FNAI.

***Cuscuta indecora* Choisy
Bigseed Alfalfa Dodder**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Corkscrew Swamp Sanctuary; Nicodemus Slough) and one non-conservation area (Sunniland area in Collier County).

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Annual parasitic vine.

Distribution: Native to North America, the West Indies, Mexico, and South America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier and Glades counties.

South Florida Habitats: Pinelands, hammocks, marshes, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Austin (1980) has an illustration.

References: Chapman, 1883; Yuncker, 1932; Small, 1933a; Austin, 1980; Godfrey & Wooten, 1981; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *C. indecora* var. *neuropetala* (Engelm.) Hitchc.; *C. neuropetala* Engelm.

Historical Context in South Florida: Gerald F. “Stinger” Guala collected bigseed alfalfa dodder in 1987 in flatwoods at Corkscrew Swamp Sanctuary in Collier County (666, FLAS). Bradley made an additional collection in Collier County in 1998 along State Road 29 in the Sunniland area (1852, FTG). In 1997, Bradley & Woodmansee made a collection at Nicodemus Slough in Glades County (804, FTG).

It was reported for Blowing Rocks Preserve in Martin County (Richardson et al., 1992), but this occurrence needs to be verified.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *It is parasitic on a number of woody and herbaceous hosts (Godfrey & Wooten, 1981).*

Preliminary recommendations:

- Survey Blowing Rocks Preserve.
- Map and monitor known stations on a regular basis.

***Cyperus floridanus* Britton ex Small
Florida Flatsedge**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Bill Baggs Cape Florida State Park; R. Hardy Matheson Preserve) and one non-conservation area (Key West Cemetery).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the Bahamas, and Cuba.

South Florida Distribution: Collier and Miami-Dade counties and the Monroe County Keys.

South Florida Habitats: Rockland hammocks, shell mounds, and open sand.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: There are about 50 species of *Cyperus* in Florida. Wunderlin (1998) has a key. In Florida this is a very small plant, usually about five cm or less in height.

References: Small, 1933a; McLaughlin, 1944; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: *C. filiformis* Sw., misapplied; *C. filiformis* var. *densiceps* Kük.

Historical Context in South Florida: John Loomis Blodgett first collected Florida flatsedge between 1838 and 1853 on the island of Key West (s.n., NY, US). Abram P. Garber also collected it on Key West in 1877 (1221, NY, FLAS). In 1903, Nathaniel L. Britton described Blodgett's plant as a new species, designating his Key West collection the type (in Small, 1903). It was not seen in the Florida Keys again until George N. Avery discovered it persisting at the Key West Cemetery in 1965 (Avery's Notes, 13 March 1965). Avery vouchered this population in 1978 (1898, FLAS, FTG). Bradley re-vouchered this population in 1995 (268, FTG), and observed plants in and around the cemetery in 2001.

The next station was discovered by Garber, who collected it in Miami in 1877 (1220, NY). Florida flatsedge was not seen in Miami-Dade County again until John Popenoe and others collected it on Key Biscayne at Bill Baggs Cape Florida State Park in 1983 (2345, FTG, USF). Bradley re-vouchered it at this station in 1995 (242, FTG). Gann has observed plants, nearly throughout the park, as recently as 2000. In 1995, Gann and Bradley discovered a station on the mainland at the R. Hardy Matheson Preserve in Miami-Dade County (5, FTG). Plants were observed growing in the ecotone between pine rockland and rockland hammock.

In 1965, Olga Lakela collected Florida flatsedge on Chokoloskee Island in Collier County (29105, USF; 29324, USF). The plants were growing on shell mounds. Avery observed this population in 1980 (Avery's Notes, 2 July 1980). The last hammock fragments on this island have been developed, and it is unlikely that this species persists there.

Major Threats: Exotic pest plant invasions; off-road bicycle use at R. Hardy Matheson Preserve.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Eliminate off-road bicycle use within area Florida flatsedge area at R. Hardy Matheson Preserve.
- Consider introducing Florida flatsedge to other sites within its historical range, including Little Hamaca Park on Key West.
- Consider restoring shell mounds hammocks on Chokoloskee Island and reintroducing Florida flatsedge.

***Cyperus fuliginus* Chapm.
Limestone Flatsedge**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Long Key State Park; National Key Deer Refuge, Snake Creek Hammocks) and one non-conservation area (Valhalla Rock Barren Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Rockland hammocks, coastal berms, and coastal rock barrens.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: There are about 50 species of *Cyperus* in Florida. Wunderlin (1998) has a key. The stems and spikelets are rusty reddish.

References: Chapman, 1883; Small, 1933a; McLaughlin, 1944; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Limestone flatsedge was collected first on the island of Key West either by John Loomis Blodgett, between 1838 and 1853 (s.n., NY), or by Ferdinand Rugel in 1846 (s.n., F). It was observed there by J. Cosmo Melville in 1872 (Melville, 1882) and was collected there by Abram

P. Garber in 1877 (s.n., NY). John Kunkel Small and others made another collection, probably in 1913 (the label is damaged), on Key Largo, and in 1919, Small and Nathaniel L. Britton made a collection on Upper Matecumbe Key (9332, NY). The next collection was made by Small in 1921 on the southern end of Big Pine Key (10147, NY), presumably in Cactus Hammock, where Ellsworth P. Killip collected it in 1952 (41958, F), George N. Avery collected limestone flatsedge in 1971 (1975, FTG), and Bradley observed it several times from 1995-2001. Donovan S. Correll and Helen B. Correll also collected limestone flatsedge on the northern end of Big Pine Key in 1982 (54042, FTG).

In 1965, George N. Avery observed plants in a hammock at the southwestern point of Ramrod Key, at the Ramrod Key Coastal Berm Site (Avery's Notes, 12 December 1965). This station was not vouchered. The property is still undeveloped and plants could remain there. Part of this site is owned by Monroe County and part is privately owned. In 1966, Avery observed limestone flatsedge on Crawl Key at the Valhalla Rock Barren Site (Avery's Notes, 19 April 1966). Bradley also observed this station in 1998, where perhaps a few hundred plants are extant. This is a privately owned site immediately adjacent to Curry Hammock State Park. In 1995, Bradley discovered limestone flatsedge in a coastal rock barren at the Long Key State Park (249, USF, FTG), where it is extant. Bradley, Gann, and Florida Park service biologist Janice A. Duquesnel observed plants there in 2000. Bradley also found plants in 1999 at the edge of a rockland hammock on Plantation Key at Snake Creek Hammocks, Florida Keys Wildlife and Environmental Area. This station was mapped, but needs to be vouchered.

Major Threats: Habitat destruction at the Valhalla Rock Barren; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Snake Creek Hammocks.
- Survey Ramrod Key Coastal Berm Site.
- Map and monitor known stations on a regular basis.
- Acquire privately owned portion of Ramrod Key Coastal Berm Site. Designate and manage the entire site as a conservation area. Acquire Valhalla Rock Barren Site.

- Consider introducing limestone flatsedge to other sites within its historical range, including Little Hamaca Park.

***Dalea carthagenensis* (Jacq.) J.F. Macbr.
var. *floridana* (Rydb.) Barneby
Florida Prairieclover**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (two occurrences in Big Cypress National Preserve; Deering Estate at Cutler; R. Hardy Matheson Preserve).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Shrub.

Distribution: Endemic to South Florida.

South Florida Distribution: Collier, Miami-Dade, and Palm Beach counties and the Monroe County mainland.

South Florida Habitats: Pine rocklands, edges of rockland hammocks, marl prairies, and coastal strand.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Isely, 1990; Wunderlin, 1998; Bradley & Gann, 1999b; Chafin, 2000; Coile, 2000.

Synonyms: *D. carthagenensis* var. *domingensis* (DC.) R.T. Clausen, misapplied; *D. domingensis* D.C., misapplied; *Parosela floridana* Rydb.

Historical Context in South Florida: Abram P. Garber first collected Florida prairieclover in 1877 in Miami (57, FLAS; 67, NY), presumably in sandy pine rocklands near the Miami River. Garber also made collections in Miami in 1878 (s.n., FLAS, NY), as did Joseph H. Simpson in 1892 (s.n., NY). Allan H. Curtiss also collected it later in 1892 from the "east border of Everglades" (563, NY), presumably near present day downtown Miami. In 1898, it was collected in Miami by Charles Pollard and G.N. Collins (221, NY). In 1901, John Kunkel Small and George V. Nash made a collection in Miami (s.n., NY), followed by Nathaniel L. Britton (s.n., NY) and S.M. Tracy (9069, NY) in 1905. In 1912, Small made a collection in the pinelands south of the Miami River (4071, NY), a

station he vouchered again with George K. Small in 1913 (4762, NY). Small also made a collection in pinelands between Miami and Coconut Grove in 1912 (4083, NY). No modern collections have been made north of Coconut Grove, and Florida prairieclover is apparently extirpated in that part of Miami-Dade County.

The first collection from southern Miami-Dade County was made by Small and Joel J. Carter in 1903 in hammocks between Cutler and Camp Longview (868, NY). Camp Longview was historically located to the west of present-day Florida City. The next collection was made in 1930 by Harold N. Moldenke from the edge of Cox Hammock (646, NY), most of which was later developed into the Monkey Jungle. It is apparently extirpated there. In 1938, L. Eleanor Scull made a collection from the edge of a hammock in Silver Palm (s.n., FLAS). This station could refer to a number of hammocks including Cox, Castellow, and Ross. In 1975, George N. Avery observed a few plants along the southern edge of Castellow Hammock (Avery's Notes, 20 August 1975). The species has not been reported from this area since then and it is apparently extirpated there.

Florida prairieclover was collected in Everglades National Park in 1951 by Ellsworth P. Killip (41210, US). This collection was made along a canal about 14 miles southwest of Paradise Key, a location near the junction of the Old Ingraham Highway and what is now the Main Park Road. The main park road did not exist in 1951, and the section of the Old Ingraham Highway that Killip may be referring to was removed after the Main Park Road was constructed. No other collections have been seen from that area of the park. In 1964, Frank C. Craighead and Maxie Simmons made a single collection along the eastern edge of the National Park (s.n., FTG). No additional collections or reports have been seen from Everglades National Park. It is possible that Florida prairieclover was never well established there.

Chapman (1883) cited a Curtiss collection from Key Biscayne. George N. Avery collected it there in 1966 at Crandon Park (s.n., FTG). No recent reports have been seen from Key Biscayne and it is assumed to be extirpated there.

Florida prairieclover is currently known from two populations in Miami-Dade County, both in conservation areas. It was reported

first for the Deering Estate at Cutler in 1916 by Small. It was vouchered there in 1974 by Donovan S. and Helen B. Correll and John Popenoe (41541, FTG). It was observed there in 2000 by Gann and Bradley, and is present in two widely separated stations in the park. Roger L. Hammer also observed a single plant nearby at Ludlam Pineland in February 2001, either in the Miami-Dade County conservation area Ludlam Pineland Tract, or in the Ludlam Florida Power and Light Easement (personal communication, March 26, 2001). This station is considered to be the same occurrence as that at the Deering Estate at Cutler, but needs to be surveyed and vouchered.

Florida prairieclover also is known from the R. Hardy Matheson Preserve. It was reported there as early as 1966 by George N. Avery (Avery's Notes, April 1966). It was observed there again in 1995 by Gann and Bradley, and by Bradley in 2001. It was collected very close to this station in 1969 by William T. Gillis at what is now the Fairchild Tropical Garden Research Center (7714, FTG), and was observed in a pineland across the street from Gillis' station in 1967 by Avery (Avery's Notes, 15 October 1967). These stations, now extirpated, were part of the same occurrence as that at R. Hardy Matheson.

Florida prairieclover was collected in Palm Beach County by Allan H. Curtiss in 1895 "between the ocean and Palm Beach" (5374, FLAS, NY). It also was collected in 1918 by Small, south of Palm Beach (8512, FLAS, NY). It has not been collected or reported from Palm Beach County since that time.

In 1930, Harold N. Moldenke collected Florida prairieclover in Pinecrest in Monroe County (346, NY), presumably within the boundaries of what is now Big Cypress National Preserve. It was collected there in 1960 by William G. Atwater (M-211, FLAS), in 1964 by Daniel B. Ward and Derek Burch (3970, FLAS), in 1965 by Leonard J. Brass (33458, FSU, USF), and in 1998 by Bradley (1541, FTG). In 1999, Chuck McCartney found this species in Big Cypress National Preserve in Collier County north of the Oasis Ranger Station (personal communication, 2 April 1999). Bradley observed this station in 1999, but it has not yet been vouchered.

Major Threats: Fire suppression; off road vehicles use in Big Cypress National Preserve; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Voucher plants at Big Cypress National Preserve north of the Oasis Ranger Station.
- Survey Ludlam Pineland tract.
- Encourage USFWS to list *Dalea carthagenensis* var. *floridana*.
- Map and monitor known stations on a regular basis.
- Consider reintroducing Florida prairieclover to other sites within its historical range, including Crandon Park on Key Biscayne, and Castellow Hammock Park.
- Consider restoring coastal strand on the island of Palm Beach and reintroducing Florida prairieclover.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing Florida prairieclover.

***Deeringothamnus pulchellus* Small
Pretty False Pawpaw**

South Florida Status: Critically imperiled. One occurrence at Fred C. Babcock-Cecil M. Webb Wildlife Management Area and adjacent private properties along Burnt Store Road (State Road 765) in Charlotte County and one occurrence on several private properties on Pine Island in Lee County.

Taxonomy: Dicotyledon; Annonaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida. It is known from Charlotte, Lee, and Orange counties (USFWS, 2000).

South Florida Distribution: Charlotte and Lee counties.

South Florida Habitats: Flatwoods.

Protection Status: Listed as endangered by the USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Nelson (1996) has a color photo; Taylor (1998) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Small, 1933a; Kral, 1960a; Long & Lakela, 1976; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *Asimina pulchella* (Small) Rehder & Dayton.

Historical Context in South Florida: John Kunkel Small and others first collected pretty false pawpaw in 1923 in pinelands east of Punta Gorda in Charlotte County (10925, NY). It has been collected numerous times from this location east to the Tuckers Corner area of Charlotte County. Small and others made collections in this area in 1924 (11481, NY; 11150, NY), 1925 (11632, NY), 1927 (s.n., NY, USF), and 1928 (s.n., NY, USF). Much of this range is now protected in the Fred C. Babcock-Cecil M. Webb Wildlife Management Area, where Gann and Bradley observed pretty false pawpaw in 1996. In 1992, Steven L. Orzell found several thousand plants in Webb, in and around what is now the Yucca Pen unit of Webb, and on private lands around Tucker's Grade (Florida Natural Areas Inventory, unpublished data, 21 August 1996). Randy Mears also collected it to the west of the Yucca Pen unit near Pirate Harbor in 1992 (s.n., USF). While there are several stations in this area, it should be considered a single occurrence.

Small first collected pretty false pawpaw in Lee County on Pine Island in 1928 (s.n., NY). It was collected there by Harold N. Moldenke in 1930 (930, NY; 931, NY), by Walter M. Buswell in 1930 (s.n., NY), by Robert Kral in 1956 (2123, US), and by Donald R. Richardson in 1981 (862, USF). Gann briefly visited the Richardson station in February 2001, and while plants were not observed, the pineland habitat was still intact, and pretty false pawpaw is assumed to be extant there. According to the U.S. Fish and Wildlife Service (2000), it is extant on Pine Island in flatwoods, on road edges, and in mowed lots. It has been reported for Estero Bay State Buffer Preserve in southern Lee County (Vanasse & Daylor, LLP, 2001), but this report needs to be verified.

Three attempts to translocate pretty false pawpaw have been made, but none have thus far resulted in a successful introduction (USFWS, 2000). Two conservation areas, the St. James Creek Preserve on Pine Island and Charlotte Harbor Environmental Center in Charlotte Harbor State Buffer Preserve in Charlotte County, have been recipients of translocated material.

Some research on the biology of pretty false pawpaw has been done, which is reviewed in U.S. Fish and Wildlife Service (2000).

Treats: Habitat destruction; exotic pest plant invasions; fire suppression.

Comments: *Specimens collected by John Kunkel Small from "Cudjoe Key" in 1928 (s.n., USF) are undoubtedly labeled incorrectly.*

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve.
- Map and monitor known stations on a regular basis.
- Acquire privately owned sites along Burnt Store Road and on Pine Island.
- Continue conservation biology and conservation horticulture studies.
- Consider establishing an *ex situ* collection of germplasm as recommended by U.S. Fish and Wildlife Service (2000).

***Desmodium floridanum* Chapm.
Florida Ticktrefoil**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Deering Estate at Cutler; Pine Shore Preserve).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, and Miami-Dade counties.

South Florida Habitats: Scrub, pine flatwoods, sandy pockets in pine rockland, and rockland hammock edges.

Protection Status: Not listed by any agency.

Identification: There are 26 species of *Desmodium* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Isely, 1990; Wunderlin, 1998.

Synonyms: *D. rhombifolium* Elliott, misapplied; *Meibomia rhombifolia* (Elliott) Vail, misapplied.

Historical Context in South Florida: Albert S. Hitchcock first collected Florida ticktrefoil in 1902 near Fort Myers (67, US). No

subsequent collections or reports from Lee County have been made.

Olga Lakela made three collections in Collier County. Her first was in 1965 about one mile south of the Collier-Hendry county line north of Immokalee in an area of *Myrica-Serenoa-Salix* with grasses and forbs (29184, USF). She collected it again in the same general region on 1966, two miles north of Immokalee, along State Road 29 (30326, USF). Lakela also made a collection in 1967, in Palm River Estates, one mile east of North Naples on State Road 848, in a dry, grassy pineland with *Serenoa* and *Quercus* (31074, USF). Only one plant was noted. Florida ticktrefoil has also been reported for Rookery Bay National Estuarine Research Reserve (Burch, 1998), but this report needs to be verified.

John Kunkel Small and others first collected Florida ticktrefoil in Miami-Dade County in 1915, at Arch Creek Prairie in the northern section of the county (6779, US). Lakela collected it in 1964 along a hammock trail in the vicinity of Fairchild Tropical Garden and Old Cutler Road (27254, USF). This collection could have been made in Matheson Hammock Park, R. Hardy Matheson Preserve, or one of the numerous, now developed, hammock areas surrounding the Garden. In 1979, Alan Herndon reported to George N. Avery that he found Florida ticktrefoil in a sandy pocket in pine rockland at Ned Glenn Nature Preserve (Avery's Notes, 21 October 1979). Avery looked for these plants in 1980 but could not find them. It also was reported for Miami Metrozoo (Fairchild Tropical Garden, 1991g), but this station has never been verified. Bradley and Woodmansee surveyed the portions of this station that would most likely contain this species in 2000 but did not observe any plants.

Florida ticktrefoil is currently known from only two stations in Miami-Dade County. It was observed by Bradley in a sand pocket in pine rockland at the Deering Estate at Cutler in 1994, a station that needs to be vouchered. In 1997, Bradley collected it at Pine Shore Preserve (637, FTG). Fewer than 100 plants are thought to be extant in South Florida.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Deering Estate at Cutler.
- Survey Miami Metrozoo, Ned Glenn Nature Preserve, and Rookery Bay National Estuarine Research Reserve.
- Map and monitor known stations on a regular basis.

***Desmodium lineatum* DC.
Sand Ticktrefoil**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas and three non-conservation areas (Everglades National Park; Goulds Pineland; Larry and Penny Thompson Park, Naval Observatory site, & Girl Scout Camp Choe; Navy Wells & privately owned Navy Wells #2).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southern United States. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to Lake and Hernando counties.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: There are 26 species of *Desmodium* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Isely, 1990; Wunderlin, 1998.

Synonyms: *Meibomia arenicola* Vail; *Meibomia polymorpha* (Vail) Small.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter collected sand ticktrefoil first in 1903 between Cutler and Camp Longview (1083, NY). Small also collected it in 1904 near the Silver Palm School (2259, NY), which was located near what is now Castellow Hammock Park in the Redland area. Small and others collected it in pinelands around Castellow and Ross hammocks in 1915 (6569, NY). There is also a collection from a scarified lot in Homestead by "Hawkins" in 1927 (41, FLAS). Sand ticktrefoil apparently was not collected again until Frank C.

Craighead vouchered it on Long Pine Key in Everglades National Park in 1963 (s.n., FTG). George N. Avery also vouchered this station in 1977 (1759, FTG), where it is assumed to be extant.

In 1977, Avery and Lloyd L. Loope observed plants in a pine rockland fragment near Richmond Heights (Avery's Notes, 29 September 1977). This station has been developed. Avery (1978a) subsequently reported sand ticktrefoil for Larry and Penny Thompson Park in the Richmond Pine Rocklands (1978). Bradley and Woodmansee observed plants at this station as recently as 2000, but this station needs to be vouchered. In 1996, Gann and Bradley observed plants at the former U.S. Naval Observatory site in the Richmond Pine Rocklands. The University of Miami now owns this station. Fewer than 1,000 plants are thought to be extant in the Richmond Pine Rocklands. It also has been reported for Girl Scout property Camp Choee just east of the Richmond Pine Rocklands (Hammer, 1992e). Plants may be extant there, although exotic pest plants have heavily invaded the site.

In 1979, Avery observed it at Navy Wells, a Miami-Dade County conservation areas west of Florida City (Avery's Notes, 22 October 1979). This station is assumed to be extant, but needs to be vouchered. In 1997, Bradley vouchered sand ticktrefoil at a privately owned station less than two miles north of Navy Wells known as Navy Wells #2 (734, FTG).

In 1998, Bradley also vouchered it at Goulds Pineland, a Miami-Dade County conservation area (1779, FTG). Fewer than 100 plants are thought to be present there, but this station needs to be more thoroughly surveyed.

Major Threats: Exotic pest plant invasions; fire suppression; habitat destruction or degradation at the Navy Wells #2 site and the Girl Scout site.

Comments: *Additional stations of sand ticktrefoil probably exist in other pine rockland fragments on the Miami Rock Ridge. These stations should be found and managed.*

Preliminary recommendations:

- Voucher plants at Larry and Penny Thompson Park and Navy Wells.

- Survey pine rocklands in the Goulds area, including Andrew Dodge Memorial Pineland, Black Creek Forest, and Institute for Regional Conservation Preserve.
- Map and monitor known stations on a regular basis.
- Acquire Navy Wells #2 site. Develop conservation agreement with the Girl Scouts of America to restore and maintain a viable population of sand ticktrefoil at Camp Choee, and provide technical assistance.

***Echinochloa muricata* (P. Beauv.) Fernald
Rough Barnyard Grass**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Corkscrew Regional Ecosystem Watershed; Six Mile Cypress Slough Preserve).

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to North America and Mexico. Wunderlin (1998) reports it as occasional in peninsular Florida.

South Florida Distribution: Collier, Lee, and Palm Beach counties.

South Florida Habitats: Flatwoods, depression marshes, strand swamps, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Similar to *E. crusgalli* (introduced), but the apex of the fertile lemma is acuminate without a ring of short trichomes before the membranaceous tip (Wunderlin, 1998).

References: Gould, 1972; Hall, 1978; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small first collected rough barnyard grass in 1917 in “Everglades along the Palm Beach Canal” in Palm Beach County (8279, NY).

In 1916, Jeanette P. Standley made a collection in Fort Myers (357a, US). In 1997, Bradley and Woodmansee collected rough barnyard grass at Six Mile Cypress Slough Preserve (517, FTG), near Fort Myers in Lee County. The plants were growing at the edge of strand swamp. Edwin L. Bridges and Randy L. Mears made a collection in 1995 at the Flint Pen Strand in the Corkscrew Regional Ecosystem Watershed (24183, USF). This station is

approximately 13 miles southeast of the Six Mile Cypress station in Lee County.

Olga Lakela collected it in the Deep Lake area, probably in what is now Big Cypress National Preserve in 1965 (29127, USF). The collection was made in a “swampy hammock.” It may still be present in Big Cypress National Preserve, but no recent observations are known.

The next station to be vouchered was Captiva Island. William C. Brumbach made a collection on middle Captiva in 1975 (8825, USF) and on upper Captiva in 1976 (9124, USF). Both collections were made in disturbed areas. Brumbach also made a collection on Sanibel Island in 1976 (9100, USF). This collection was made along a canal. No additional reports are known from Captiva or Sanibel islands. It is not certain if these collections represent native populations.

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It is also somewhat weedy, and may be an ephemeral part of the South Florida flora. Also, it may be overlooked. Gould (1972) cites a Broward County specimen from the New York Botanical Garden herbarium. We were unable to locate this specimen.*

Preliminary recommendations:

- Survey Deep Lake area in Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.

***Eleocharis vivipara* Link
Viviparous Spikerush**

South Florida Status: Critically imperiled. Three occurrences in four conservation areas (Jonathan Dickinson State Park; Juno Dunes Natural Area & Jupiter Ridge Natural Area; Savannas Preserve State Park)

Taxonomy: Monocotyledon; Cyperaceae

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Broward, Glades, Martin, and Palm Beach counties.

South Florida Habitats: Depression marshes, wet prairies, and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Ward & Hodgson, 1975; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *E. prolifera* Torr.

Historical Context in South Florida: Leonard J. Brass first collected viviparous spikerush in 1963 in Tasmania in Glades County (32971, USF), a station about 9.5 miles northwest of Palmdale. The plants were found on a sandy roadside, and it is not clear if this station represented a native population.

In 1975, John Popenoe made a collection at Jonathan Dickinson State Park in Martin County (439, FTG), where it is presumably extant. In 1992, Mark A. Garland and Bob Przekop also collected it in Martin County at Savannas Preserve State Park northwest of Jensen Beach (797, FLAS). It is assumed to be extant there.

Bradley and Woodmansee first collected viviparous spikerush in Palm Beach County in 1997 at Juno Dunes Natural Area (313, FTG). It has been reported for the nearby Jupiter Ridge Natural Area (Ecohorizons, Inc. and Palm Beach County Environmental Resources Management, 1996a). Plants at this station are assumed to be extant, but need to be vouchered. It has been reported for the Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties, but this station needs to be verified.

Ted Hendrickson and Ann Buckley made a single collection in Broward County in 1986 in a drainage ditch in the East Coast Buffer (504, FTG), a property that is managed by the South Florida Water Management District and is located south of Alligator Alley and west of US 27. It is not clear if this station represents a native population.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Ward and Hodgson (1975) suggest that it may be more common than is thought. Plants rarely fruit except when growing terrestrially. They are more often found growing prolifically in deep water and are sterile in that condition.*

Preliminary recommendations:

- Voucher plants at Jupiter Ridge Natural Area.
- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Eltroplectris calcarata* (Sw.) Garay & H.R. Sweet
Longclaw Orchid**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Camp Owaissa Bauer; Everglades National Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida in Highlands and Miami-Dade counties, the West Indies, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Ward, 1978; Correll & Correll, 1982; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Centrogenium setaceum* (Lindl.) Schltr.; *Pelexia setacea* Lindl.

Historical Context in South Florida: Alvah A. Eaton first collected longclaw orchid in 1903 in Miami-Dade County (s.n., AMES). The exact location of this station is unknown. In 1905,

Eaton collected longclaw orchid in Timms Hammock (1233, AMES, NY), now part of the Miami-Dade County park, Camp Owaissa Bauer. George N. Avery subsequently collected it there in 1968 (395, FLAS). Avery observed plants in Timms Hammock and one other hammock in Camp Owaissa Bauer several times between 1967 and 1981 (Avery's Notes, 1967-1981). Roger L. Hammer last observed these plants in 1999 (personal communication, 19 February 2001).

In 1981, Avery observed 13 plants in a hammock on Long Pine Key in Everglades National Park (Avery's Notes, 4 April 1981). This was, apparently, the first observation of this species in the park. In 1983, Avery observed it in a second hammock on Long Pine Key (Avery's Notes, 24 February 1983). Gann and Bradley observed plants on Long Pine Key in 2000 with Roger L. Hammer. Paul Martin Brown reports that this species is present in six hammocks on Long Pine Key and estimates that there are fewer than 200 plants extant in South Florida today (personal communication, 7 February 2001).

Longclaw orchid was reported from Castellow Hammock Park (Hammer, 1992f), but this represented a small colony of plants that were salvaged from Timms Hammock and translocated into Castellow Hammock. The plants were uprooted at Timms Hammock during the construction of a trail. These plants are no longer present at Castellow Hammock Park (R.L. Hammer, personal communication, 19 February 2001).

Major Threats: Poaching; exotic pest plant invasions; wild or prescribed fire during the dry season on in Everglades National Park; hydrological modifications in Everglades National Park.

Comments: *This is one of the species that may be affected by the Everglades restoration. The Highlands County station is at Highland Hammock State Park, where it has been severely impacted by wild hogs (R.L. Hammer, personal communication, 19 February 2001; P.M. Brown, personal communication, 6 April 2001). It may already be extirpated there.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching.

- Conduct conservation biology and conservation horticulture studies.
- Conduct research to determine the effects of the Everglades restoration on longclaw orchid.

***Eragrostis hypnoides* (Lam.) Britton et al.
Teal Love Grass**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Corkscrew Regional Ecosystem Watershed; Riverbend Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to much of North America, the West Indies, Central America, and South America. Wunderlin (1998) reports it as occasional in Florida in the central panhandle and the central and southern peninsula.

South Florida Distribution: Charlotte, Collier, Glades, Lee, and Palm Beach counties. The Lee County station needs to be vouchered.

South Florida Habitats: Strand swamps, floodplain forests, and drying ponds.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration; Tobe et al. (1998) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: O.E Frye first collected teal love grass in 1946 in Charlotte County at an unspecified locality (s.n., FLAS). The collection was made in "middle of open muck pond." Frank C. Craighead made a single collection in Glades County in 1962, about seven miles west of Palmdale (s.n., FTG). This area is now occupied primarily by cattle ranches, as it was probably in 1962. Alan H. Herndon collected teal love grass in 1985 along the Big Cypress Bend boardwalk in Fakahatchee Strand Preserve State Park in Collier County (1211, FTG, FLAS). The collection was made in a strand swamp in a drying pond. Loran C. Anderson (1997) observed teal love grass at Flint Pen

Strand in the Corkscrew Regional Ecosystem Watershed in Lee County, but this station needs to be vouchered. Bradley made a collection along a road edge in Riverbend Park in Palm Beach County in 1998 (1768, FTG).

Major Threats: Exotic pest plant invasions; hydrological modifications.

Comments: *This is a widespread species in the New World that is infrequent in Florida. It may have always been uncommon in South Florida, and appears to be somewhat ephemeral in our area. It flowers in the summer, when surveys should be conducted.*

Preliminary recommendations:

- Survey Big Cypress Bend area of Fakahatchee Strand Preserve State Park during dry down periods.
- Map and monitor known stations on a regular basis.

***Ernodea cokeri* Britton ex Coker
Coker's Beach Creeper**

South Florida Status: Critically imperiled. Six occurrences in five conservation areas and two non-conservation areas (Institute for Regional Conservation Preserve; Ingram Pineland; Larry and Penny Thompson Park & Luis Martinez U.S. Army Reserve Station in the Richmond Pine Rocklands; Navy Wells Pineland; Seminole Wayside Park; privately owned Notre Dame Pineland).

Taxonomy: Dicotyledon; Rubiaceae.

Habit: Sub-shrub.

Distribution: Native to South Florida and the Bahamas.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: The leaves of Coker's beach creeper have only 1-2 veins per leaf, while the related *E. littoralis* has 3-7 (Wunderlin, 1998). Chafin (2000) has illustrations and a color photo.

References: Correll & Correll, 1982; Negron-Ortiz & Hickey, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Nathaniel L. Britton first collected Coker's beach creeper in 1904 in pinelands near Long Prairie (191, NY). Long Prairie was historically located between Homestead and Florida City in southern Miami-Dade County and is now destroyed. This locality represents the southernmost station for this species on the mainland. The northernmost collection was from Coconut Grove (Jack 8404, A, in Negron-Ortiz & Hickey, 1997). Other historical collections were made by John Kunkel Small and Joel J. Carter in 1906 (2707, NY; 2708, NY; 2709, NY), by Small and Carter in 1909 (3159, NY), by Small and others in 1915 (5764, NY), by S.H. Richmond in 1915 (s.n., NY), by Small and others in 1915 (6448, NY), and by Olga Lakela in 1964 (27299, USF). Coker's beach creeper has been extirpated throughout most of its range in Miami-Dade County.

Coker's beach creeper currently is known from six stations in Miami-Dade County. George N. Avery discovered the first extant station in 1979 at Seminole Wayside Park (2086, FTG). Bradley and Woodmansee observed this station as recently as 2000. Fewer than 100 plants were observed. Bradley vouchered plants at Larry and Penny Thompson Park in the Richmond Pine Rocklands in 1995 (451, FTG; 490, FTG). Fewer than 100 plants are estimated to be extant at that station. Woodmansee also observed plants at the Luis Martinez U.S. Army Reserve Station in the Richmond Pine Rocklands in 2000, a station that needs to be vouchered. Fewer than 10 plants were observed there. The two Richmond Pine Rockland stations are considered to be the same occurrence. Bradley also discovered a population at Notre Dame Pineland in 1998, a private site near the Homestead Air Reserve Base (1840, FTG). By far, this is the station with the most plants, with several hundred plants present. In 2000, Bradley and Woodmansee discovered a new station at Navy Wells Pineland, a Miami-Dade County conservation area. Fewer than 100 plants were observed at this site. Bradley also found a few plants at Ingram Pineland in 2000. Woodmansee made a new discovery at the Institute for Regional Conservation Preserve in 2001. One plant was observed. The latter three stations need to be vouchered.

Only one collection is known from the Florida Keys, where Ellsworth P. Killip collected it on Big Pine Key in 1950 (40218, NY). It is not known to be extant there, but the National Key Deer Refuge should be surveyed.

Major Threats: Habitat destruction at Luis Martinez U.S. Army Reserve Station and Notre Dame Pineland; fire suppression; exotic pest plant invasions.

Comments: *Coker's beach creeper* only recently was recognized as being part of the South Florida flora (Negron-Ortiz & Hickey, 1996). This species was formerly confused with *Ernodea littoralis*, especially those populations described as *E. littoralis* var. *angusta* (= *E. angusta* Small). Some reports of *E. littoralis* from Miami-Dade County and the Florida Keys could represent additional stations of *E. cokeri*.

Preliminary recommendations:

- Voucher plants at the Ingram Pineland, Institute for Regional Conservation Preserve, Luis Martinez U.S. Army Reserve Station, and Navy Wells.
- Survey National Key Deer Refuge on Big Pine Key.
- Map and monitor known stations on a regular basis.
- Acquire Notre Dame Pineland.
- Designate surplus property at Luis Martinez U.S. Army Reserve Station as a conservation area.

***Eugenia rhombea* Krug & Urb. ex Urb.
Red Stopper**

South Florida Status: Critically imperiled. Four occurrences in five conservation areas and two non-conservation areas (Attwood Addition, Indian Key Historic State Park & privately owned Teatable Hammock; Biscayne National Park; Crocodile Lake National Wildlife Refuge & Dagny Johnson Key Largo Hammocks Botanical State Park; Lignumvitae Key Botanical State Park; Vaca Key Red Stopper Site).

Taxonomy: Dicotyledon; Myrtaceae.

Habit: Small tree.

Distribution: Native to South Florida, the West Indies, Mexico, and Central America.

South Florida Distribution: Miami-Dade County and the Monroe County Keys. Reported in error from Lee County (see “Comments” below).

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1996) has an illustration; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Nuttall, 1849; Chapman, 1883; Sargent, 1893; Small, 1933a; Long & Lakela, 1976; Little, 1978; Tomlinson, 1980; Correll & Correll, 1982; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *E. procera* (Sw.) Poir., misapplied.

Historical Context in South Florida: John Loomis Blodgett first collected red stopper between 1838 and 1853 on the island of Key West (s.n., NY). Blodgett’s specimen states that the tree was common there, as Nuttall (1849) and Sargent (1893) also reported. Several other collections were made in hammocks on Key West: in 1896 by Allan H. Curtiss (5626, NY); in 1913 by John Kunkel Small and George K. Small (4967, NY); and in 1954 by Robert F. Thorne (s.n., FSU). Since 1954, it has only been collected in small hammock fragments at private residences, or as individual trees in private yards. T. Ann Williams observed plants in private yards in the city of Key West from the 1980s through the 1990s (personal communication, 6 March 2001). Only one small hammock remains on Key West, Little Hamaca Park, where red stopper has been cultivated as part of a hammock restoration project. It is unknown whether or not any recruitment has occurred there. Gann last observed these plants in 1992.

Alfred Russell and H.R. Totten made a collection on Key Largo in 1940 (s.n., NY). W.L. Stern subsequently collected it on North Key Largo in 1961 (1439, GH, US), probably in what is now Crocodile Lake National Wildlife Refuge. Bradley collected a voucher in the refuge in 1999 (2003, FTG), at a station that had been observed by Karen Achor and others since at least 1977 (in Weiner, 1980). It was reported for what is now Dagny Johnson Key Largo Hammocks Botanical State Park by Arthur H. Weiner (1980), at a station directly across the street from what is now

Crocodile Lake National Wildlife Refuge. Gann and Florida Park Service biologists Janice A. Duquesnel and James G. Duquesnel observed this station in 1999. Several hundred plants are thought to be present between the two stations.

In 1973, Kenneth C. Alvarez discovered plants on Upper Matecumbe Key (Avery's Notes, 4 July 1973), in what appears to have been the privately owned Teatable Hammock. In 1974, Alvarez vouchered this station (s.n., NY). Both Weiner (1980) and Kruer (1992) reported plants there, and this station is thought to be extant. In 1999, Gann, Bradley, and J.A. Duquesnel observed plants at the Attwood Addition of the Indian Key Historic State Park, a small hammock fragment on Upper Matecumbe Key. This station is only a few blocks from Teatable Hammock on Upper Matecumbe Key, and is considered part of the same occurrence. Fewer than 10 plants were observed. J.A. Duquesnel collected geographic coordinates in 2001 (personal communication, 26 March 2001), but this station needs to be vouchered.

In 1975, Avery discovered one small tree on Totten Key in Biscayne National Park (Avery 1583, FLAS). While surveys of Totten Key by Gann and Bradley in 2001 have failed to locate any plants, surveys in 2001 by Bradley and Woodmansee located four plants on Meig's Key and two plants on Old Rhodes Key in Biscayne National Park. The Meig's Key station was vouchered (1519, FTG). In 1982, Avery also found one tree on Palo Alto Key (2373, FTG, USF), which is located between Totten Key and Key Largo in John Pennekamp Coral Reef State Park. This is the only report known from that island or from Pennekamp.

In 1983, Avery observed plants reported to him by Arthur H. Weiner in a private hammock on Vaca Key just south of the Key Lime Resort. Twelve plants were observed at this station. T. Ann Williams reports that she observed these plants in the mid-1980s (personal communication, 6 March 2001), that this hammock was still intact as of 2001, and that the plants are probably still present (personal communication, 18 March 2001).

J. Paul Scurlock (1987) reported the discovery of a single tree at Lignumvitae Key Botanical State Park. Gann and Duquesnel also observed a single tree there in 2000, but this station needs to be vouchered.

Red stopper has been collected at or reported for a number of other sites where it is apparently now extirpated. Allan H. Curtiss collected red stopper on "Umbrella Key" (1115, GH), now Windley Key in the late 1880s. Sargent (1893) also reported it for that island. It is currently cultivated at Windley Key Fossil Reef Geological State Park. Avery observed red stopper on Lower Sugarloaf Key in 1963 and 1964 (Avery's Notes, 1963-1964). This station is now within Sugarloaf Hammocks, part of Florida Keys Wildlife and Environmental Area. Bradley and Woodmansee conducted a brief search for red stopper in 2000, but no plants were observed. In 1974, Robert Kral made a collection on Big Pine Key, south of US1 (53887, GH), perhaps in what is now National Key Deer Refuge.

Red stopper is widely cultivated in South Florida, and it has been out-planted in many locations in the Florida Keys. Thus far, it has not been known to naturalize outside of its historical range in South Florida.

Major Threats: Habitat destruction; exotic pest plant invasions.

Comments: *In 1937, L. Eleanor Scull collected this species at "Chapman's Hammock, Miami" (s.n., FLAS). We are unfamiliar with this locality and know of no valid reports of wild populations on the mainland. Reports from the west coast (cf. Brumbach 7474, FLAS; Wunderlin, 1982) are based upon misidentified specimens of E. axillaris or E. uniflora. The Gray Herbarium at Harvard University has a specimen from "Palm Beach & Martin counties, on Jupiter Island" collected by George R. Cooley and others in 1956 (4876, GH). This specimen has not been examined by us and should be verified.*

Preliminary recommendations:

- Voucher plants at Attwood Addition, Key Vaca Red Stopper Site, Lignumvitae Key Botanical State Park, and Old Rhodes Key in Biscayne National Park.
- Continue surveys at Sugarloaf Hammocks.
- Survey National Key Deer Refuge on Big Pine Key, Palo Alto Key in John Pennekamp Coral Reef State Park, and Totten Key in Biscayne National Park.
- Map and monitor known stations on a regular basis.

- Acquire Teatable Hammock and Vaca Key Red Stopper Site.
- Consider augmenting population at Lignumvitae Key Botanical State Park.
- Consider introducing red stopper to other sites within its historical range, including Little Hamaca Park and Windley Key Fossil Reef Geological State Park.

***Galeandra beyrichii* Rchb. f.**
Beyrich's Hooded Orchid

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Castellow Hammock Park; Everglades National Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos.

References: Hawkes, 1947; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Karl O. Kramer discovered Beyrich's hooded orchid in 1946 in Castellow Hammock (Hawkes, 1947), which is now within Castellow Hammock Park. Only one plant was observed, and this was collected and presumably deposited at the Ames Herbarium at Harvard University (Hawkes, 1947). Carlyle Luer, Monroe R. Birdsey and others observed plants in Castellow Hammock again in the early 1960s (Luer, 1972). George N. Avery, Mary Ann Bolla, Sally Black, Joyce W. Gann, Roger L. Hammer and others observed plants at Castellow Hammock from 1974 to 1978 (Avery's Notes). Hammer vouchered this station in 1988 (s.n., FTG). Hammer observed this population in 2000, and estimates that there are fewer than three-dozen extant plants (personal communication, 19 February 2001).

In 1974, C. Eugene Delchamps reported to George N. Avery that he and Roland Eves had observed a new station in a hammock on Long Pine Key in Everglades National Park (Avery's Notes, 10 December 1974). Daniel F. Austin, Avery, and others subsequently observed these plants in 1977 (Avery's Notes, 22 August 1977). Don Keller observed 44 plants in one hammock in Everglades National Park in 1988, and a few others in two other hammocks (personal communication, 19 February 2001). Roger L. Hammer reports that it has been observed in three hammocks on Long Pine Key (personal communication, 19 February 2001). He estimates that there are about 50 plants present in Everglades National Park today.

Chuck McCartney, Sally Black and the Native Plant Workshop discovered an additional station at Fuchs Hammock west of Homestead in 1975 (Avery's Notes, 16 March 1975). Hammer and Luer observed six plants at this station in 1977 (R.L. Hammer, personal communication, 19 February 2001). Hammer observed just two sterile plants in 1990, prior to Hurricane Andrew in 1992. This station must be treated as historical until it can be verified that Beyrich's hooded orchid is still present.

Major Threats: Poaching; exotic pest plant invasions; hydrological modifications.

Comments: *This is one of the species that may be affected by the Everglades restoration. It can remain dormant for years, making it difficult to accurately survey populations from year-to-year (R.L. Hammer, personal communication, 19 February 2001). Galeandra bicarinata G.A. Romero & P.M. Br. has been published as a new name for the Florida plants of Galeandra, treating it as a Miami-Dade County endemic (Romero-González & Brown, 2000).*

Preliminary recommendations:

- Survey Fuchs Hammock Preserve on an annual basis until 2010.
- Map and monitor known stations on a regular basis.
- Conduct research to determine the effects of the Everglades restoration on Beyrich's hooded orchid.

***Guajacum sanctum* L.**
Lignumvitae

South Florida Status: Critically imperiled. Six occurrences in seven conservation areas and three non-conservation areas (Biscayne National Park; Crocodile Lake National Wildlife Refuge & Dagny Johnson Key Largo Hammocks Botanical State Park; Klopp Tract, Lignumvitae Key Botanical State Park & Lignumvitae Key Botanical State Park; Long Key State Park & North Layton Hammock; privately owned Big Munson Island; privately owned Teatable Hammock on Upper Matecumbe Key).

Taxonomy: Dicotyledon; Zygophyllaceae.

Habit: Tree.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1994) has a color photo; Nelson (1996) has a color photo; the IRC Website has a color photo.

References: Romans, 1775; Nuttall, 1849; Chapman, 1883; Sargent, 1891; Small, 1933a; Long & Lakela, 1976; Little, 1978; Ward, 1978; Tomlinson, 1980; Correll & Correll, 1982; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Bernard Romans (1775) first reported lignumvitae for South Florida, writing that by the late 1700s it had already been nearly exterminated by loggers. He observed lignumvitae being logged from Elliott Key south to Windley Key, but failed to note it from Upper Matecumbe south to Key West. John Loomis Blodgett collected lignumvitae first in Florida on the island of Key West between 1838 and 1853 (s.n., NY). Nuttall (1849) stated that Blodgett had found it to be abundant there. John Kunkel Small and Charles A. Mosier vouchered the Key West station again in 1915 (5997, NY), but

apparently it was extirpated in the wild there a short time later. Ward & Ing (1997) lists a candidate for Florida champion tree designation in the city of Key West that is 31 feet high, with a spread of 38.5 feet. They state that this tree must be a relict of pre-settlement vegetation.

Abram P. Garber made a collection on Lignumvitae Key in 1877 (s.n., NY), a station that also was vouchered by C.P. Sreemadhaven in 1971 (4916, USF), and by B.C. Schmitt in 1974 (30, FTG). Numerous botanists have observed it there at Lignumvitae Key Botanical State Park. It was observed there in 2000 by Gann and Florida Park Service biologist Janice A. Duquesnel. Several hundred plants are present there, the largest population in South Florida.

A number of collections have been made on Upper Matecumbe Key, the first probably by Allan H. Curtiss in the late 1800s (417, NY, US). Joseph H. Simpson also vouchered this station in 1882 (345, NY). George N. Avery later observed it at several stations on Upper Matecumbe beginning in 1963 (Avery's Notes, 1963-1966). Avery vouchered one of these stations in 1971 (1072, FTG). It is apparently extant on Upper Matecumbe Key at Teatable Hammock, where it was first reported by Karen Achor in 1982 (Weiner, 1980 as amended). Kruer (1992) also reported *lignumvitae* for this station, which needs to be vouchered.

In 1909, Small and Joel J. Carter made the first collection on Key Largo (3055, NY), a station that was later vouchered by Hugh O'Neill in 1929 (s.n., NY), D.H. Caldwell in 1952 (8774, NY), George R. Cooley in 1962 (9296, USF), Martha Meagher in 1969 (81a, USF), and Avery in 1971 (1070, FTG). Almost all of the plants on Key Largo have been observed in North Key Largo, in what are now Dagny Johnson Key Largo Hammocks Botanical State Park and Crocodile Lake National Wildlife Refuge. Gann and Duquesnel observed plants in Dagny Johnson Key Largo Hammocks Botanical State Park in 2000, and Bradley and Woodmansee observed plants in Crocodile Lake National Wildlife Refuge in 2000. A few dozen plants are thought to be present at each station. Both stations need to be vouchered. It also has been reported on Key Largo at the Key Largo Ranger Station of Everglades National Park (Avery & Loope, 1980b), and for Dove Creek Hammocks (Kruer, 1992). A portion of Dove Creek

Hammocks has been acquired by the State of Florida and is now part of the Florida Keys Wildlife and Environmental Area. Bradley and Woodmansee surveyed this portion of the hammock in 2000, but did not observe *lignumvitae* to be present. The Key Largo Ranger Station of Everglades National Park needs to be surveyed.

Small and George K. Small made a collection on Sands Key to the north of Elliott Key in Miami-Dade County in 1915 (6989, NY), in what is now Biscayne National Park. This is the northernmost station ever recorded. Kruer (1992) reported *lignumvitae* for Sands Key based upon Avery (1978c), but this report needs to be verified.

Hugh O'Neill made a collection in 1929 on Lower Matecumbe Key (s.n., US), a station that also was vouchered by Harold N. Moldenke in 1930 (5743, NY), and David Fairchild in 1931 (s.n., FTG). It was later reported there by Avery in 1968 (Avery's Notes, 9 October 1968), and by Karen Achor in 1982 at a site known as the Hall Tract (Weiner, 1980 as amended). Most of this hammock is now part of the Klopp Tract of *Lignumvitae* Key Botanical State Park. Although Gann and Duquesnel found no adult plants in surveys of the Klopp Tract in 2000, one seedling was found on the property. It is possible that mature plants still exist on the privately owned portions of this hammock.

In 1930, Small made a collection on Long Key (s.n., NY). *Lignumvitae* was later reported for Long Key State Park (Hammer, 1995c), a station that was observed by Gann and Duquesnel in 1999. Fewer than 10 plants are believed to be present at the park; this station needs to be vouchered. Kruer (1992) and the National Audubon Society (1992) also reported plants at the privately owned North Layton Hammock on Long Key. These reports were based upon observation of plants by National Audubon Society biologist Wayne Hoffman (Kruer, 1992).

In 1956, G.K. Brizicky and W.L. Stern made a collection on Windley Key (543, US). *Lignumvitae* is now cultivated at Windley Key Fossil Reef Geological State Park, but no recent observations of wild plants have been made.

Avery reported that in 1969 "the Websters" had visited Totten Key, now in Biscayne National Park, and had found several "sizable

trees” (Avery’s Notes, 18 March 1969). Curry (1991 in Kruer, 1992) reported it as common on Totten Key. Ward & Ing (1997) lists a *lignumvitae* tree on Totten Key as the Florida and National champion, but this station needs to be vouchered. Avery and Achor also reported *lignumvitae* in 1982 from Palo Alto Key (Weiner 1980, as amended), which is very close to Totten Key and now part of John Pennekamp Coral Reef State Park. The only other plants known from Pennekamp are cultivated specimens. In 2001, Gann and Bradley discovered one tree on Old Rhodes Key, just east of Totten Key in Biscayne National Park (1120, FTG).

Avery made a collection in 1971 on Plantation Key in a hammock that was in the process of being destroyed (1071, FTG). Karen Achor observed *lignumvitae* in Plantation Hammock in 1982 (Weiner 1980, as amended), and Kruer (1992) reported *lignumvitae* from this hammock based upon a personal communication with Mike Ross in 1991. The National Audubon Society’s 1992 report for Lake San Pedro (National Audubon Society et al., 1992), is almost certainly based upon the Weiner and Kruer reports. A portion of Lake San Pedro is now protected in the Florida Keys Wildlife and Environmental Area. Bradley and Woodmansee surveyed this portion of the hammock in 2000, but did not find any plants of *lignumvitae*. The remaining portions of Plantation Hammock need to be surveyed.

In 1987, T. Ann Williams discovered four plants of *lignumvitae* on Big Munson Island in the lower Florida Keys. This station was verified by Curtis R. Kruer in 1991 (Kruer, 1992), and was vouchered by Bradley in 2001 (2130, FTG), who found a single large tree.

Major Threats: Exotic pest plant invasions; habitat destruction at privately owned portions of the Klopp Tract on Lower Matecumbe Key, North Layton Hammock on Long Key, Plantation Hammock on Plantation Key, and Teatable Hammock on Upper Matecumbe Key; poaching.

Comments: *The wood is highly valued by woodworkers and populations have been logged in the Florida Keys since at least the late 1700s (Romans, 1775).*

Preliminary recommendations:

- Voucher plants at Crocodile Lake National Wildlife Refuge, Key Largo State Botanical Site, Long Key State Park, Teatable Hammock, and Totten Key.
- Survey Key Largo Ranger Station of Everglades National Park, Sands Key in Biscayne National Park, Palo Alto Key in John Pennekamp Coral Reef State Park, private hammocks to the south of the Klopp Tract on Lower Matecumbe Key, and Plantation Hammock on Plantation Key.
- Map and monitor known stations on a regular basis.
- Acquire North Layton Hammock on Long Key, the unprotected portions of Plantation Hammock on Plantation Key, Teatable Hammock on Upper Matecumbe Key, and private hammocks to the south of the Klopp Tract on Lower Matecumbe Key.
- Develop conservation agreement with Boy Scouts of America to manage a viable population of lignumvitae on Big Munson Island, and provide technical assistance.
- Protect from poaching.
- Consider augmenting known populations, including at the Klopp Tract, Lignumvitae Key Botanical State Park.
- Consider introducing lignumvitae to other sites within its historical range, including Dove Creek Hammocks, Little Hamaca Park, and Windley Key Fossil Reef Geological State Park.
- Review FNAI rank.

***Gymnopogon brevifolius* Trin.
Shortleaf Skeleton Grass**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Big Cypress National Preserve; Jonathan Dickinson State Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Hendry, Lee, Martin, and Miami-Dade counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Smith, 1971; Hall, 1978; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Shortleaf skeleton grass may have been collected first by Joseph H. Simpson in 1892 (s.n., NY), although the locality is given only as "Southern Florida." The first definite collection in South Florida was made in 1919 by John Kunkel Small and others, west of Miami along the Tamiami Trail in a "pineland prairie" (9388, NY), presumably in pinelands south of the Miami River. W.A. Silveus made the next collection in 1940 near Fort Myers Beach (6579, US), perhaps in what is now Estero Bay State Buffer Preserve. In 1941, John H. Davis, Jr. made a collection in a pineland south of Clewiston in Hendry County (s.n., FLAS). All pinelands in that area have been destroyed.

In 1997, Bradley and Woodmansee made a collection of shortleaf skeleton grass along the Loxahatchee River in Jonathan Dickinson State Park in Martin County in (646, FTG, USF). Several hundred plants were observed in mesic flatwoods. Bradley also collected shortleaf skeleton grass in 1997 in the Bear Island area of Big Cypress National Preserve (1100, FTG). Bradley and Woodmansee observed several hundred plants there in 2001.

Major Threats: Fire suppression; exotic pest plant invasions; recreational off-road vehicle use in Big Cypress National Preserve; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Most collections have been made from October to December, when surveys should be conducted.*

Preliminary recommendations:

- Survey Estero Bay State Buffer Preserve.
- Map and monitor known stations on a regular basis.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing shortleaf skeleton grass.

***Habenaria distans* Griseb.
Hammock False Rein Orchid**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Collier-Seminole State Park; Fakahatchee Strand Preserve State Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida in Collier, Lee, and Highlands counties, and to the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Strand swamps and wet hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Luer (1972) has illustrations and color photos; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Correll, 1950; Luer, 1972; Godfrey & Wooten, 1979; McCartney, 1990; Tobe et al., 1998; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected hammock false rein orchid in 1878 along the Caloosahatchee River (s.n., AMES, NY). Correll (1950) attributed this collection to Lee County, which makes sense given Garber's known collecting activities.

Two stations are known from Collier County: Collier-Seminole State Park and Fakahatchee Strand Preserve State Park. Luer (1972) reported observing a "thriving colony" in August 1960 at Collier-Seminole State Park, immediately before Hurricane Donna struck. He returned a short time later to find the colony decimated, but it did persist. Chuck McCartney vouchered this population in 1991 (51, FTG), collecting only an inflorescence. Florida Park Service biologist R. "Bobby" Hattaway confirms that this station is extant, and estimates that fewer than 1,000 plants are present (personal communication, 12 January 2001).

John Popenoe apparently first vouchered the Fakahatchee Strand population in 1978 from cultivated material originally collected by

Robert Riefer in 1976 (1345, FTG). There are differing accounts as to whether or not these plants came from the Fakahatchee, as the label states, or Collier-Seminole State Park (cf. Avery's Notes, 3 September 1980, 16 September 1980). Nevertheless, Bruce E. Tatje and Jane H. Thompson collected hammock false rein orchid in Fakahatchee Strand Preserve State Park in 1978 (143, FAU). Chuck McCartney, in the company of Alan Herndon, also observed and photographed a few plants in the Fakahatchee in 1987 (personal communication, 21 February 2001). Florida Park Service biologist Mike Owen observed a single plant there with Roger L. Hammer (personal observation, 7 February 2001).

Major Threats: Poaching; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Consider reintroducing hammock false rein orchid to Lee County along the Caloosahatchee River, including at Caloosahatchee Regional Park.
- Determine status in Highlands County.
- Review for listing by FNAI.

***Harrisia aboriginum* Small ex Britton & Rose
Aboriginal Pricklyapples**

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Gasparilla Island Conservation and Improvement Association Tract A & Kitchen Key; J.N. "Ding" Darling National Wildlife Refuge).

Taxonomy: Dicotyledon; Cactaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida in Lee, Manatee, and Sarasota counties.

South Florida Distribution: Lee County.

South Florida Habitats: Coastal berms and spoil mounds.

Protection Status: Listed as endangered by FDACS (as *Cereus gracilis*) and as imperiled by FNAI.

Identification: Similar to *H. fragrans* and *H. simpsonii*, but having the combination of young buds covered with brown pubescence,

trichomes of areoles on hypanthium 6-8 mm long, margins of inner petals erose, and fruits yellow at maturity (Wunderlin, 1998).

References: Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Austin et al., 1980b; Benson, 1982; Austin, 1984; Hooten, 1991; Wunderlin, 1998; Coile, 2000.

Synonyms: *Cereus gracilis* Mill. var. *aboriginum* (Small ex Britton & Rose) L.D. Benson.; *Harrisia gracilis*, of authors, not (Mill.) Britt.

Historical Context in South Florida: Albert S. Hitchcock first collected aboriginal pricklyapples in Lee County in 1900 (Austin et al., 1980b). Daniel F. Austin and Sandra K. Austin made the next collection in 1979 on Buck Key, just east of Captiva Island (Austin et al., 1980b). Mark L. Hooten also collected it at this station (s.n., US), and illegitimately described it as a new species, *H. donae-antoniae* (Hooten, 1991). Buck Key is divided amongst several owners, including the U.S. Fish and Wildlife Service, the Sanibel-Captiva Conservation Foundation, and a private owner. Richard Workman has observed plants there on several occasions (personal communication, 26 June 2001). He estimates that between 100 and 200 plants are present on Buck Key, the majority on property now protected within the J.N. "Ding" Darling National Wildlife Refuge. In 2001, Gann observed several dozen plants there with Workman, Dee Serage of the Sanibel-Captiva Conservation Foundation, and Meghan Fellows and Jennifer Possley of Fairchild Tropical Garden. Fellows and Possley began mapping the aboriginal pricklyapples on the island during that visit. All of the plants observed appeared to be within the boundaries of J.N. "Ding" Darling National Wildlife Refuge.

Aboriginal pricklyapples is also present at two locations in the vicinity of Gasparilla Island, which is located in both Lee and Charlotte counties. It was reported from Gasparilla Island State Park (Clark, 1978) and for Kitchen Key (Live Oak Key in Morris & Miller, 1981), which is immediately adjacent to Gasparilla Island in Charlotte County. Kitchen Key is now a conservation area managed by Charlotte County. In 2001, Gann, Fellows, and Possley observed plants on Kitchen Key, together with Misty Nabers of the Gasparilla Island Conservation and Improvement Association (GICIA), her father Clyde Nabers, and Rick Joyce of Lee County (Gann, 2001b). Fewer than 10 plants were observed, and it appears that the aboriginal pricklyapple population on this

low elevation island may be suffering from sea-level rise. On the same day, Joyce showed the group a single aboriginal pricklyapple plant at a GICIA property to the south of Kitchen Key.

Aboriginal pricklyapples has been reported for a number of other stations including Cayo Costa island in Cayo Costa State Park in Lee County (Herwitz, 1977; Herwitz et al., 1996; Florida Park Service District 4, 1994a), the Bocilla Preserve in Lee County (anonymous, no date.r), and Delnor-Wiggins Pass State Park in Collier County (Florida Park Service District 4, 1994g). Since aboriginal pricklyapples has never been collected in Collier County, the Delnor-Wiggins Pass State Park record is treated as doubtful until it can be confirmed.

Fairchild Tropical Garden has twenty-eight seedlings of aboriginal pricklyapples propagated from seed collected on Longboat Key in Sarasota County in 1997 (M. Collins, personal communication, 18 June 2001). The Sanibel Captiva Conservation Foundation has also propagated and grown aboriginal pricklyapples at its nursery on Sanibel Island (D. Serage, personal communication, 23 October 2001).

Major Threats: Poaching; habitat destruction; exotic pest plant invasions; sea-level rise. Austin (1984) reports that a disease, possibly bacterial, attacks this species, turning the stems to “slush.”

Comments: *This species has been reported, in error, for Biscayne National Park (Hammer & Bradley, 1998; Stalter, 1999).*

Preliminary recommendations:

- Survey Bocilla Preserve, Delnor-Wiggins Pass State Park, Gasparilla Island State Park, and Cayo Costa State Park on Cayo Costa Island.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Maintain *ex situ* collection of germplasm.
- Conduct conservation biology research and conservation horticulture studies, including the impacts of the bacterial infection reported by Austin (1984).
- Review for listing by USFWS. Review FNAI rank.

***Helianthus debilis* Nutt.**
subsp. ***vestitus*** (E. Watson) Heiser
West Coast Dune Sunflower

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Don Pedro Island State Park; Stump Pass Beach State Park).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Annual or short-lived perennial herb.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in the western central peninsula.

Southern Florida Distribution: Charlotte and Lee counties.

Southern Florida Habitats: Beach dunes.

Protection Status: Not listed by FDACS, because it is a subspecies. Listed as imperiled by FNAI.

Identification: Distinguished from *H. debilis* subsp. *debilis* by having leaves coarsely and irregularly toothed rather than entire to shallowly and evenly toothed. Also, the stems are villous rather than short hispid. The IRC Website has a color photo

References: Small, 1933a; Heiser, 1956; Heiser et al., 1966; Ward, 1978; Cronquist, 1980; Ward, 1981; Wunderlin, 1998.

Synonyms: *H. vestitus* E. Watson; *H. debilis* var. *vestitus* (E. Watson) Cronq.

Historical Context in South Florida: Virginia Ducey first collected west coast dune sunflower in 1957 on Sanibel Island in Lee County (231, USF). It also has been reported for Gasparilla Island State Park in northern Lee County (Florida Park Service District 4, 1994c), but this represents a misidentification of *H. debilis* subsp. *debilis* that has been introduced to the park (S. Braem, personal communication, 9 April 2001; B.F. Hansen, personal communication, 12 April 2001).

In 1991, S. Erickson made a collection at Stump Pass Beach State Park in Charlotte County (PC0048, USF). Gann observed this occurrence in 2000, although the construction of a parking lot on the north end of the park appeared to have destroyed most of the population there. Fewer than 10 plants were observed. Florida Park Service biologist Sally Braem has observed plants at Don Pedro Island State Park in Charlotte County (personal

communication, 13 February 2001), but this station needs to be vouchered.

West coast dune sunflower also has been reported from Delnor-Wiggins Pass State Park in Collier County (Florida Park Service District 4, 1994g). It has not been vouchered in Collier County, so this report is treated as doubtful.

Major Threats: Habitat destruction; hybridization with *H. debilis* subsp. *debilis*; exotic pest plant invasions; management error; physical damage from park visitors.

Comments: *East coast dune sunflower* (*H. debilis* subsp. *debilis*) has been widely planted within the historical range of *H. debilis* subsp. *vestitus*, and threatens its existence. These planted populations should be eradicated.

Preliminary recommendations:

- Voucher plants at Don Pedro Island State Park.
- Survey Delnor-Wiggins Pass State Park.
- Map and monitor known stations on a regular basis.
- Eliminate populations of *H. debilis* subsp. *debilis* at Gasparilla Island State Park and from within the range of *H. debilis* subsp. *vestitus*.
- Ensure that park development does not destroy additional plants at Stump Pass Beach State Park. Control pedestrian traffic, so that beach visitors do not damage west coast dune sunflower.
- Consider establishing an *ex situ* collection of germplasm.
- Conduct conservation biology and conservation horticulture studies.
- Consider augmenting population at Stump Pass Beach State Park.
- Consider reintroducing west coast dune sunflower to other sites within its historical range.
- Review for listing by USFWS. Review FNAI rank.

***Hypericum crux-andreae* (L.) Crantz
St. Peter's-wort**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Big Cypress National Preserve; Corkscrew Regional Ecosystem Watershed).

Taxonomy: Dicotyledon; Hypericaceae.

Habit: Shrub.

Distribution: Native to the eastern and northern United States. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier and Lee counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Nelson (1996) has an illustration; Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Adams, 1962; Godfrey & Wooten, 1981; Taylor, 1992; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *H. stans* (Michx.) W.P. Adams & N. Robson; *Ascyrum crux-andreae* L.; *Ascyrum cuneifolium* Cham.; *Ascyrum stans* Michx.

Historical Context in South Florida: Walter M. Buswell first collected St. Peter's-wort in 1934 in Fort Myers (s.n., FTG). The next collection made in Lee County was in 1995, when Edwin L. Bridges and Randy L. Mears vouchered it for the Flint Pen Strand (24155, FTG), now part of the Corkscrew Regional Ecosystem Watershed.

In 1978, John Popenoe collected St. Peter's-wort in Collier County in the Kissimmee Billy Strand area, which is now within Big Cypress National Preserve (1321, FTG), but this station needs to be surveyed. Bradley observed it in the Bear Island area of Big Cypress National Preserve in 1997, but this station needs to be vouchered. Bear Island is less than 12 miles west of the Kissimmee Billy Strand station and is considered to be part of the same occurrence.

Major Threats: Fire suppression; recreational off-road vehicle use in Big Cypress National Preserve; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants in Bear Island area of Big Cypress National Preserve.
- Survey Kissimmee Billy Strand area of Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.

***Indigofera mucronata* Spreng. ex DC.
var. *keyensis* (Small) Isely
Florida Keys Indigo**

South Florida Status: Critically imperiled. Five occurrences in four conservation areas (John Pennekamp Coral Reef State Park; Long Key State Park; Snake Creek Hammocks; Windley Key Fossil Reef Geological State Park), and two non-conservation areas (Burnt Point Florida Keys Indigo Site & Valhalla Rock Barren).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Collier and Miami-Dade counties, and the Monroe County Keys.

South Florida Habitats: Rockland hammocks, coastal rock barrens, coastal berms, and shell mounds.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Chafin 2000 has illustrations and a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Avery & Loope, 1980a; Isely, 1990; Wunderlin, 1998, Bradley & Gann, 1999b; Coile, 2000.

Synonyms: *I. keyensis* Small; *I. subulata* Vahl, misapplied; *I. trita* L. f. subsp. *scabra* (Roth) de Kort & Thijsse.

Historical Context in South Florida: John Loomis Blodgett first collected Florida Keys indigo between 1838 and 1853 on Lignumvitae Key (s.n., NY). This is the only collection known from that island. Additional collections have been made from Key Largo (Curtiss 586, NY, US) south to Knights Key (Britton 552, NY). It is apparently extirpated on Knights Key, Lignumvitae Key, and Vaca Key (Simpson 466, NY, US), where it was last observed in 1964 by George N. Avery (Avery's Notes, 20 June 1964).

Florida Keys indigo is extant on Key Largo where Allan H. Curtiss collected it first in 1880 (586, NY, US). William G. Atwater also made a collection there in 1959, with the locality given as "along shore" (M-170, FLAS). Avery observed plants in 1964 on private property later added to John Pennekamp Coral Reef State Park (Avery's Notes, 11 September 1964). These plants were observed by Gann and Bradley in 1995, and by Gann and Florida Park Service biologist Janice A. Duquesnel in 1998. Fewer than 10 plants were present. This station needs to be vouchered.

John Kunkel Small made a collection on Lower Matecumbe Key in 1907 (s.n., NY), a station that also was vouchered by Small in 1917 (8390, NY), Small and others in 1925 (11595, NY), Harold N. Moldenke in 1930 (625, NY), and S. Mori and C. Gracie in 1988 (18790, NY). Gann and Duquesnel rediscovered this population in 2000 at the Klopp Tract, Lignumvitae Key Botanical State Park. Unfortunately, this population may have been destroyed by an exotic species control project.

In 1958, W.L. Stern and K.L. Chambers made the first collection on Crawl Key (340, NY, US), a station that was observed by Avery in 1966 (Avery's Notes, 19 April 1966). Bradley found plants there in 1998 at the privately owned Valhalla Rock Barren Site, which is immediately adjacent to Curry Hammock State Park. Several hundred plants are still present. Plants were also reported for the privately owned Burnt Point Florida Keys Indigo Site on nearby Long Point Key (Ross & Ruiz, 1996), but this station needs to be surveyed.

Avery also observed Florida Keys indigo on Long Key in what is now Long Key State Park (Avery's Notes, 19 April 1966). Carol Lippincott vouchered this station in 1991 (s.n., FTG). This station

also was reported by Kruer (1992) and Ross & Ruiz (1996). Gann, Bradley, and Duquesnel have observed plants there as recently as 2000. Several hundred plants may be present at this station, but a thorough census is needed. In 1965, Avery also noted plants on Craig Key, which is located between Long Key and Crawl Key (Avery's Notes, 20 January 1965), but this is a fill island and is not considered a natural population.

In 1962, Frank C. Craighead collected a specimen on Upper Matecumbe Key (s.n., USF). Karen Achor observed plants there in 1982 in privately owned Teatable Hammock (in Weiner 1980, as amended). Bradley has searched for Florida Keys indigo there, but has not been able to locate any plants. More survey work is needed at that station.

Conrad Byrd made the first collection on Windley Key in 1968 (s.n., FTG), in what is now Windley Key Fossil Reef Geological State Park. This station also was reported by Kruer (1992), and has been observed as recently as 2000 by Gann, Bradley, and Duquesnel. In 1999, Bradley discovered an additional population on Plantation Key at Snake Creek Hammocks, Florida Keys Wildlife and Environmental Area, but this station needs to be vouchered. Bradley and Woodmansee observed plants there again in 2000 (Bradley et al., 2000b).

Two collections were made outside of the Florida Keys in the 1800s. Abram P. Garber made a collection in 1877 in Miami (s.n., NY, US). Alvan W. Chapman made a second collection (s.n., NY) in the 1800s on "Robert's Key. Caximbas Bay." This station appears to be part of Marco Island in Collier County, which is now mostly developed.

Major Threats: Exotic pest plant invasions; habitat destruction; sea-level rise.

Preliminary recommendations:

- Voucher plants at John Pennekamp Coral Reef State Park and Snake Creek Hammocks.
- Survey Burnt Point Florida Keys Indigo Site, Klopp Tract, and Teatable Hammock.
- Map and monitor known stations on a regular basis.

- Acquire Burnt Point Florida Keys Indigo Site, Teatable Hammock, and Valhalla Rock Barren.
- Consider reintroduction to sites within its historical range, including Lignumvitae Key Botanical State Park.
- Encourage USFWS to list *Indigofera mucronata* var. *keyensis*.

***Ionopsis utricularioides* (Sw.) Lindl.
Delicate Violet Orchid**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Arthur R. Marshall National Wildlife Refuge; Big Cypress National Preserve; Fakahatchee Strand Preserve State Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier and Palm Beach counties and the Monroe County mainland.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Bell & Taylor (1982) has a color photo.

References: Ames, 1904b; Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Bell & Taylor, 1982; Wunderlin, 1998; Coile, 2000.

Synonyms: *I. paniculata* Lindl.; *I. tenera* Lindl.

Historical Context in South Florida: Oakes Ames first collected delicate violet orchid in “Gobblers Head” near Naples in southwestern Collier County (s.n., AMES; Ames, 1904b). Only four or five plants were found according to Ames’ journal (Plimpton, 1979). The location of this station is uncertain. John Kunkel Small made the next collection in 1925 on *Citrus* trees at “Deep Lake Hammock” (12706, NY), presumably in what is now Big Cypress National Preserve, but possibly in the Fakahatchee Strand. L.P. Brewer made an additional collection near Deep Lake in 1950, also on *Citrus* trees (s.n., FLAS). Delicate violet orchid has been reported from two areas of Big Cypress National Preserve north of Alligator Alley. Chuck McCartney collected a

specimen in the Rabenau Camp area of Big Cypress National Preserve in 1989 (30, SEL). There is also a report for the Kissimmee Billy Strand area (anonymous, no date.g), but this report needs to be verified. Roger L. Hammer photographed a plant south of the Tamiami Trail in Gum Slough in 1991 (personal communication, 13 June 2001). Black & Black (1980) listed delicate violet orchid as rare for Big Cypress National Preserve.

Daniel B. Ward made the first collection in the Fakahatchee Strand in 1965 (5366, FLAS), in what is now Fakahatchee Strand Preserve State Park. Gann and Woodmansee observed plants there in 2000 on a field trip led by Florida Park Service biologist Mike Owen. Owen estimates that there are fewer than 1,000 plants in the Fakahatchee Strand (personal communication, 7 February 2001).

In 1956, Frank C. Craighead made a collection of delicate violet orchid along the Rogers River in Everglades National Park in Monroe County (s.n., FLAS). Daniel F. Austin and Sandra K. Austin also observed it and collected it at Arthur R. Marshall Loxahatchee National Wildlife Refuge in Palm Beach County in the early 1970s (personal communication, 8 February 2001; s.n., FAU). Plants are still present there, but they have been translocated to an area where they will not be easily accessible to collectors (M. Bailey, personal communication, 13 April 2001). Delicate violet orchid also was reported for Corkscrew Swamp Sanctuary (Judd, 1994), but this station needs to be verified.

Major Threats: Poaching; exotic pest plant invasions.

Comments: *Hammer (2001) suspects that this is a short-lived species that is cold-sensitive. As a result, it may be somewhat ephemeral in South Florida.*

Preliminary recommendations:

- Survey Rogers River area in Everglades National Park. Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

***Jacquemontia havanensis* (Jacq.) Urb.
Havana Clustervine**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Bahia Honda State Park; Dagny Johnson Key Largo Hammocks Botanical State Park).

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Vine.

Distribution: Native to South Florida, the West Indies, Mexico, and Central America.

South Florida Distribution: Monroe County Keys.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

South Florida Habitats: Beach dunes, coastal berms, and edges of rockland hammocks.

Identification: Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Robertson, 1971; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Gann et al., 2001.

Synonyms: *J. jamaicensis* (Jacq.) Hallier f.; *Convolvulus nodiflorus* Desr., misapplied.

Historical Context in South Florida: Allan H. Curtiss first collected Havana clustervine in 1882 on Bahia Honda Key (s.n., US; 2171, NY), in what is now Bahia Honda State Park. Curtiss made a second collection there in 1896 (5646, NY). It also was collected there by John Kunkel Small in 1916 (7459, US), by Daniel B. Ward in 1964 (4308, USF), and by Bradley in 1995 (257, FTG). Gann and Bradley have both observed plants at Bahia Honda State Park. In 2001, Bradley and Florida Park Service biologist Janice A. Duquesnel mapped plants at Bahia Honda State Park (Gann et al., 2001a).

Curtiss discovered the next station on Boca Chica Key in 1891 (s.n., GH). This station was vouchered only one additional time, by Robert W. Long, in 1966 (2142, USF). Bradley and Woodmansee surveyed Boca Chica Key in 2001, but failed to find any plants (Gann et al., 2001a).

Curtiss may have collected it on No Name Key in 1896 (Robertson, 1971). We have not observed the specimen that Robertson reports (5631, G), but this is the same number used by Curtiss on a collection of *J. pentanthos* from No Name Key (5631, NY), which has been observed by Bradley. It seems likely that the Robertson report is in error. A specimen was possibly collected by Frank C. Craighead and George N. Avery on Big Pine Key in 1963 (s.n., Everglades National Park herbarium). Strangely, this location is not mentioned in Avery's botanical notes, so this may represent a mislabeled specimen from Bahia Honda Key. Avery only recorded observing Havana clustervine on Bahia Honda Key in the lower Florida Keys.

William G. Atwater collected Havana clustervine first on North Key Largo in 1959 (M-164, Everglades National Park herbarium). This station is within what is now Dagny Johnson Key Largo Hammocks Botanical State Park. Additional collections were made there by George N. Avery in 1971 (904, FTG, USF), and by Ruben P. Sauleda and Diane K. Sauleda in 1982 (7980, FTG, USF). Most of the plants at this station are growing along the edge of a hammock that is divided by the intersection of Card Sound Road and State Road 905. It was not clear exactly what the natural habitat was for this species on North Key Largo until 2000, when Gann and Duquesnel found additional plants in the ecotone between Crossroads Hammock, immediately to the north of the main station, and Dispatch Slough to the east. Plants at Key Largo Hammock State Botanical Sites were mapped in 2001 by Gann, J.A. Duquesnel, Florida Park Service biologist James G. Duquesnel, and Fairchild Tropical Garden biologists Megan Fellows and Jennifer Possley (Gann et al., 2001b).

Major Threats: Exotic pest plant invasions; sea-level rise.

Comments: *A specimen cited by Robertson (1971) from Virginia Key in Miami-Dade County, collected by Simpson (544, F), is actually a specimen of J. reclinata.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Jacquemontia reclinata* House ex Small
Beach Clustervine**

South Florida Status: Nine occurrences in nine conservation areas (Atlantic Dunes Park; Coral Cove Park; Crandon Park; Hugh Taylor Beach State Park; Loggerhead Park; Red Reef Park; South Beach Park; Spanish River Park).

Taxonomy: Dicotyledon; Convolvulaceae.

Habit: Vine.

Distribution: Endemic to southern Florida.

South Florida Distribution: Endemic to coastal southeastern Florida from Key Biscayne, Miami-Dade County, north to Martin County.

South Florida Habitats: Sand dunes.

Protection Status: Listed as endangered by the USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1905; Small, 1933a; Small, 1934; Robertson, 1971; Long & Lakela, 1976; Ward, 1978; Avery & Loope, 1980a; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *Convolvulus havanensis* Jacq., misapplied.

Historical Context in South Florida: Abram P. Garber first collected beach clustervine in 1877 in Miami-Dade County at “Miami, Keys and Main-land” (s.n., FLAS). In 1892, it was collected on Virginia Key by Joseph H. Simpson (544, F), the only collection known from that island. This specimen was incorrectly cited as *J. havanensis* by Robertson (1971).

In 1903, John Kunkel Small and Joel J. Carter collected beach clustervine on “Bull Key near Miami” (630, F), referring to Miami Beach. This collection was specified as the type specimen of this species when described by House (in Small, 1905). It also was collected on Miami Beach by Small and others in 1911 (3306, NY; 3382, NY), and by Small and Charles A. Mosier in 1915 (5825, FLAS, FSU). Small (1934) discussed this occurrence. In 1930, Harold N. Moldenke collected it at the north end of Miami Beach on Golden Beach (587, NY). The last definite collection of this

species on Miami Beach was made by Delzie Demaree, probably around 1933 (10178, US).

In 1964, A.P. Christman collected beach clustervine was collected at Crandon Park on Key Biscayne (15, FLAS). George N. Avery observed this occurrence several times from 1965 to 1982 (Avery's Notes). This station also was vouchered in 1979 by Donovan Correll and others (50517, FTG). Beach clustervine still occurs there and is currently being studied by biologists from Fairchild Tropical Garden.

Beach clustervine was collected first in Palm Beach County at Palm Beach in 1895 by William M. Canby (s.n., US) and later that year by Herbert J. Webber (230, MO). Allan H. Curtiss made the next collection at Palm Beach in 1897 (5860, FLAS). A collection was made in the vicinity of Palm Beach in 1908 by W. Garvens (s.n., F). It was collected at Jupiter in 1889 by George L. Bates (s.n., F), in 1928 by "Brown & West" (s.n., FLAS), in 1933 by Erdman West (s.n., FLAS), in 1949 by Leonard J. Brass (20540, FLAS), and at "West Jupiter" in 1904 by Allen B. Burgess (770, F). Collections were made on Jupiter Island in Palm Beach County by Small and John B. DeWinkeler in 1921 (9867, FLAS) and by Olga Lakela in 1962 (25201, FLAS, FSU).

Demaree made the first collection in Broward County at Hollywood in 1938 (18708, FSU). Additional collections have been made in Broward in 1940 at Fort Lauderdale Beach by J.M. Crevasse (s.n., FLAS) and in 1969 by William L. McCart (11277, FLAS), and at Pompano Beach in 1969 by McCart (11275, FLAS). A single specimen is known from Martin County, collected at Hobe Sound by F.R. Randolph in 1921 (50, GH).

Natural occurrences still exist in Miami-Dade County at Crandon Park, in Broward County at Hugh Taylor Birch State Park, and in Palm Beach County at Atlantic Dunes Park, Coral Cove Park, Red Reef Park, Loggerhead Park, Radnor Beach Park, South Beach Park, and Spanish River Park. The authors have observed several of these populations.

Fairchild Tropical Garden (FTG) and the Florida Park Service have initiated a formal introduction program at Bill Baggs Cape Florida

State Park. FTG has initiated a comprehensive research program on this species.

Major Threats: Habitat destruction.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Continue introduction at Bill Baggs Cape Florida State Park.
- Continue research program at FTG.

***Juncus dichotomus* Elliott
Forked Rush**

South Florida Status: Critically imperiled. Three occurrences in four conservation areas (Halpatokee Regional Park; Jonathan Dickinson State Park & Riverbend Park; Seabranche Preserve State Park).

Taxonomy: Monocotyledon; Juncaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Charlotte, Hendry, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Small, 1933a; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *J. platyphyllus* (Wiegand) Fernald.

Historical Context in South Florida: Bruce F. Hansen and others first collected forked rush in 1980 in the Tuckers Corner area of Charlotte County (7022, USF), in the vicinity of Fred C. Babcock-Cecil M. Webb Wildlife Management Area. Joanne Korvick made a collection in Hendry County in 1982 in a ditch in an orange grove in La Belle (s.n., FLAS). It is uncertain whether or not this represented a natural population.

Forked rush was collected for the first time in Palm Beach County by Bradley and Woodmansee in 1997 along the Loxahatchee

River in Jonathan Dickinson State Park (64, FTG). It also was observed by Bradley and Woodmansee along the Loxahatchee River in Riverbend Park, which is managed by Palm Beach County, but this station needs to be vouchered.

In 1998, Bradley and Woodmansee observed forked rush in Martin County at Seabranh Preserve State Park (Bradley et al., 1999), but this station needs to be vouchered. In 1999, forked rush was collected by Woodmansee in Martin County at Halpatiokee Regional Park (401, FTG).

Major Threats: Fire suppression; exotic pest plants; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Riverbend Park and Seabranh Preserve State Park.
- Survey Tuckers Corner area, including the Fred C. Babcock-Cecil M. Webb Wildlife Management Area
- Map and monitor known stations on a regular basis.

***Juncus repens* Michx.
Lesser Creeping Rush**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Jonathan Dickinson State Park).

Taxonomy: Dicotyledon; Juncaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Martin, and Palm Beach counties.

South Florida Habitats: Depression marshes and flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: O.E. Frye first collected lesser creeping rush in 1946 at an unspecified locality in Charlotte County (s.n., FLAS). It was collected in Charlotte County again in 1997 by Gann and Bradley at the Fred C. Babcock-Cecil M. Webb Wildlife Management Area (727, FTG).

Lesser creeping rush was collected twice in Collier County in 1967. Anne F. Bellenger collected it first in the Monument Road area of Big Cypress National Preserve (671, USF). Olga Lakela made the next collection in “Collier County...pineland association...flanked by a brackish lagoon...” (30847, USF), presumably from Marco Island (see Lakela 30848, USF [*Lechea sessiliflora*]).

John Popenoe made the only collection in Martin County in 1978 at Jonathan Dickinson State Park (1241, USF), a station that later was observed by Bradley. Plants were found to be abundant in deep water in a depression marsh. In 1997, Bradley and Woodmansee made a collection in Palm Beach County along the Loxahatchee River in Jonathan Dickinson State Park (738a, FTG). Lesser creeping rush has been reported for Dupuis Reserve (Woodbury, no date), which is located in Martin and Palm Beach counties, but this report needs to be verified.

Lesser creeping rush also was reported to have been collected a single in 1961 inside Fort Jefferson on Loggerhead Key in Dry Tortugas National Park in Monroe County (Reimus and Robertson, 1997). If a specimen was actually collected there, it represents only a waif occurrence.

Major Threats: Hydrological modifications; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve and the Monument Road area of Big Cypress National Preserve.

- Map and monitor known stations on a regular basis.

***Lachnocaulon engleri* Ruhland
Engler's Bogbutton**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Jonathan Dickinson State Park; Savannas Preserve State Park; Six Mile Cypress Slough Preserve).

Taxonomy: Monocotyledon; Eriocaulaceae.

Habit: Short-lived perennial herb.

Distribution: Native to the southeastern coastal plain in Alabama and Florida. Wunderlin (1998) reports it as occasional in Florida in the northern and central peninsula.

South Florida Distribution: Lee, Martin, and Palm Beach counties.

South Florida Habitats: Mesic flatwoods and rarely wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Small, 1933a; Kral, 1966a; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *L. engleri* var. *caulescens* Moldenke.

Historical Context in South Florida: Robert Kral first collected Engler's bogbutton in 1963 in Stuart in Martin County (18235, FSU). In 1964, Kral collected it again on the north side of Stuart (20386, FSU). In 1998, Gann and Bradley observed Engler's bogbutton north of Stuart at the Savannas Preserve State Park in Martin County, but this station needs to be vouchered. It has been reported for Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be present there, but this station needs to be vouchered.

Paul M. Cassen made a single collection from West Palm Beach in 1968 (428, FLAS), where it is almost certainly extirpated due to development. It also has been reported for the Dupuis Reserve

(Woodbury, no date), which is located in both Martin and Palm Beach counties, but this station needs to be verified.

In 1997, Bradley and Woodmansee collected Engler's bogbutton in Lee County at the Six Mile Cypress Slough Preserve (765, FTG, USF).

Major Threats: Fire suppression; exotic pest plant invasions; hydrological modifications.

Comments: *Kral (1966a) discussed how ephemeral this species sometimes is, especially in areas where water levels have fallen recently, as well as is in disturbed sites. Kral also mentions that the seeds of this species may have the capacity to remain dormant for extended periods of time.*

Preliminary recommendations:

- Voucher plants at Jonathan Dickinson State Park and Savannas Preserve State Park in Martin County.
- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Lachnocaulon minus* (Chapm.) Small
Small's Bogbutton**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (J.W. Corbett Wildlife Management Area; Jonathan Dickinson State Park).

Taxonomy: Monocotyledon; Eriocaulaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Wet flatwoods and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and color photos.

References: Small, 1933a; Kral, 1966a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: *L. eciliatum* Small; *L. michauxii* Kunth var. *minus* Chapm.

Historical Context in South Florida: Small's bogbutton was reported for three South Florida counties by Kral (1966): Broward, Martin, and Palm Beach. We have only been able to locate a single specimen from South Florida. This specimen was collected in Martin County southeast of Salerno by Olga Lakela in 1962 (25393, GH). The exact location of Lakela's station is unknown, but it may have been developed.

Gann and Bradley observed Small's bogbutton at J.W. Corbett Wildlife Management Area in Palm County in 1995, but this station needs to be vouchered.

Small's bogbutton has been reported for Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be present there, but this station needs to be vouchered. It also has been reported for Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties, but this report needs to be verified.

Major Threats: Hydrological modifications; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at J.W. Corbett Wildlife Management Area and Jonathan Dickinson State Park.
- Survey Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Lantana canescens* Kunth
Hammock Shrubverbena**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Camp Owaissa Bauer; Castellow Hammock Park; Silver Palm Hammock).

Taxonomy: Dicotyledon; Verbenaceae.

Habit: Shrub.

Distribution: Native to South Florida, the West Indies, southern Texas, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Edges of rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *L. microcephala* A. Rich.; *Goniostachyum citrosum* Small.

Historical Context in South Florida: John Kunkel Small first collected hammock shrubverbena in 1904 in a hammock near Silver Palm School (2142, NY). In 1909, Small used this collection as the type specimen in describing a new species from Florida and Cuba, *Goniostachyum citrosum* (Small, 1909). This collection probably was from Castellow Hammock, a station that Small and Charles A. Mosier vouchered in 1915 (5530, FSU). Castellow Hammock and portions of adjacent Ross Hammock are now protected within Castellow Hammock Park. Roger L. Hammer (personal communication, 11 June 2001), Gann, and Bradley have all observed plants there.

Hammock shrubverbena was collected in the same area in 1906 by Small and Joel J. Carter at Caldwell Hammock (2680, NY), now Silver Palm Hammock, a Miami-Dade County conservation area. Collections also were made there in 1930 by Harold N. Moldenke (559, NY) and Charles Mosier (s.n., US), and in 1998 by Bradley (1387, FTG). Gann has observed this population over several years. Gann and Joyce W. Gann observed a single plant there in December, 2001.

In 1961, Frank C. Craighead collected hammock shrubverbena at Camp Owaissa Bauer (s.n., USF), a Miami-Dade County Park, and this station was re-vouchered in 1995 by Bradley (232, FTG). Bradley observed this population as recently as 2000, and Hammer observed plants there in 2001 (personal communication, 13 June 2001). Fewer than 10 individuals are thought to remain,

although following Hurricane Andrew in 1992 the population had increased substantially for several years.

Major Threats: Fire suppression, which causes the loss of the pine rockland-rockland hammock ecotone; exotic pest plant invasions; management error.

Comments: *This species seems to respond positively to disturbances such as hurricanes and fires and seems to become less abundant in their absence. Camp Owaissa Bauer, Castellow Hammock Park, and Silver Palm Hammock are all less than five miles away from each other.*

Preliminary recommendations:

- Map known stations annually.
- Monitor known stations every three months.
- Conduct prescribed burns to maintain pine rockland-rockland hammock ecotone at Camp Owaissa Bauer.
- Restore pine rockland-rockland hammock ecotone at Castellow Hammock Park and Silver Palm Hammock.

***Lantana depressa* Small
var. *floridana* (Moldenke) R.W. Sanders
Florida Shrubverbena**

South Florida Status: Critically imperiled. Three occurrences in five conservation areas (Bill Baggs Cape Florida State Park, Crandon Park, & Virginia Key Hammock; Juno Dunes Natural Area; Rocky Point Hammock).

Taxonomy: Dicotyledon; Verbenaceae.

Habit: Shrub.

Distribution: Endemic to peninsular Florida.

South Florida Distribution: Broward, Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Sand dunes, mesic hammocks, and coastal strand.

Protection Status: Listed as endangered by FDACS (as *L. depressa*) and as imperiled by FNAI.

Identification: The species is distinguished from other Florida *Lantana* by having flowers in dense, flat topped heads and having leaf blades that are ovate-elliptic to lanceolate-elliptic (Wunderlin 1998). The variety is distinguished by being an erect shrub over

0.5 m tall and having stems with antrorse or spreading trichomes that are 0.5-1 mm long and a corolla limb that is 8-10 mm long (Wunderlin 1998).

References: Small, 1933a; Long & Lakela, 1976; Sanders, 1987; Nelson, 1996; Wunderlin, 1998; Coile, 2000.

Synonyms: *L. bahamensis* Britt. var. *floridana* Moldenke; *L. ovatifolia* Britton, misapplied.

Historical Context in South Florida: Abram P. Garber first collected Florida shrubverbena in 1877 in Miami (s.n., FLAS). In 1903, it was collected on "Bull Key" (Miami Beach) by John Kunkel Small and George K. Small (s.n, FLAS). The type specimen was collected in 1904, also on Miami Beach, by Small (2101, NY). Since these early collections, it has been vouchered from Key Biscayne north along the coast to Martin County. In 1984, Roger W. Sanders made the only known collection from the Miami-Dade County mainland at the northern end of the county in scrubby flatwoods (1656, FTG). Plants still occur on Key Biscayne at Bill Baggs Cape Florida State Park, where they have been observed by Gann and Bradley, and at Crandon Park (Bradley 240, FTG). Florida shrubverbena is also present on Virginia Key at the City of Miami's maritime hammock restoration site at the Virginia Key and Marine Stadium. Gann and Bradley observed plants there in 1999. The Bill Baggs Cape Florida State Park and Virginia Key stations need to be vouchered.

Sanders (1987) reported occurrences of this species north of Miami-Dade County in Broward, Palm Beach, and Martin counties. While we have not seen specimens from Broward County, it is reported to occur at Hollywood North Beach Regional Park (MacAdam, 1988) and at the Dania Tract (Johnson & Muller, 1993a). Both of these stations need to be verified.

In Palm Beach County, it was collected by Olga Lakela in 1962 north of Juno Beach (25425, NY). It was observed in this area at Juno Dunes Natural Area by the authors in 1997, but this station needs to be vouchered. It is also reported to occur at Atlantic Dunes Park (Johnson & Muller, 1993a) and Jupiter Lighthouse Tract (Farnsworth, 1993c), a portion of which is now the Palm Beach County conservation area Jupiter Inlet Natural Area. Both the Atlantic Dunes Park and Jupiter Inlet Natural Area need to be

vouchered. In Martin County, it was collected in 1998 at Rocky Point Hammock Park by Bradley and Woodmansee (1019, FTG).

Major Threats: Hybridization with *L. camara*; exotic pest plant invasions.

Comments: *Florida shrubverbena* hybridizes with the exotic *L. camara* (Sanders, 1987). Many wild plants are now hybrids between these two species, rather than pure *L. depressa* var. *floridana*. Because of this, the native *Florida shrubverbena* is often difficult to identify.

Preliminary recommendations:

- Voucher plants at Crandon Park, Juno Dunes Natural Area, and Virginia Key Hammock.
- Survey Atlantic Dune Park, Dania Tract, Hollywood North Beach Regional Park, and Jupiter Inlet Natural Area.
- Map and monitor known stations on a regular basis.
- Eliminate populations of *L. camara* that could contaminate populations of *Florida shrubverbena* and destroy hybrids.
- Review for listing by USFWS. Review FNAI rank.

***Linum carteri* Small var. *carteri*
Carter's Flax**

South Florida Status: Critically imperiled. Seven occurrences in three conservation areas (Camp Owaissa Bauer; R. Hardy Matheson; Rockdale Preserve) and four non-conservation areas (Cocoplum Development Carter's Flax Site; Old Dixie Pineland; Ponce and Riviera Pineland; USDA Subtropical Horticulture Research Station).

Taxonomy: Dicotyledon; Linaceae.

Habit: Annual terrestrial herb.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Listed as endangered by FDCAS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Chafin (2000) has illustrations and a color photo.

References: Small, 1905; Small, 1933a; Rogers, 1963; Mosquin & Hayley, 1967; Rogers, 1968; Long & Lakela, 1976; Avery &

Loope, 1980a; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998; Bradley & Gann, 1999b; Chafin, 2000; Coile, 2000.

Synonyms: *Cathartolinum carteri* (Small) Small.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected Carter's flax in 1903 between Coconut Grove and Cutler (7518, NY). Small described it as a new species in 1905. Since 1903, it has been found in pine rocklands from as far north as the vicinity of Brickell Hammock (Small 3269, NY), to as far south as the Naranja area (Bradley 188, FTG). Most of the habitat for this plant has been destroyed.

Carter's flax is currently known from three conservation areas: Camp Owaissa Bauer, where it was observed first by Bradley in 1994, R. Hardy Matheson Preserve where it was recorded by Fairchild Tropical Garden (1990), and Rockdale Pineland where it was found by Bradley in 1999.

It is also known from four non-conservation areas: Cocoplum Development Carter's Flax Site; Old Dixie Pineland; Ponce and Riviera Pineland; USDA Subtropical Horticulture Research Station. These stations were all observed by Bradley in the mid to late 1990s. Bradley observed the USDA Subtropical Horticulture Research Station site in 2001. Woodmansee observed plants at the Ponce and Riviera Pineland in 2001.

Fairchild Tropical Garden is in the process of mapping all seven stations.

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions.

Comments: *This species can persist in scarified pine rocklands, which can be restored.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Acquire Cocoplum Development Carter's Flax Site, Old Dixie Pineland, and Ponce and Riviera Pineland.

- Designate area with pine rockland fragments at the USDA Subtropical Horticulture Research Station as a conservation area and restore disturbed areas to re-connect the fragments.
- Encourage USFWS to list *Linum carteri* var. *carteri*.

***Lomariopsis kunzeana* (Underw.) Holttum**
Holly Vine Fern

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Camp Owaissa Bauer; Everglades National Park; Matheson Hammock Park).

Taxonomy: Pteridophyte; Lomariopsidaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida, Cuba, and Hispaniola.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Moist limestone sinkholes and outcrops in rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has two illustrations; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000; Moran, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Stenochlaena kunzeana* Underw.

Historical Context in South Florida: Holly vine fern was collected first in November 1903 by John Kunkel Small and Joel J. Carter (856, NY) and separately by Alvah A. Eaton (677, GH, NY, US) in southern Miami-Dade County. Small's specimen gives the locality as between Cutler and Camp Longview while Eaton's label is from Ross Hammock. Eaton also found plants at Castellow Hammock (Eaton, 1906). Both Castellow Hammock and a portion of Ross Hammock are protected in what is now Castellow Hammock Park. Small and Carter collected holly vine fern at Ross Hammock in 1906 (2383, NY), and Mary W. Diddell collected it there in 1931 (s.n., FLAS). George N. Avery observed one plant in 1976 in a small sinkhole at Castellow Hammock within Castellow Hammock Park (Avery's Notes, 11 March 1976). Roger

L. Hammer also observed this station, but holly vine fern has not been seen at Castellow Hammock Park since Hurricane Andrew in 1992 (R.L. Hammer, personal communication, 19 January 2001).

Eaton (1906) reported observing holly vine fern at Timms Hammock, a station that was vouchered by Donovan S. Correll in 1936 (6068, US). Timms Hammock is now part of the Miami-Dade County park, Camp Owaissa Bauer. Avery and others observed it there in the 1960s. Hammer and Don Keller observed eight plants there in 2000 (D. Keller, personal communication, 8 February 2001). Eaton (1906) also reported it for nearby Hattie Bauer Hammock, but this station was never vouchered.

Small made several collections on Long Pine Key in 1916 and 1917 (7346, NY; 7488, NY; 8126, NY), in what is now Everglades National Park. Frank C. Craighead also made a collection there in 1960 (s.n., ARCH). In 1975 and 1976, Avery observed a single plant in one hammock on Long Pine Key. Don Keller observed one very large plant in that same hammock in 1988 and again in 1990 (personal communication, 8 February 2001).

In 1962, Thomas Darling, Jr. made a collection at Warwick Hammock (s.n., US), which is located north of Deering Estate at Cutler. William G. Atwater made a collection in that area in 1960 (s.n.; FLAS), but it has not been collected there since that time. The entire hammock has been subdivided and developed, although a few remnants of native vegetation and limestone substrate remain in some yards. Gann surveyed some of these yards in the late 1990s, but did not find any holly vine fern.

The most recent station to be vouchered was at Matheson Hammock Park, where Avery collected holly vine fern in 1970 (754, FTG). There is an early collection without a date from that area by Alicia Rodham (s.n., NY), but the locality data is uncertain. Alan Cressler recorded around 50 plants in 1993 during a fern survey he conducted following Hurricane Andrew in 1992 (Cressler, 1993). Most of the plants at the site were wiped out by the exotic sewer vine (*Paederia cruddasiana*) following Hurricane Andrew (D. Keller, personal communication, 8 February 2001).

Major Threats: Long-term drainage on the Miami Rock Ridge; poaching; stochastic extinction (e.g., hurricanes); exotic pest plant invasions.

Comments: *As with many fern species, the gametophytes of the holly leaf fern may be more widespread than the sporophytes. Peck (in Flora of North America Editorial Committee, 1993) reports that the gametophytes are often found among the stem scales of the sporophytes. Peck and Roger L. Hammer found gametophytes in a number of solution holes in Castellow Hammock Park (R.L. Hammer, personal communication, 13 June 2001).*

Preliminary recommendations:

- Survey Castellow Hammock Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Consider establishing an *ex situ* collection of germplasm.
- Consider reintroducing holly vine fern to sites within its historical range, including Hattie Bauer Hammock.
- Promote a higher regional water table on the Miami Rock Ridge.
- Determine status in Cuba and Hispaniola.

***Ludwigia arcuata* Walter
Piedmont Primrosewillow**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Halpatiokee Regional Park).

Taxonomy: Dicotyledon; Onagraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it was frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Charlotte, Collier, and Martin counties.

South Florida Habitats: Mesic flatwoods and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Ludwigiantha arcuata* (Walter) Small.

Historical Context in South Florida: Piedmont primrosewillow was collected twice in Collier County in 1967 by Olga Lakela, both times near Immokalee. Lakela's first collection was made in a canal (30874, USF). Her next collection was made "about in excavated ponds in pinelands" (30817, USF). Bradley observed this species on Marco Island in Collier County in 1999. A small colony was found on a wet roadside and was most likely introduced there with sod. It is not clear if Piedmont primrosewillow is native to Collier County.

Bruce F. Hansen and others first collected Piedmont primrosewillow in Charlotte County in 1980 at Tucker's Corner (7027, USF). This collection was made in flatwoods. This station is adjacent to Fred C. Babcock-Cecil M. Webb Wildlife Management Area, where Piedmont primrosewillow was collected by Gann and Bradley in 1996 (710, FTG). The plants were found in one small area of the site in disturbed flatwoods. Woodmansee observed Piedmont primrosewillow in Martin County at Halpaticokee Regional Park, but this station needs to be vouchered.

Piedmont primrosewillow has been reported for Loxahatchee Slough Natural Area in Palm Beach County (Farnsworth, 1994c), and Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties. Both of the stations need be verified.

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Some populations of this species may have been introduced by cattle, with sod, or by other means.*

Preliminary recommendations:

- Voucher Dupuis Reserve, Halpatickee Regional Park, and Loxahatchee Slough Natural Area.
- Map and monitor known stations on a regular basis.

***Ludwigia pilosa* Walter
Hairy Primrosewillow**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Arthur R. Marshall Loxahatchee National Wildlife Refuge; Pal-Mar; Jonathan Dickinson State Park).

Taxonomy: Dicotyledon; Onagraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Riverside swamp forests, tree islands, and basin marshes.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Roy O. Woodbury first collected hairy primrosewillow in 1989 at Jonathan Dickinson State Park in Martin County (s.n., FTG). The collection was made in a swamp along Kitching Creek. In 1997, Bradley and Woodmansee discovered and vouchered a small colony of this species in Palm Beach County at Pal-Mar (218, FTG), a conservation area managed by South Florida Water Management District. Later that year Gann and Bradley vouchered an additional colony at this site (1057, FTG). Plants at this station were found growing at the edges of basin marshes in the ecotone with mesic flatwoods or small tree islands. Hairy primrosewillow also has been reported from the Dupuis Reserve (Woodbury, no date), which is located in Palm Beach and Martin counties, but this report needs to be verified. Bradley and Woodmansee observed hairy primrosewillow

again in 1997 at Arthur R. Marshall Loxahatchee National Wildlife Refuge, and the station was vouchered by the authors in 1998 (67, FTG). Plants were found growing on the edge of a tree island.

Major Threats: Exotic pest plant invasions; fire suppression; hydrological modifications.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Dupuis Reserve and Pal-Mar Natural Area, and un-acquired portions of the Pal-Mar CARL Site.
- Map and monitor known stations on a regular basis.

***Lycopodiella caroliniana* (L.) Pic. Serm.
Slender Club-Moss**

South Florida Status: Critically imperiled. Two occurrences in four conservation areas (Loxahatchee Slough Natural Area, Pond Cypress Natural Area & West Palm Beach Water Catchment Area; Jonathan Dickinson State Park).

Taxonomy: Pteridophyte; Lycopodiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America, the West Indies, Mexico, Central America, South America, and the Old World. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Martin, and Palm Beach counties.

South Florida Habitats: Wet flatwoods and wet prairies.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has color photos and an illustration; Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has an illustration; the IRC Website has a color photo.

References: Chapman, 1883; Lloyd & Underwood, 1900; Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Lycopodium carolinianum* L.; *Pseudolycopodiella caroliniana* (L.) Holub.

Historical Context in South Florida: L.M. Underwood first collected slender club-moss in 1891 at Lake Worth in Palm Beach County (2226, NY). It has not been collected since then in that immediate area, but it has been reported for three mostly contiguous conservation areas in north-central Palm Beach County: City of West Palm Beach Water Catchment Buffer (Farnsworth, 1993b), Pond Cypress Natural Area (Farnsworth, 1994a), and Loxahatchee Slough Natural Area (Farnsworth 1994c). These stations probably represent a single large population. Slender club-moss is assumed extant there, but all of these occurrences need to be vouchered.

In 1916, Paul C. Standley made a collection of slender club-moss “in the vicinity of Marco...” in Collier County (12710, US). Olga Lakela made two other collections in Collier County, the first in 1965 along State Road 82 near Corkscrew Junction (28119, USF), and the second in 1966 along State Road 82 northwest of Immokalee (30507, USF).

John Popenoe made the first collection in Martin County in 1977 from a ditch “east of the stables” in Jonathan Dickinson State Park (844, FTG). Donovan S. Correll and Popenoe vouchered it a second time in Jonathan Dickinson in 1977, this time in a savanna in the Wilson Creek area (48597, FTG, NY, US). It is assumed to be extant there.

Hitchcock (1902) reported plants from Fort Myers in Lee County, and Eaton (1906) reported plants from Fort Lauderdale in Broward County, but we have not been able to locate vouchers for these stations.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Voucher plants at City of West Palm Beach Water Catchment Area, Loxahatchee Slough Natural Area, and Pond Cypress Natural Area.
- Map and monitor known stations on a regular basis.

***Malachra urens* Poit.
Roadside Leafbract**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Everglades National Park; Manatee Park).

Taxonomy: Dicotyledon; Malvaceae.

Habit: Annual terrestrial herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Collier and Lee counties, and the Monroe County mainland.

South Florida Habitats: Shell mounds, salt marshes, coastal berms, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: It can be distinguished from the exotic *M. capitata* by having sessile or short pedunculate heads, rather than long pedunculate heads (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *M. alceifolia* Jacq., misapplied.; *M. capitata* (L.) L., misapplied.

Historical Context in South Florida: Allan H. Curtiss first collected roadside leafbract at “Chuckaluskee Bay” (383, NY). The specimen was undated, but was probably made in 1881 or 1882. This location is probably Chokoloskee Island in Collier County, where Joseph H. Simpson collected roadside leafbract in 1891 (220, US). Collections also were made near Everglades City in 1925 by Walter M. Buswell (s.n., NY), and in Everglades City by John Popenoe and Roger W. Sanders in 1981 (2141, FTG). Frank C. Craighead made an additional collection from Collier County in 1964 (s.n., FTG, USF). The specimen was collected along the “Sunniland Air Beacon Road” a location with which we are not familiar. Sunniland is on State Road 29 north of Big Cypress National Preserve.

In 1930, Charles A. Mosier made a collection along Loop Road in the vicinity of Pinecrest (s.n., NY), within what is now Big Cypress National Preserve. It was collected there the same month by

Harold N. Moldenke (367a, NY). It is possible that this was a waif population established on road fill.

In 1942, John H. Davis, Jr. made a collection from "Cape Sable" (s.n., FLAS), in what is now Everglades National Park. In the broad sense, Cape Sable can refer to a large region including the Flamingo area, where roadside leafbract has been collected a number of times. It was collected near Flamingo by William G. Atwater in 1963 (717, FLAS), by George N. Avery in 1966 (s.n., FLAS) and again in 1972 (1100, FTG), and by Maxie Simmons in 1969 (Avery 608, FLAS). Gann and Bradley have both observed plants in the vicinity of Flamingo in Everglades National Park.

Richard Workman made a collection in Lee County in 1996 at Manatee Park (s.n., FLAS, USF), where it is assumed to be extant.

Major Threats: Exotic pest plant invasions.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Review for listing by FDACS and FNAI.

***Marshallia tenuifolia* Raf.
Grassleaf Barbara's Buttons**

South Florida Status: Critically imperiled. Three occurrences in four conservation areas (Danforth; Pal-Mar; Jonathan Dickinson State Park & Loxahatchee River Natural Area).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Wet flatwoods and depression marshes.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has color photos.

References: Channell, 1957; Cronquist, 1980; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Popenoe and Richard E. Roberts first collected grassleaf Barbara's buttons in 1980 at Jonathan Dickinson State Park in Martin County (1908, USF). It also has been reported for Loxahatchee River Natural Area in Palm Beach County (Palm Beach County Environmental Resources Management, 2001), a station that needs to be vouchered. This station is considered the same occurrence as that at Jonathan Dickinson State Park. Woodmansee made a collection at Danforth in Martin County in 2000 (512, FTG).

In 1997, Bradley and Woodmansee collected grassleaf Barbara's buttons in Palm Beach County at Pal-Mar (222, FTG), a conservation area managed by South Florida Water Management District. It also has been reported for Dupuis Reserve (Woodbury, no date), which is located nearby in Palm Beach and Martin counties, but this report needs to be verified.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher Loxahatchee River Natural Area.
- Survey Dupuis Reserve, Pal-Mar Natural Area, and un-acquired portions of the Pal-Mar CARL Site.
- Map and monitor known stations on a regular basis.

***Maxillaria crassifolia* (Lindl.) Rchb. f.
Hidden Orchid**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Big Cypress National Preserve; Fakahatchee Strand Preserve State Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has both illustrations and color photos; Chafin (2000) has both illustrations and color photos.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Ward, 1978; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *M. sessilis* (Sw.) Fawc. & Rendle.

Historical Context in South Florida: Charles A. Mosier first collected hidden orchid between 1917 and 1930 (s.n., NY), without specific locality data. John Kunkel Small (1933a) reported that it had been collected in the Big Cypress Swamp. Walter M. Buswell collected it in 1939 from “Big Cypress” (s.n., USF). Both Mosier’s and Buswell’s collections are probably from the Fakahatchee Strand, now in Fakahatchee Strand Preserve State Park. R.E. Vagner made the first definitive voucher from the Fakahatchee Strand in 1964 (s.n., USF). Daniel B. Ward vouchered it there again in 1965 (5365, FSU). It has been observed a number of times since then in the Fakahatchee. Florida Park Service biologist Mike Owen estimates that there are fewer than 1,000 plants in the Fakahatchee Strand (personal communication, 7 February 2001).

George N. Avery first reported hidden orchid from the Loop Road area of Big Cypress National Preserve in 1978 (Avery’s Notes, 20 February 1978). Avery, Lloyd L. Loope, and Oron L. “Sonny” Bass observed plants in a pond apple slough, where it was common. Black & Black (1980) reported it as rare for the preserve. Tony Pernas discovered a second station within the Loop Road area in 1999. Bradley observed this population with Pernas and Amy Ferriter in 1999. A single tree was observed with fewer than 10 plants present there.

Earlier, there were reports of hidden orchid from the Jetport area of the Big Cypress Swamp by Frank C. Craighead (Botanical Notes of Frank C. Craighead). Several plants were given to Craighead by the Eastern Airlines Orchid Club and moved to the Long Pine Key area of Everglades National Park. George N. Avery observed one of these plants “probably dead” in Deer

Hammock in 1977 (Avery's Notes, 25 February 1977). Chuck McCartney photographed what appeared to have been a translocated plant in Winkley Hammock on Long Pine Key in 1986 (personal communication, 21 February 2001). There is no indication that hidden orchid is native to any portion of Everglades National Park, nor that an introduced population has ever become established.

Major Threats: Poaching; hydrological modifications; exotic pest plant invasions.

Preliminary recommendations:

- Continue ongoing survey at Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

***Micranthemum umbrosum* (J.F. Gmel.) S.F. Blake
Shade Mudflower**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Halpatokee Regional Park; Jonathan Dickinson State Park; Six Mile Cypress Slough Preserve) and one non-conservation area (vicinity of Fisheating Creek).

Taxonomy: Dicotyledon; Scrophulariaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Glades, Lee, and Martin counties.

South Florida Habitats: Cypress swamps, riverside swamp forests, river banks, and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Pennell, 1935; Godfrey & Wooten, 1981; Tobe et al., 1998; Wunderlin, 1998; Logier & Martorell, 2000.

Synonyms: *M. orbiculatum* Michx.; *Globifera umbrosa* J.F. Gmel.

Historical Context in South Florida: Leonard J. Brass first collected shade mudflower in 1945 along Fisheating Creek in Glades County (14834, US). It also was collected along Fisheating Creek by John Popenoe in 1977 (1010, FTG). In 2000, Bradley observed this species to be common in ditches in the vicinity of Fisheating Creek north of Palmdale. It is almost certainly present within the newly established Fisheating Creek Wildlife Management Area.

In 1980, Richard P. Wunderlin and others collected shade mudflower in a canal in North Fort Myers (8849, USF). In 1997, it was observed by Bradley and Woodmansee in a strand swamp at Six Mile Cypress Slough Preserve southeast of Fort Myers, but this station needs to be vouchered.

In 1981, John Popenoe collected shade mudflower at Jonathan Dickinson State Park in Martin County (1971, USF). This collection was made at the edge of a sewage treatment plant, but the species probably occurs in cypress domes or river banks in the park. In 2000, Woodmansee and Martin County biologist Sandra Vardaman observed shade mudflower at Halpaticokee Regional Park, also in Martin County, but this station needs to be vouchered.

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Additional surveys may indicate that shade mudflower is more common than it appears, and it may be down-ranked to imperiled in South Florida in the future.*

Preliminary recommendations:

- Voucher plants at Halpaticokee Regional Park and Six Mile Cypress Slough Preserve.
- Survey Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Micromeria brownei* (Sw.) Benth.
var. *pilosiuscula* A. Gray
Browne's Savory**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Six Mile Cypress Slough Preserve).

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States, Mexico, and Central America. Wunderlin (1998) reports it as frequent in Florida from the peninsula to the central panhandle.

South Florida Distribution: Broward, Charlotte, Lee, and Miami-Dade counties.

South Florida Habitats: Wet flatwoods and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Correll & Correll, 1982; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *M. pilosiuscula* (A. Gray) Small; *Satureja brownei* (Sw.) Briq.

Historical Context in South Florida: Leland M. Baltzell first collected Browne's savory in 1975 in the vicinity of Bermont in Charlotte County (7861, FLAS). While this area has been developed, Gann and Bradley observed it nearby at Fred C. Babcock-Cecil M. Webb Wildlife Management Area in 1996.

Browne's savory was reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in Lee and Collier counties, but this station needs to be verified. Bradley and Woodmansee observed plants at Six Mile Cypress Slough Preserve in Lee County, but this station needs to be vouchered.

Additional collections exist for Broward County (Hendrickson & Buckley 595, FTG) and Miami-Dade County (Avery 771, USF; Popenoe 1621, USF). These collections are all from disturbed wet sites and are probably introduced.

Major Threats: Fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Fred C. Babcock-Cecil M. Webb Wildlife Management Area and Six Mile Cypress Slough Preserve.
- Survey Corkscrew Swamp Sanctuary.
- Map and monitor known stations on a regular basis.

***Nemastylis floridana* Small
Celestial Lily**

South Florida Status: Critically imperiled. One occurrence in five conservation areas (Dupuis Reserve, J.W. Corbett Wildlife Management Area, Loxahatchee Slough Natural Area, Royal Palm Beach Pines Natural Area, & Pal-Mar).

Taxonomy: Monocotyledon; Iridaceae.

Habit: Perennial terrestrial herb.

Distribution: Endemic to Florida. Wunderlin (1998) reports it as occasional in Florida from Flagler County south to Broward County.

South Florida Distribution: Broward, Palm Beach, and Martin counties.

South Florida Habitats: Wet flatwoods.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Small, 1931a; Small, 1933a; Goldblatt, 1975; Ward, 1978; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: “Thompson & Lawson” made the first collection of celestial lily in 1971 near Holmberg Road in the Parkland area of Broward County (17, FAU). Grace B. Iverson collected it again in the same general area in 1977 (s.n., FAU). This entire area has been developed, and celestial lily is doubtfully extant in Broward County.

Anne Cox made the next collections in 1981 in the Palm Beach Gardens area of northern Palm Beach County (22, FAU; 49, FAU). While this station may be extirpated, several collections have been made in or near Pal-Mar, a conservation area managed by South Florida Water Management District that is located in northern Palm Beach and southern Martin counties. Roy O. Woodbury made the first collection from this area in 1990, probably in what is now Pal-Mar in Martin County (M-1081, FTG). In 1997, Bradley and Woodmansee made several collections at Pal-Mar in Palm Beach County (698, FTG, USF; 701, FTG) and in Martin County (744, FTG, USF). Bradley and Woodmansee also observed plants nearby at the J.W. Corbett Wildlife Management Area in 1998 and 2000, and the authors observed plants at Dupuis Reserve in 2000. Both of these stations need to be vouchered. Celestial lily has been reported for the Loxahatchee Slough Natural Area (Farnsworth, 1994c) and for Royal Palm Beach Pines Natural Area (Black, 1996) in Palm Beach County. Both of these stations are presumed to be extant, but need to be vouchered. Although Royal Palm Beach Pines site is somewhat separated from the other stations, it seems reasonable to assume that there is one large population in northern Palm Beach and southern Martin counties. Additional plants are almost certainly on non-conservation lands in the area. One additional collection is known from the Stuart area in Martin County, where Woodbury made a collection in 1989 (M-1082, FTG). No recent observations from that area are known.

Major Threats: Drainage of wet flatwoods habitat; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This species is very difficult to see when it is not flowering. Flowering takes place only in September and October in the late afternoon from about 4:00 to 6:00 PM, making this species very difficult to observe in the field (Small, 1931). Mackiernan & Norman (1979) studied the reproductive biology of this species at a site in Volusia County.*

Preliminary recommendations:

- Voucher plants at Dupuis Reserve, J.W. Corbett Wildlife Management Area, Loxahatchee Slough Natural Area, and Royal Palm Beach Pines Natural Area.
- Survey Pal-Mar Natural Area and un-acquired portions of the Pal-Mar CARL Site.

- Map and monitor known stations on a regular basis.

***Opuntia corallicola* (Small) Werderm.
Semaphore Pricklypear**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Biscayne National Park; Torchwood Hammock Preserve).

Taxonomy: Dicotyledon; Cactaceae.

Habit: Shrub or small tree.

Distribution: Endemic to South Florida.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Low buttonwood transition areas between rockland hammocks and mangrove swamps, and possibly other habitats such as openings in rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI. Currently under review for listing by USFWS (2001).

Identification: Scurlock (1987) has color photos; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Benson, 1982; Scurlock, 1987; Austin et al., 1998; Wunderlin, 1998; Bradley & Gann, 1999b; Chafin, 2000; Coile, 2000.

Synonyms: *O. spinosissima* Mill., misapplied; *Consolea corallicola* Small.

Historical Context in South Florida: John Kunkel Small and others discovered semaphore pricklypear in 1919 on Big Pine Key (s.n., NY). In 1930, Small described it as a new species, *Consolea corallicola* (Small, 1930a). In 1963, George N. Avery observed it on Long Beach on Big Pine Key in what is now National Key Deer Refuge (Avery's Notes, 30 October 1963). It apparently was eradicated from Big Pine Key in the 1960s by a combination of road building and poaching (Bradley & Gann, 1999b). It was found sometime before 1965 on Little Torch Key by Clarence Webb and Oley Olsen (Avery's Notes, 24 November 1965). Plants were vouchered there by Robert W. Long in 1967 (2497, USF) and T. Ann Williams in 1986 (s.n., FTG). Nine plants

remain on that island at The Nature Conservancy's Torchwood Hammock Preserve (C. Bergh, personal communication, 20 February 2001). This population is now being augmented (C. Bergh, personal communication, 10 January 2002).

Small (1930, 1933a) reported plants from Key Largo. We have been unable to locate specimens to verify this report. In 2001, Bradley, Woodmansee, and Biscayne National Park biologist Toby Obenauer made a discovery of a new population to the north of Key Largo on a small island in Biscayne National Park.

Attempts are underway to translocate this species to several sites: National Key Deer Refuge on Big Pine Key, Spoonbill Sound Hammocks, Florida Keys Wildlife and Environmental Area on Cudjoe Key, Dagny Johnson Key Largo Hammocks State Botanical Site on Key Largo, Little Torch Hammocks, Florida Keys Wildlife and Environmental Area on Little Torch Key, and Ramrod Hammocks, Florida Keys Wildlife and Environmental Area on Ramrod Key. Another introduction project has been reported for No Name Key and Upper Sugarloaf Key (C. Bergh, personal communication, 11 January 2002). Organizations involved in these introductions include Fairchild Tropical Garden, Florida Park Service, The Nature Conservancy, and University of South Florida. Other plants are cultivated as landscape plants in South Florida, but no introduced populations are known.

Opuntia species in South Florida are susceptible to infestation by the larvae of an exotic moth, *Cactoblastis cactorum*. The plants at Torchwood Hammock were caged for a time to prevent infestation, but these cages were removed immediately prior to Hurricane Georges in 1998. Rather than replacing the cages, the plants are monitored weekly by volunteers in order to detect early infestations.

The reproductive biology of semaphore pricklypear has been studied by Negron-Ortiz (1998). Negron-Ortiz reported that fruit abortion was high and viable seed set was very low possibly because of meiotic problems resulting from polyploidy.

Major Threats: Damage from *Cactoblastis cactorum* larvae; poaching; stochastic events such as hurricanes; sea-level rise.

Comments: Wunderlin (1998) lists this as *O. spinosissima*, a species of Jamaica. We follow Austin et al. (1998), who treats our species as a South Florida endemic.

Preliminary recommendations:

- Voucher plants at Biscayne National Park.
- Map plants in Biscayne National Park.
- Monitor plants in Biscayne National Park on an annual basis.
- Continue mapping and monitoring at Torchwood Hammock Preserve.
- Protect from poaching.
- Protect from *Cactoblastis cactorum*.
- Continue ongoing efforts to reintroduce semaphore cactus to Big Pine Key.
- Continue ongoing efforts to introduce semaphore cactus to other sites within its historical range in the Florida Keys.
- Encourage USFWS to list *Opuntia corallicola*.

***Opuntia triacanthos* (Willd.) Sweet
Jumping Cactus**

South Florida Status: Critically imperiled. Four occurrences in two conservation areas and three non-conservation areas (privately owned Big Munson Island; Long Key State Park & privately owned Long Key Layton Coastal Rock Barren; National Key Deer Refuge; privately owned Valhalla Rock Barren).

Taxonomy: Dicotyledon; Cactaceae.

Habit: Shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal rock barrens and edges of rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Benson (1982) has a black and white photo; the IRC Website has a color photo.

References: Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Benson, 1982; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *O. abjecta* Small ex Britton & Rose.

Historical Context in South Florida: John Kunkel Small and Paul Matthauss discovered jumping cactus in 1921 in or around Cactus Hammock on Big Pine Key (s.n., NY). A number of other collections from this station have been made since that time: by P. Bartsch in 1919 (s.n., US); by Small in 1922 (s.n., NY); by G.S. Miller in 1935 (1710, US); and by Ellsworth P. Killip in 1936 (31712, US), 1951 (41332, US), and 1952 (41708, US). George N. Avery observed this station in 1966 (Avery's Notes, 12 May 1966). T. Ann Williams observed plants there from the 1970s to the 1990s (personal communication, 7 March 2001). Williams returned in 2001 and observed between 50 and 100 plants (personal communication, 19 March 2001). Bradley and Woodmansee also observed this station in 2001. Fairchild Tropical Garden biologists Meghan Fellows and Jennifer Possley began mapping this population in 2001.

Conrad Byrd found an additional station in or before 1966 on Long Key in an area that now is part of Long Key State Park (Avery's Notes, 28 March 1966). A population remains there and was observed as recently as 2000 by Gann, Bradley, and Florida Park Service biologist Janice A. Duquesnel. It is estimated that there are fewer than 100 plants extant there today. A second station was reported for Long Key at the privately owned Long Key Layton Coastal Rock Barren (National Audubon Society, 1992). Bradley and Wayne Hoffman observed this station in 1998. It is estimated that there are fewer than 100 plants at this station. Both Long Key stations need to be vouchered.

Byrd also reported to Avery in 1966 that he had found a population on Crawl Key (Avery's Notes, 28 March 1966). This occurrence is extant at the privately owned Valhalla Rock Barren, which is located adjacent to Curry Hammock State Park. Bradley and Woodmansee observed this station as recently as 2001. There are a few hundred plants at this station, which needs to be vouchered.

Kruer (1992) reported an additional station at Big Munson Island. T. Ann Williams reports that she observed plants there in 1987 (personal communication, 7 March 2001). Bradley, Fellows, and Possley observed a few plants there in 2001. This station needs to be vouchered.

Major Threats: Habitat destruction at Long Key Layton Coastal Rock Barren and Valhalla Rock Barren Site; infestation by the exotic moth, damage from *Cactoblastis cactorum* larvae; exotic pest plant invasions; poaching; sea-level rise.

Preliminary recommendations:

- Voucher plants at Long Key State Park, Long Key Layton Coastal Rock Barren, and Valhalla Rock Barren Site.
- Take photographic voucher at Big Munson Island.
- Map and monitor known stations on a regular basis.
- Acquire Long Key Layton Coastal Rock Barren and Valhalla Rock Barren Site.
- Develop conservation agreement with Boy Scouts of America to manage a viable population of jumping cactus on Big Munson Island, and provide technical assistance.
- Protect from poaching.
- Protect from *Cactoblastis cactorum*.

***Panicum verrucosum* Muhl.
Warty Panicum**

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (J.W. Corbett Wildlife Management Area & Pal-Mar; Jonathan Dickinson State Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Flatwoods, marshes, and pond margins.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration; Tobe et al. (1998) has photos and illustrations.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: John Popenoe first collected warty panicum in 1975 at Jonathan Dickinson State Park in Martin County (348, FTG). This station was vouchered again by Popenoe in 1977 (941, FTG), and is assumed to be extant.

In 1997, Gann and Bradley made a collection in Palm Beach County at Pal-Mar (1035, FTG), a conservation area managed by South Florida Water Management District. Fewer than 10 plants were seen on the edge of a dirt road adjacent to mesic flatwoods. In 2000, it was observed by Bradley and Woodmansee at J.W. Corbett Wildlife Management Area in Palm Beach County, but this station needs to be vouchered. It has been reported for Dupuis Reserve (Woodbury, no date), which is adjacent to Pal-Mar in Palm Beach and Martin counties, but this station needs to be verified. The Dupuis Reserve, J.W. Corbett Wildlife Management Area, and Pal-Mar stations are considered to be the same occurrence.

Warty panicum also has been reported for Corkscrew Regional Ecosystem Watershed (Hilsenbeck, 1997), which is located in Collier and Lee counties. This stations needs to be verified.

Major Threats: Exotic pest plant invasions; fire suppression.

Comments: *This is a temperate species at the southern end of its range. According to David W. Hall, it is frequently weedy in wetlands and is very common to the north of our area (personal communication, 9 March 2001).*

Preliminary recommendations:

- Voucher plants at J.W. Corbett Wildlife Management Area.
- Survey Corkscrew Regional Ecosystem Watershed, Dupuis Reserve, Pal-Mar Natural Area, and Pal-Mar CARL Site.
- Map and monitor known stations on a regular basis.

***Passiflora sexflora* Juss.
Goatsfoot**

South Florida Status: Critically imperiled. Five occurrences in four conservation areas (Camp Owaissa Bauer; Castellow Hammock Park; Fuchs Hammock Preserve; Hattie Bauer

Hammock) and one non-conservation area (a portion of privately owned Krome Hammock).

Taxonomy: Dicotyledon; Passifloraceae.

Habit: Perennial vine.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDCAS and as imperiled by FNAI.

Identification: Chafin (2000) has illustrations and color photos; the IRC Website has a color photo.

References: Small, 1933a; Killip, 1938; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected goatsfoot in 1903 between Cutler and Camp Longview in Miami-Dade County (791, NY). Camp Longview was historically located to the west of present-day Florida City. Small (1905) reported the discovery of this species in the United States. Also in 1903, Alvah A. Eaton collected it in “Castellow & Ross hammock” in the Redland area of Miami-Dade County. Castellow Hammock and portions of Ross Hammock are now protected in Castellow Hammock Park. It was observed there by the authors in 1997 (Gann et al. 26, FTG). Roger L. Hammer observed goatsfoot nearby in Cox Hammock during a survey of the Monkey Jungle, but it may no longer be extant there (personal communication, 13 June 2001).

Goatsfoot has been recorded for a number of other hammocks in the Redland area. In 1903, Eaton collected it in Hattie Bauer Hammock (688, F), most of which is now a Miami-Dade County conservation area. Roger L. Hammer has also observed it there (Hammer, 1992b). In 1904, Nathaniel L. Britton collected it at Caldwell Hammock (264, NY), now Silver Palm Hammock, a Miami-Dade County conservation area. No recent reports from that hammock are known. Small and Charles A. Mosier collected it in Sykes Hammock, now Fuchs Hammock Preserve, in 1915 (5484, NY). It was observed at this station in 1966 by George N. Avery (Avery's Notes, 2 November 1966) and by Bradley in 1999.

In 1915, Small and Mosier also collected it at Nixon-Lewis Hammock (5889, NY). This station was vouchered by Harold N. Moldenke in 1930 (550, NY) and by Avery in 1966 (294, USF). This station has been almost completely destroyed and goatsfoot is believed to be extirpated there. In 1915, Small and Mosier also collected it at Goodburn Hammock (5906, NY), a hammock of uncertain location. In 1965, Avery observed goatsfoot in Timms Hammock, located in Camp Owaissa Bauer (Avery's Notes, 20 March 1965), a station that was vouchered in 1998 by Bradley (1306, FTG). In 2000, Woodmansee collected it at a privately owned property in Krome Hammock, which is being managed as a conservation area (590, FTG). Krome Hammock has been subdivided into several properties containing hammock fragments and goatsfoot may be present on some additional properties.

Goatsfoot has been reported a number of times for Everglades National Park (Avery & Loope, 1980b; Avery & Loope, 1983; Reimus, 1996; Reimus, 1999), but these reports need to be verified.

Major Threats: Exotic pest plant invasions.

Comments: *This species is often most prolific at hammock edges and in canopy gaps, and is somewhat ephemeral following hurricanes and other disturbances.*

Preliminary recommendations:

- Survey Cox Hammock, Everglades National Park, and Krome Hammock.
- Map and monitor known stations on a regular basis.
- Develop conservation agreement with property owners in Krome Hammock, and provide technical assistance.
- Review FNAI rank.

***Pavonia paludicola* Nicolson ex Fryxell
Swampbush**

South Florida Status: Critically imperiled. Two occurrences in five conservation areas (Biscayne National Park, Black Point Park, Chapman Field Park, & R. Hardy Matheson Preserve; Everglades National Park).

Taxonomy: Dicotyledon; Malvaceae.

Habit: Shrub.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Collier and Miami-Dade counties, and the Monroe County mainland.

South Florida Habitats: Stream banks near the coast and mangrove swamp forests.

Protection Status: Listed as endangered by FDCAS.

Identification: Nelson (1996) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Correll & Correll, 1982; Nelson, 1996; Wunderlin, 1998; Fryxell, 1999; Coile, 2000; Loggier & Martorell, 2000.

Synonyms: *P. racemosa* Sw.; *P. spicata* Cav.; *Malache scabra* Vogel.

Historical Context in South Florida: Edward Palmer first collected swampbush in 1874 on the shores of Biscayne Bay in Miami-Dade County (s.n., NY, US). Abram P. Garber made the next collection in the Miami area in 1877 (s.n., FLAS, NY). In 1895, Allan H. Curtiss made a collection on the shore of Arch Creek (5462, NY, FLAS). He also collected it there at an unspecified earlier date (386, NY). John Kunkel Small and George K. Small collected it in the same area in 1913 (4598, FLAS, FSU, NY).

In 1906, Small and Joel J. Carter made a collection at Cutler (s.n., NY), probably at Addison Hammock where Small collected it again in 1916 (7483, NY). This station is now preserved as the Deering Estate at Cutler, but no recent records have been seen from that site. Bradley searched for plants at this station in 2000 without success. Frank C. Craighead and John Popenoe collected swampbush in 1964 at "Jennings Hammock," (s.n., FLAS, FTG, USF). This station was from the edge of what is R. Hardy Matheson Preserve (J. Popenoe, personal communication, 14 January 2002). This station also was observed in 1966 by George N. Avery (Avery's Notes, 21 September 1966), and collected there by Avery in 1967 (s.n., FLAS). It was collected in the R. Hardy Matheson Preserve in 1964 by Robert W. Read (1101, FTG). Bradley also vouchered it there in 1998 (1411, FTG).

Swampbush was found in the Black Point area of Miami-Dade County in 1976 by David and Sally Black (Avery's Notes, 2 December 1976). Don Keller later located this station, which Bradley vouchered within Black Point Park and Marina in 1999 (1981, FTG). Roessler (1995) reported swampbush for Chapman Field Park, which is located between R. Hardy Matheson Park and Black Point Park. This occurrence is assumed to be extant, but needs to be vouchered. In 2001, the authors discovered swampbush in a mangrove swamp on the mainland portion of Biscayne National Park near Black Point Park. This station needs to be vouchered. It appears that historically there was a single population from Snapper Creek Hammock south to at least the Black Point area. Although these stations are now somewhat fragmented, we treat them here as a single occurrence.

Joseph H. Simpson first collected swampbush in Monroe County in 1891 on Lostmans Key (171, NY, US), now within the western coast of Everglades National Park. In 1936, John H. Davis, Jr. collected it on the Broad River (s.n., FLAS), which is located about eight miles southeast of Lostmans Key. In 1966, Craighead collected it along the Rogers River (s.n., FTG), which is located between Lostmans Key and the Broad River. Roger L. Hammer observed the Rogers River occurrence in 1999 (personal communication, 13 June 2001). George N. Avery and John Popenoe made an additional collection on the Turner River in southern Collier County in 1972 (1133, FLAS, FTG). There is probably one population extending from the Turner River area in the north south to at least the Broad River.

Major Threats: Exotic pest plant invasions.

Comments: *There could be a substantial number of plants in Everglades National Park, and swampbush could be down ranked to imperiled in South Florida in the future.*

Preliminary recommendations:

- Voucher plants at Biscayne National Park and Chapman Field Park.
- Map and monitor known stations on a regular basis.
- Assess appropriateness and study feasibility of reintroducing swampbush to other sites within historical range, including the Deering Estate at Cutler.

- Review for listing by FNAI.

***Peperomia humilis* A. Dietr.**
Low Peperomia

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Everglades National Park; Fakahatchee Strand Preserve State Park; Jonathan Dickinson State Park).

Taxonomy: Dicotyledon; Piperaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to peninsular Florida, the West Indies, Central America, and South America. Wunderlin (1998) reports as rare in the peninsula.

South Florida Distribution: Collier, Martin, and Miami-Dade counties, and the Monroe County mainland.

South Florida Habitats: Coastal berms, strand swamps, and mesic hammocks.

Protection Status: Listed as endangered by FDACS and as imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Flora of North America Editorial Committee, 1997; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *P. leptostachya* Hook. & Arn., misapplied; *Micropiper humile* (A. Dietr.) Small; *Micropiper leptostachyon* (Nutt.) Small.

Historical Context in South Florida: Alvah A. Eaton first collected low peperomia in 1905 at Flamingo on the Monroe County mainland (s.n., NY), in what is now Everglades National Park. John Kunkel Small and John B. DeWinkeler made the next collection in 1922 in the same region near West Lake in Miami-Dade County (s.n., NY). Other collections from the Flamingo area include those by Small and others in 1921 (10331, NY), by J.M. Crevasse in 1941 (s.n., FLAS), by Frank C. Craighead in 1954 (s.n., Everglades National Park herbarium), and by Rick and Jean Seavey in 1987 (961, Everglades National Park Herbarium). Craighead also translocated some plants of unknown origin to Everglades National Park (Botanical Notes of F.C. Craighead), presumably to the Flamingo area. Roger L. Hammer observed

and photographed several large populations in Coot Bay Hammock in 2000 (personal communication, 13 June 2001).

William G. Atwater made a collection in Collier County in 1959 in the Fakahatchee Strand (M-155, FLAS), in what is now Fakahatchee Strand Preserve State Park. Bradley observed this station in 1995. In 1977, John Popenoe collected plants in Martin County along the Loxahatchee River in Jonathan Dickinson State Park (1039, FLAS), where it is assumed to be extant.

Major Threats: Exotic pest plant invasions; poaching; sea-level rise.

Comments: *Boufford (in Flora of North America Editorial Committee, 1997) inexplicably listed this as naturalized in Florida.*

Preliminary recommendations:

- Survey West Lake area in Everglades National Park.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

***Phanopyrum gymnocarpon* (Elliott) Nash
Savannah Panicum**

South Florida Status: Critically imperiled. Two occurrences in one conservation area (Fakahatchee Strand Preserve State Park) and one non-conservation area (Big Cypress Seminole Indian Reservation).

Taxonomy: Monocotyledon; Poaceae.

Habit: Annual terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Hendry, and Lee counties.

South Florida Habitats: Strand swamps.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration; Godfrey & Wooten (1979) has an illustration.

References: Chapman, 1883; Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Panicum gymnocarpon* Elliott.

Historical Context in South Florida: Frank C. Craighead first collected Savannah panicum in 1963 in the Fakahatchee Strand (s.n., USF), in what is now Fakahatchee Strand Preserve State Park. It also was observed in the Fakahatchee Strand on two occasions by George N. Avery, once in 1968 and once in 1972 (Avery's Notes, 17 November 1968, 26 March 1972). He reported it "growing thickly in and around ponds." Austin et al. (1990) also reported it for the Fakahatchee, and it is presumably extant there.

Susan Dubois made a collection in Lee County in 1978 north of the Caloosahatchee River and east of Cypress Creek (78-12-41, USF). This is in the vicinity of Caloosahatchee Regional Park. Nigel Morris collected Savannah panicum in 1989 on the Big Cypress Seminole Reservation in Hendry County (A-1, FLAS). He states that it was abundant there. This station is assumed to be extant. It was reported for Dupuis Reserve (Woodbury, no date), but this report needs to be verified.

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It flowers spring through fall, when surveys should be conducted.*

Preliminary recommendations:

- Survey Caloosahatchee Regional Park and Dupuis Reserve.
- Map and monitor known stations on a regular basis.

***Phoradendron leucarpum* (Raf.)**

Reveal & M.C. Johnst.

Oak Mistletoe

South Florida Status: Critically imperiled. Three occurrences in four conservation areas (Big Cypress National Preserve; Corkscrew Swamp Sanctuary & Corkscrew Regional Ecosystem Watershed; Six Mile Cypress Slough Preserve).

Taxonomy: Dicotyledon; Viscaceae.

Habit: Perennial parasitic herb.

Distribution: Native to North America, including Mexico. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, and Hendry counties.

South Florida Habitats: Cypress swamps.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Nelson (1996) has an illustration; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Bell & Taylor, 1982; Nelson, 1996; Wunderlin, 1998.

Synonyms: *P. eatonii* Trel.; *P. flavescens* (Pursh) Nutt., misapplied; *P. macrotomum* Trel.; *P. serotinum* (Raf.) M.C. Johnst.; *P. serotinum* var. *macrotomum* (Trel.) M.C. Johnst.

Historical Context in South Florida: Alvah A. Eaton first collected oak mistletoe in 1905 at "Deep Lake" (1310, NY, MO). This station may refer to Big Cypress National Preserve or, more likely, the Fakahatchee Strand. George N. Avery and others observed oak mistletoe in the Fakahatchee Strand in 1965 (Avery's Notes, 6 June 1965), in what is now Fakahatchee Strand Preserve State Park. Only one plant was found, so this occurrence is treated as historical.

Oak mistletoe also has been collected in the northeastern corner of Big Cypress National Preserve. William Rabenau discovered plants in the Rabenau Camp area, and showed these plants to Chuck McCartney in 1979. Bradley vouchered this station in 1998 (1636, FTG). An additional collection is known from a privately owned site in Collier County. Daniel B. Ward and others collected it about 10 miles southeast of Immokalee in 1965 (5270, USF). Oak mistletoe has been reported for Corkscrew Swamp Sanctuary (Judd, 1994) and Corkscrew Regional Ecosystem Watershed (Hilsenbeck, 1997), both of which are located in the vicinity of Immokalee. These occurrences are assumed to be extant, but need to be vouchered.

In 1916, Paul C. Standley made the first collection outside of Collier County in the Fort Myers area (12631, US). G.M. Lummis also collected oak mistletoe in Fort Myers in 1921 (s.n., US). In 1997, Bradley and Woodmansee vouchered plants at the Six Mile Cypress Slough Preserve near Fort Myers (168, FTG). The authors observed a few hundred plants in the strand swamp. Oak mistletoe also was collected in Hendry County by Richard P.

Wunderlin and others in 1980, about 15.5 miles east of Immokalee (8855, USF).

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. The specimen collected by Eaton at Deep Lake was described as a new species by Trelease, P. eatonii.*

Preliminary recommendations:

- Voucher plants at Corkscrew Swamp Sanctuary and Corkscrew Regional Ecosystem Watershed.
- Survey Ward and Wunderlin stations in Collier and Hendry counties, and Fakahatchee Strand Preserve State Park.
- Map and monitor known stations on a regular basis.

***Picramnia pentandra* Sw.
Bitterbush**

South Florida Status: Critically imperiled. Five occurrences in five conservation areas and adjacent non-conservation areas (Alice Wainwright Park; Sewell Park; Simpson Park; The Barnacle State Historic Site; Vizcaya Museum and Gardens).

Taxonomy: Dicotyledon; Simaroubaceae.

Habit: Shrub or small tree.

Distribution: Native to South Florida, the West Indies, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Little, 1978; Tomlinson, 1980; Correll & Correll, 1982; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected bitterbush in 1877 in Miami (s.n., NY), presumably in Brickell Hammock. Allan H. Curtiss made another collection on an unspecified date in the 1880s. This collection also probably was from Brickell Hammock (441, NY). Many botanists have collected specimens from Brickell Hammock since that time. It is extant in several fragments of Brickell Hammock, including Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens, as well as at Sewell Park to the west of Brickell Hammock. It is often a common understory shrub at these sites and is commonly found on adjacent private properties.

The natural range of this species in southern Florida has been obscured by its use in landscaping and its habit of spreading from areas where it has been planted. Its natural range is known, with certainty, to end two to three miles to the south of the southern limits of Brickell Hammock in the Coconut Grove area, where it is present at The Barnacle State Historic Park, a site that needs to be vouchered. It was vouchered in Coconut Grove at the Kampong by Richard A. Howard in 1968 (17076, GH) and William T. Gillis in 1969 (8084, FTG).

A number of specimens of this species from farther south and west in Miami-Dade County represent locations where bitterbush has been planted and escaped: Camp Owaissa Bauer (Thomas 4919, NY), the Deering Estate at Cutler (Correll et al. 47064, FTG, NY), Fairchild Tropical Garden (Thomas 4914, NY), Florida International University (Mahr 7, FTG), the Homestead area (Craighead s.n., FTG; Lakela 54800, USF), and USDA Tropical Research and Education Center (Bradley 643, FTG). It also has been reported for Everglades National Park (Reimus, 1999), where it has escaped from cultivation.

Major threats: Exotic pest plant invasions.

Comments: *This species has been reported for the Florida Keys by Small (1913), Sargent (1922), and Long & Lakela (1976). We have been unable to find specimens to substantiate these reports.*

Preliminary recommendations:

- Voucher plants at The Barnacle State Historic Park.
- Map and monitor known stations on a regular basis.

***Pilosocereus robinii* (Lem.) Byles & G.D. Rowley**
Keys Tree Cactus

South Florida Status: Critically imperiled. Four occurrences in two conservation areas and three non-conservation areas (Long Key State Park & privately owned Layton Hammock; National Key Deer Refuge; privately-owned Teatable Hammock; privately-owned hammock on Lower Matecumbe Key).

Taxonomy: Dicotyledon; Cactaceae.

Habit: Tree.

Distribution: Native to South Florida and Cuba.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by the USFWS, as endangered by FDACS, and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Britton & Rose, 1937; Long & Lakela, 1976; Little, 1978; Avery & Loope, 1980a; Benson, 1982; Scurlock, 1987; Adams & Lima, 1994a; Adams & Lima, 1994b; Wunderlin, 1998; Chafin, 2000; Coile, 2000; USFWS, 2000.

Synonyms: *P. robinii* var. *deeringii* (Small) Kartesz & Gandhi; *Cephalocereus deeringii* Small; *Cephalocereus keyensis* Britton & Rose; *Cephalocereus robinii* (Lem.) Britt. & Rose; *Cereus robinii* (Lem.) L.D. Benson; *Cereus robinii* (Lem.) L.D. Benson var. *keyensis* L.D. Benson, *nom. nud.*; *Cereus robinii* (Lem.) L.D. Benson var. *deeringii* (Small) L.D. Benson; *Cereus monoclonus* D.C., misapplied.

Historical Context in South Florida: Reverend Alva Bennett first collected Keys tree cactus in 1834 or 1835 on the island of Key West (s.n., NY). A collection was made by Allan H. Curtiss in 1885 without locality data (s.n., NY), but this also may have been from Key West (Adams and Lima, 1994). It was collected also on Key West by John Kunkel Small in 1913 (4880, NY) and in 1917 (s.n., NY). By this time, the hammocks where it grew nearly were destroyed. In 1915, Small found only two plants on the island

(Small, 1916a). It was probably extirpated there a very short time thereafter.

Albert S. Hitchcock found Keys tree cactus next in 1906 at Windley Key, then called "Umbrella Key" (Benson, 1982). This station was vouchered by John Kunkel Small in 1916 (s.n., NY) and in 1917 (Benson, 1982). Keys tree cactus is no longer present on the island, and may have been destroyed by the construction of stone quarries.

In 1916, Small also collected Keys tree cactus on Lower Matecumbe Key (7790, NY). A small population of eight plants was reported from a private site on Lower Matecumbe Key (Adams and Lima, 1994), which is assumed to be extant. This station is near the Klopp Tract, Lignumvitae Key Botanical State Park.

In 1919, Small and Britton collected Keys tree cactus on Upper Matecumbe Key (9321, NY). More recently, eleven plants were reported to occur in privately owned Teatable Hammock by Adams and Lima (1994). This occurrence was observed by Bradley in 1999.

In 1919, Small made a collection in Cactus Hammock on Big Pine Key, now part of the National Key Deer Refuge. This population is extant and is the largest population in existence today. Adams and Lima counted 565 plants at this station in 1994, and studied the life history of plants at that station. Fairchild Tropical Garden biologists Meghan Fellows and Jennifer Possley began mapping this population in 2001.

Three additional stations within one occurrence are known from Long Key. Two of these stations are in Long Key State Park, while a larger portion of the population is in privately owned North Layton Hammock. The Long Key occurrence was observed, at least by 1965, by Conrad Byrd (Avery's Notes, 19 March 1965). Adams and Lima (1994) reported a population of 40 plants on this island. Gann and Florida Park Service biologist Janice A. Duquesnel observed the Long Key State Park plants in 2000. Fewer than 10 plants were observed. All of the Long Key stations need to be vouchered.

Small (1917) also reported that plants were present on Boca Chica Key, but we have seen no specimens documenting this. There is no evidence that Small saw the plants himself.

Fairchild Tropical Garden maintains an ex situ collection of Florida germplasm of Keys tree cactus.

Major Threats: Habitat destruction; poaching; exotic pest plant invasions.

Comments: *In Cuba, this species may be known from only a single population (Adams & Lima, 1994a).*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Acquire North Layton Hammock, Teatable Hammock, privately owned hammock on Lower Matecumbe Key.
- Protect from poaching.
- Reintroduce to Windley Key at Windley Key Fossil Reef Geological State Park.
- Consider restoring rockland hammock on Key West and reintroducing Keys tree cactus.

***Pinguicula lutea* Walter
Yellow Butterwort**

South Florida Status: Four occurrences in five conservation areas (Bessemer; Corkscrew Regional Ecosystem Watershed & Corkscrew Swamp Sanctuary; Jonathan Dickinson State Park; Royal Palm Beach Pines Natural Area).

Taxonomy: Dicotyledon; Lentibulariaceae.

Habit: Perennial terrestrial forb.

Distribution: Native to the Coastal Plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Broward, Charlotte, Collier, Glades, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Tobe et al. (1998) has a color photo.

References: Chapman (1884); Small (1933a); Wood & Godfrey (1957); Casper (1966); Long & Lakela (1976); Godfrey & Wooten

(1981); Bell & Taylor (1982); Taylor (1992); Tobe et al. (1998); Wunderlin (1998).

Synonyms: None.

Historical Context in South Florida: Ethel Z. Bailey first collected yellow butterwort in 1931 west of Fort Lauderdale (s.n., BH). In 1939, Erdman West collected it in Charlotte County, just northeast of Murdock (s.n., FLAS), a station that would have been very close to the Sarasota County line. This area has been completely developed. Yellow butterwort was collected in the vicinity of Fort Myers by Jeanette P. Standley in 1916 (290, MO) and by William A. Murrill in 1941 (s.n., FLAS). It also was collected in Lee County at Coconut by Harold N. Moldenke in 1930 (698, MO). It is currently known from the Corkscrew Regional Ecosystem Watershed (Hilsenbeck, 1997), which is located in both Lee and Collier counties. It was collected in the vicinity of this site by Olga Lakela in 1965, near the town of Corkscrew off State Road 82 in 1965 (28118, USF). It also was collected in Collier County by Robert W. Long near Lake Trafford in 1967 (2380, USF). A specimen was collected by Daniel B. Ward and others west of Palmdale in Glades County (3-10, FLAS), near what is now the Fisheating Creek Wildlife Management Area.

Conrad Roth made first collection in Martin County in 1948 at Stuart (s.n., FTG). In 1969, William L. McCart vouchered it at Jonathan Dickinson State Park in Martin County (10540, FAU, FLAS). It was also vouchered there by Donovan S. Correll and John Popenoe in 1976 (480523, FTG). David and Sally Black collected it at a site west of Palm City in 1980 (830, FTG), but this site probably has been developed. It was also found at Bessemer, a Martin County preserve, by Woodmansee and Sandra Vardaman in 1999. A collection made by Walter M. Buswell in 1941 from "Indiantown to Jupiter" (s.n., FTG) may be from either Martin or Palm Beach counties. Yellow butterwort also has been reported for Dupuis Reserve (Woodbury, no date) and Royal Palm Beach Pines Natural Area (Farnsworth, 1995c; Black, 1996). The Royal Palm Beach Pines Natural Area station is assumed to be extant, but the Dupuis Reserve report needs to be verified.

Major Threats: fire suppression, exotic pest plant invasions.

Preliminary recommendations:

- Survey Dupuis Reserve and Fisheating Creek Wildlife Management Area.
- Voucher plants at Bessemer, Corkscrew Regional Ecosystem Watershed, and Royal Palm Beach Pines.
- Map and monitor known stations on a regular basis.

***Pisonia rotundata* Griseb.
Smooth Devilsclaws**

South Florida Status: Critically imperiled. Five occurrences in two conservation areas and adjoining private properties (Big Pine Key in National Key Deer Refuge and adjoining private properties; Cudjoe Key in National Key Deer Refuge; Sugarloaf Key in National Key Deer Refuge; No Name Key in National Key Deer Refuge and adjoining private properties; Middle Torch Hammocks Anderson, Lipchak, 3112 Parcels, Florida Key Wildlife and Environmental Area).

Taxonomy: Dicotyledon; Nyctaginaceae.

Habit: Shrub to small tree.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Pine rocklands and rockland hammock margins.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1994) has an illustration; Nelson (1996) has a color photo; Tobe et al. (1998) has illustrations and color photos; Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Little, 1978; Tomlinson, 1980; Correll & Correll, 1982; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: John Loomis Blodgett first collected smooth devilsclaws between 1838 and 1853 on Big Pine Key (s.n., NY). Since that time, numerous collections have been made on that island, where the largest population still exists within the National Key Deer Refuge. The authors have observed it

there as recently as 2001. In 1881, Allan H. Curtiss made a collection nearby on No Name Key (2338, NY, US). It was collected there by Joseph H. Simpson in 1891 (148, US), and in 1958 by W.L. Stern and K.L. Chambers (329, NY). It was reported by Weiner (1980) for three different hammocks on this island. Gann observed plants there in 2000 within the National Key Deer Refuge, although plants are assumed to be present on adjacent privately owned properties.

In 1963, George N. Avery observed plants on Ramrod Key, north of “Ramrod Shores” (Avery’s Notes, 24 March 1963). We are not familiar with this location. Smooth devilsclaws has been reported to occur on Sugarloaf Key by Weiner (1980) and Scurlock (1987). This occurrence is within the National Key Deer Refuge and is presumably extant. Weiner (1980) also reported occurrences in two hammocks on Cudjoe Key, presumably within the National Key Deer Refuge.

In addition, Weiner (1980) reported an occurrence on Middle Torch Key. In 2000, Bradley and Woodmansee observed this occurrence within Middle Torch Hammocks Anderson, Lipchak, 3112 Parcels, Florida Keys Wildlife and Environmental Area. Fewer than 100 plants were seen. This station needs to be vouchered.

A collection made by John Kunkel Small in 1912 on “Long Island” (3889, NY) is a bit puzzling. It may refer to Long Key, but no other reports are known from the middle or upper Keys. This may be a labeling error.

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions; sea-level rise.

Preliminary recommendations:

- Voucher plants at Middle Torch Hammocks.
- Survey Ramrod Key.
- Map and monitor known stations on a regular basis.
- Acquire privately owned lands on Big Pine Key and No Name Key with populations of smooth devilsclaws and add to National Key Deer Refuge.

***Pogonia ophioglossoides* (L.) Ker Gawl.
Rose Pogonia**

South Florida Status: Critically imperiled. Three occurrences in seven conservation areas (Danforth; Jonathan Dickinson State Park; Dupuis Reserve, J.W. Corbett Wildlife Management Area, Loxahatchee Slough Natural Area, Pal-Mar, & Pal-Mar Natural Area).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties south to the central peninsula.

South Florida Distribution: Lee, Martin, and Palm Beach counties.

South Florida Habitats: Wet flatwoods.

Protection Status: Listed as threatened by FDACS.

Identification: Luer (1972) has illustrations and color photos; Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Correll, 1950; Luer, 1972; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Harold N. Moldenke first collected rose pogonia in 1930 at Coconut, southwest of Estero in Lee County (966, NY), perhaps in what is now Estero Bay State Buffer Preserve.

In 1962, Olga Lakela made a single collection in pine flatwoods south of Salerno in eastern Martin County (24972, USF). In 2000, Woodmansee and Martin County biologist Sandra Vardaman vouchered rose pogonia nearby at Danforth (486, FTG), a Martin County conservation area. Fewer than 100 plants are thought to be present there. John Popenoe (1981) also reported it for Martin County in Jonathan Dickinson State Park. Florida Park Service biologist Richard E. Roberts observed it there in the late 1990s (personal communication, 5 January 2001). Chuck McCartney reports that he observes rose pogonia every spring when he visits

the park, and that plants are relatively numerous, especially around seasonal ponds (personal communication, 21 February 2001). It may also be present in flatwoods at other sites in Martin County, and more thorough searches should be conducted.

Rose pogonia also has been observed several times in northwestern Palm Beach County and southwestern Martin County. Steve Farnsworth reported it for the Pal-Mar Natural Area (Farnsworth, 1993a) and nearby at Loxahatchee Slough Natural Area (Farnsworth, 1994c). In 1998, Bradley vouchered plants at Pal-Mar (1629, FTG), which is contiguous with Pal-Mar Natural Area. Plants are assumed to be present at all three stations, although the Pal-Mar and Loxahatchee Slough Natural Area stations need to be vouchered. David Black also observed it at J.W. Corbett Wildlife Management Area in March 2001 (personal communication, 18 March 2001), but this station needs to be vouchered. It also has been reported at Dupuis Reserve in western Martin and Palm Beach counties (Woodbury, no date), but this station needs to be verified.

Major Threats: Drainage of wet flatwoods habitat; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. It flowers in the spring, when surveys should be conducted.*

Preliminary recommendations:

- Voucher plants at Dupuis Reserve, J.W. Corbett Wildlife Management Area, Loxahatchee Slough Natural Area, and Pal-Mar Natural Area.
- Survey Estero Bay State Buffer Preserve.
- Map and monitor known stations on a regular basis.

***Polygala polygama* Walter
Racemed Milkwort**

South Florida Status: Critically imperiled. One occurrence at Juno Dunes Natural Area & Jupiter Ridge Natural Area.

Taxonomy: Dicotyledon; Polygalaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern North America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Broward, Collier, Glades, Lee, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Mesic flatwoods.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; James, 1957b; Long & Lakela, 1976; Bell & Taylor, 1982; Taylor, 1992; Wunderlin, 1998.

Synonyms: *P. aboriginum* Small.

Historical Context in South Florida: Abram P. Garber first collected racemed milkwort in 1877 in Miami (s.n., FLAS, NY), presumably in sandy pine rocklands near the Miami River. Alvah A. Eaton also collected it near Miami in 1903 (646, NY). Nathaniel L. Britton made the only collection of this species in Broward County at Deerfield in 1904 (5, NY). In 1960, Daniel B. Ward and others made a collection in Glades County west of Palmdale (s.n., FLAS). Racemed milkwort also was reported from the Palmdale area (Christman, 1988) at a site called “Palmdale SE.” Both of these collections are in the vicinity of the newly acquired Fisheating Creek Wildlife Management Area.

In 1969, William L. McCart made a collection in Lee County at Koreshan State Historic Site (10635, FLAS). Only one plant was seen and it was collected. In 2000, Gann and Florida Park Service biologists R. “Bobby” Hattaway and Sally Braem conducted a brief survey for this species at Koreshan. No plants were seen, but this site needs additional survey work. In 1983, Chuck McCartney collected racemed milkwort in 1983 on private property within the boundaries of Big Cypress National Preserve (Avery 2550, FLAS).

Several un-vouchered stations have been observed or reported from Palm Beach County. It was reported for Frenchman’s Forest Natural Area (Farnsworth, 1996a) and Juno Dunes Natural Area (Farnsworth, 1997). In 1997, Bradley and Woodmansee observed plants at Juno Dunes Natural Area, and Gann and Bradley observed plants at Jupiter Ridge Natural Area. Extensive surveys

of Frenchman's Forest Natural Area by Gann and Bradley failed to locate any plants.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Juno Dune Natural Area and Jupiter Ridge Natural Area.
- Survey Fisheating Creek Wildlife Management Area, Koreshan State Historic Site, and the vicinity of the McCartney station in Big Cypress National Preserve. Continue surveys at Frenchman's Forest Natural Area.
- Map and monitor known stations on a regular basis.
- Consider restoring sandy pine rocklands near the Miami River and reintroducing racemed milkwort.

***Quercus inopina* Ashe
Scrub Oak**

South Florida Status: Critically imperiled. One occurrence in two conservation areas and adjacent private properties (Savannas Preserve State Park & Tilton).

Taxonomy: Dicotyledon; Fagaceae.

Habit: Tree.

Distribution: Endemic to peninsular Florida. Wunderlin (1998) reports it as occasional in Florida in the northern and central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Scrub.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has a color photo; Nelson (1996) has a color photo.

References: Nelson, 1994; Nelson, 1996; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Sally Black first collected scrub oak in 1988 at a private property north of Stuart in Martin

County (1145, FLAS, USF). Although this parcel was developed as the Pineapple Plantation, plants should still be present in a mitigation site (S. Black, personal communication, 2 March 2001). In 1996, scrub oak was found nearby at the Savannas Preserve State Park Hawk's Bluff Parcel in Martin County and vouchered there by Gann and Bradley (827, FTG). In 1999, Woodmansee vouchered plants at Tilton, a Martin County conservation area (383, FTG). Additional plants are probably present on other properties in northern Martin County.

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Survey Pineapple Plantation in northern Martin County.
- Map and monitor known stations on a regular basis.

***Quercus laevis* Walter
Turkey Oak**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Jonathan Dickinson State Park; Estero Bay State Buffer Preserve) and adjacent private properties.

Taxonomy: Dicotyledon; Fagaceae.

Habit: Tree.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Lee, and Martin counties.

Reported from, but not vouchered in, Palm Beach County.

South Florida Habitats: Sandhills.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Nelson (1994) has an illustration; Taylor (1998) has a color photo; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Bell & Taylor, 1982; Godfrey, 1988; Nelson, 1994; Flora of North America Editorial Committee, 1997; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Paul C. Standley first collected turkey oak in 1927 in Naples (52540, US). In 1982, John

Popenoe made a collection in the Pelican Bay area (2220, FTG), about six miles north of Naples. This station has probably been destroyed. James N. Burch observed plants in northwestern Collier County around 1990 at what is now the Audubon Country Club, but he is not sure if any plants remain at the site (personal communication, 6 August 2001). He recently observed plants about 1-2 kilometers north of this station along Bonita Beach Road in southwestern Lee County. Fewer than 10 trees remain in an area that will probably be developed soon. Vanasse & Daylor, LLP (2001) report turkey oak for Estero Bay State Buffer Preserve, where it is assumed to be extant.

In 1950, Carol H. Beck collected turkey oak at Jonathan Dickinson State Park in Martin County (s.n., FLAS). William L. McCart also vouchered this station in 1969 (10521, FAU, FLAS), as did John Popenoe in 1974 (292, FTG). The authors have observed plants there on several occasions. An additional station in Martin County was vouchered in 1975 by Jack McLaughlin at a Boy Scout camp in Tequesta (s.n., FAU). It is unknown if this station is extant. According to Sally Black, turkey oak is present on several private properties outside of Jonathan Dickinson State Park in Martin and Palm Beach counties (personal communication, February, 2001).

Major Threats: Habitat destruction; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. The low turkey oak sandhills at Jonathan Dickinson State Park also provide important habitat for the federally endangered tiny polygala (Polygala smallii).*

Preliminary recommendations:

- Voucher plants at plants along Bonita Beach Road and at Estero Bay State Buffer Preserve.
- Survey Audubon Country Club site, Bonita Beach Road site, Pelican Bay area, and Tequesta Boy Scout station.
- Map and monitor known stations on a regular basis.

***Rhynchosia swartzii* (Vail) Urb.
Swartz's Snoutbean**

South Florida Status: Critically imperiled. Three occurrences in six conservation areas (Biscayne National Park; Crocodile Lake National Wildlife Refuge, Dagny Johnson Key Largo Hammocks Botanical State Park, & John Pennekamp Coral Reef State Park; Key Largo Ansama Parcel, Florida Keys Wildlife and Environmental Area & Dove Creek Hammocks, Florida Keys Wildlife and Environmental Area).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Vine.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County and the Monroe County Keys.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Unlike other trifoliolate *Rhynchosia* in South Florida, *R. swartzii* has red seeds (Wunderlin, 1998).

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Grear, 1978; Correll & Correll, 1982; Isely, 1990; Wunderlin, 1998; Coile, 2000.

Synonyms: *R. caribaea* D.C., misapplied; *Dolicholus swartzii* Vail.

Historical Context in South Florida: Swartz's snoutbean was collected first on the island of Key West by either John Loomis Blodgett between 1838 and 1853 (s.n., NY) or by Ferdinand Rugel in 1846 (137, FLAS, NY). These remain the only known collections from the lower Florida Keys.

In 1906, John Kunkel Small and Joel J. Carter collected Swartz's snoutbean on Elliott Key in Miami-Dade County (2550, NY), which is now part of Biscayne National Park. It has been observed there by the authors as recently as 2001. Small and Charles A. Mosier also collected it in 1915 on Adams Key (5728, NY), also in Biscayne National Park, but surveys by Gann and Bradley in 2001 failed to locate any plants.

Swartz's snoutbean has been collected a few miles to the south on Key Largo by many botanists. The first to collect it were Small and Carter in 1909 (2958, NY), on the southern portion of the island. Bradley and Woodmansee observed it in Dove Creek Hammocks in the Florida Wildlife and Environmental Area on southern Key Largo in 2000. In 2001, Bradley and Woodmansee also observed one plant at the Key Largo Ansama Parcel, Florida Keys Wildlife and Environmental Area. Both of these stations need to be vouchered. All other reports are from the northern portions of Key Largo, from about two miles south of the junction of US 1 and State Road 905, to the northern tip of the island. It was collected first on northern Key Largo by E.F. Ford in 1961 (s.n., FLAS). It has been observed as recently as 2000 by Bradley and Woodmansee at Crocodile Lake National Wildlife Refuge, and by Gann and Florida Park Service biologist Janice A. Duquesnel at Dagny Johnson Key Largo Hammocks Botanical State Park and John Pennekamp Coral Reef State Park. The populations in these three sites are all considered as one occurrence. Bradley vouchered plants at Dagny Johnson Key Largo Hammocks Botanical State Park in 1995 (475, FTG), and Bradley and Woodmansee vouchered plants at Crocodile Lake National Wildlife Refuge in 2000 (1248, FTG). Plants at John Pennekamp Coral Reef State Park still need to be vouchered.

There is a single report from privately owned Teatable Hammock on Upper Matecumbe Key (Weiner, 1980 as amended).

Only one record is known from the mainland. George N. Avery found Swartz's snoutbean in 1976 in "Lower Loveland Hammock" in southern Miami-Dade County (1667, USF). According to his description of this location, it appears that this station is now called Grant Hammock, which is privately owned. The western half of this hammock has been mostly destroyed, but it appears that Avery found plants at the eastern edge of the hammock.

Major Threats: Exotic pest plant invasions; management error.

Comments: *This species often grows at the edges of hammocks, thus it is susceptible to trimming or herbicide treatment of forest edges.*

Preliminary recommendations:

- Voucher plants at Dove Creek Hammocks, John Pennekamp Coral Reef State Park, and Key Largo Ansama Parcel.
- Survey Grant Hammock. Continue surveys on Adams Key.
- Map and monitor known stations on a regular basis.
- Consider reintroduction to Key West at Little Hamaca Park, and to other locations within its historical range.

***Rhynchospora breviseta* (Gale) Channell
Shortbristle Beaksedge**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas and one adjacent non-conservation area (Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Jonathan Dickinson State Park; Pal-Mar & Pal-Mar CARL Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain and the West Indies. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the central peninsula.

South Florida Distribution: Charlotte, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Gale, 1944; Godfrey & Wooten, 1979; Wunderlin, 1998.

Synonyms: *R. oligantha* A. Gray var. *breviseta* Gale.

Historical Context in South Florida: O.E. Frye first collected shortbristle beaksedge in 1946 at an unspecified locality in Charlotte County (s.n., FLAS). In 1996, Gann and Bradley collected it at Fred C. Babcock-Cecil M. Webb Wildlife Management Area (637, FTG).

David and Sally Black made a collection in 1983 at the Royal Palm Beach Acreage in Palm Beach County (1063, FTG). This site is thought to have been destroyed. In 1991, Steven L. Orzell and Edwin L. Bridges made a collection at the Pal-Mar CARL Site in Martin County (16814, FTG). In 1997, Gann and Bradley

collected it at the Pal-Mar conservation area in Palm Beach County (1047, FTG). Shortbristle beaksedge also has been reported for Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties adjacent to Pal-Mar and the Pal-Mar CARL Site, but this report needs to be verified. These three stations are considered to be the same occurrence.

Shortbristle beaksedge has been reported for Jonathan Dickinson State Park (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be present there, but this station needs to be vouchered.

Major Threats: Drainage of flatwoods habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Voucher plants at Jonathan Dickinson State Park.
- Survey Dupuis Reserve and Pal-Mar Natural Area.
- Map and monitor known stations on a regular basis.
- Acquire the unprotected portions of the Pal-Mar CARL Site.

***Rhynchospora harperi* Small
Harper's Beaksedge**

South Florida Status: Critically imperiled. Three occurrences in four conservation areas and one adjacent non-conservation area (Corkscrew Regional Ecosystem Watershed; Jonathan Dickinson State Park; J.W. Corbett Wildlife Management Area, Pal-Mar, & Pal-Mar CARL Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional from the western panhandle to the central peninsula.

South Florida Distribution: Charlotte, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Depression marshes, wet flatwoods, and cypress domes.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration.

References: Small, 1933a; Gale, 1944; Godfrey & Wooten, 1979; Kral, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Robert Kral first collected Harper's beaksedge in 1973 on the south side of Stuart in Martin County (51780, VDB). In 1994, Kral made another collection on a private property west of Port Salerno (83706, NY).

In 1991, Steven L. Orzell and Edwin L. Bridges collected Harper's beaksedge in Martin County at the Pal-Mar CARL Site (16822, USF). In 1997, Bradley and Woodmansee collected it nearby in Palm Beach County at Pal-Mar (695, FTG), a conservation area managed by the South Florida Water Management District. In 1991, Orzell and Bridges also collected it nearby at the J.W. Corbett Wildlife Management Area in Palm Beach County (16856, USF). All of these sites are considered to be the same occurrence. In 1997, Bradley and Woodmansee collected Harper's beaksedge in Palm Beach County along the Loxahatchee River in Jonathan Dickinson State Park (742, FTG).

In 1991, Bridges and Orzell also made a collection in Charlotte County at a property owned by the Harper Brothers (18142, FTG). Loran Anderson (1997) observed Harper's beaksedge at the Flint Pen Strand in Lee County, now part of the Corkscrew Regional Ecosystem Watershed, which is located in both Lee and Collier counties. This station needs to be vouchered.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Corkscrew Regional Ecosystem Watershed.
- Survey Harper Brothers property and Pal-Mar Natural Area.
- Map and monitor known stations on a regular basis.
- Acquire unprotected portions of the Pal-Mar CARL Site.

***Rhynchospora rariflora* (Michx.) Elliott**
Fewflower Beaksedge

South Florida Status: Critically imperiled. Two occurrences in four conservation areas and one adjacent non-conservation area (Jonathan Dickinson State Park & Riverbend Park; Loxahatchee Slough Natural Area, Pal-Mar & Pal-Mar CARL Site).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States, the West Indies, and Central America. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Glades, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Mesic and wet flatwoods.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has an illustration.

References: Chapman, 1883; Small, 1933a; Gale, 1944; Long & Lakela, 1976; Godfrey & Wooten, 1979; Tobe et al., 1998; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: O.E. Frye first collected fewflower beaksedge in 1946 at an unspecified locality in Charlotte County (s.n., FLAS). In 1958, Robert Kral collected it six miles north of Fort Myers in Lee County (7582, USF), presumably in what is now North Fort Myers. In 1965, Olga Lakela made a collection north of Immokalee in Collier County (29202, USF). Leland M. Baltzell collected it in 1975 in Glades County northwest of Palmdale (7323, FLAS), in the vicinity of what is now the Fisheating Creek Wildlife Management Area.

In 1991, fewflower beaksedge was collected by Steven L. Orzell and Edwin L. Bridges at Pal-Mar CARL Site in Martin County (16847, FTG). In 1997, Bradley and Woodmansee collected it nearby in Palm Beach County at Pal-Mar (223, FTG), a conservation area managed by South Florida Water Management District. It also has been reported for Dupuis Reserve (Woodbury, no date), and Loxahatchee Slough Natural Area (Farnsworth, 1994c), both of which are in the vicinity of the Pal-Mar CARL Site

and Pal-Mar. Fewflower beaksedge is assumed to be extant at Loxahatchee Slough Natural Area, but needs to be vouchered. The Dupuis Reserve record needs to be verified. All four of these sites are considered to be the same occurrence.

In 1997, Bradley and Woodmansee also collected it along the Loxahatchee River at Riverbend Park, which is managed by Palm Beach County (606, FTG). It also has been reported at Jonathan Dickinson State Park (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be present there, and to be part of the same occurrence as that at Riverbend Park.

Major Threats: Drainage of flatwoods habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Voucher plants at Jonathan Dickinson State Park and Loxahatchee Slough Natural Area.
- Survey Dupuis Reserve, Fisheating Creek Wildlife Management Area, and Pal-Mar Natural Area.
- Map and monitor known stations on a regular basis.
- Acquire unprotected portions of Pal-Mar CARL Site.

***Rhynchospora wrightiana* Boeck.
Wright's Beaksedge**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Jonathan Dickinson State Park; Pal-Mar).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain, Cuba, and Puerto Rico. Wunderlin (1998) reports it as occasional in Florida from the northern counties to the central peninsula.

South Florida Distribution: Martin and Palm Beach counties.

South Florida Habitats: Depression marshes and flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Small, 1933a; Gale, 1944; Godfrey & Wooten, 1979; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *R. brachychaeta* C. Wright.

Historical Context in South Florida: Loran C. Anderson first collected Wright's beaksedge in 1997 at Jonathan Dickinson State Park in Martin County (17550, FSU), although Popenoe (1981) had reported it there earlier. Also in 1997, Gann and Bradley collected it at Pal-Mar in Palm Beach County (1031, FTG). It is presumably present in other conservation areas in Martin and Palm Beach County.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Survey appropriate habitat in Martin and Palm Beach counties.

***Rubus cuneifolius* Pursh
Sand Blackberry**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Caloosahatchee Regional Park; Fred C. Babcock-Cecil M. Webb Wildlife Management Area).

Taxonomy: Dicotyledon; Rosaceae.

Habit: Shrub.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Broward, Charlotte, Glades, Lee, and Palm Beach counties.

South Florida Habitats: Flatwoods and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Nelson (1996) has an illustration; Taylor (1998) has a color photo.

References: Bailey, 1932; Small, 1933a; Godfrey & Wooten, 1981; Nelson, 1996; Wunderlin, 1998.

Synonyms: *R. inferior* L.H. Bailey; *R. probabilis* L.H. Bailey.

Historical Context in South Florida: James B. McFarlin first collected sand blackberry in 1975 in Palmdale in Glades County (7274, FLAS). In 1975, Leland M. Baltzell collected it northwest of

Palmdale (7274, FLAS). Both of these stations are in the vicinity of what is now the Fisheating Creek Wildlife Management Area.

In 1981, John Popenoe collected sand blackberry west of Jupiter in Palm Beach County (1961, USF). It has been reported from other stations in Palm Beach County since then, including Loxahatchee Slough Natural Area (Farnsworth, 1994c), and Frenchman's Forest Natural Area (Farnsworth, 1996a). Gann and Bradley surveyed Frenchman's Forest in 1996, but did not observe any plants. Both of these occurrences need to be verified.

Ted Hendrickson and Ann Buckley collected sand blackberry in 1987 in Davie in Broward County (567, NY). This collection was made in a citrus grove. It is unclear whether or not the species' historical range extended into Broward County, or if this was an introduced population.

In 1996, Gann and Bradley observed sand blackberry at Fred C. Babcock-Cecil M. Webb Wildlife Management Area in Charlotte County, but this station needs to be vouchered. Gann and Lee County biologists Roger Clark and Rob Irving also observed sand blackberry in 2001 at the Caloosahatchee Regional Park in Lee County. This station also needs to be vouchered.

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Caloosahatchee Regional Park and Fred C. Babcock-Cecil M. Webb Wildlife Management Area.
- Survey Fisheating Creek Wildlife Management Area, Frenchman's Forest Natural Area, and Loxahatchee Slough Natural Area.
- Map and monitor known stations on a regular basis.

***Sageretia minutiflora* (Michx.) C. Mohr
Smallflower Mock Buckthorn**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas (Big Cypress National Preserve; Collier-

Seminole State Park; Corkscrew Swamp Sanctuary; Fakahatchee Strand Preserve State Park).

Taxonomy: Dicotyledon; Rhamnaceae.

Habit: Shrub or small tree.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier, Glades, and Hendry counties.

South Florida Habitats: Mesic hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (1996) has an illustration.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Nelson, 1996; Wunderlin, 1998.

Synonyms: *S. michauxii* Brongn.

Historical Context in South Florida: John Kunkel Small and John B. DeWinkeler first collected smallflower mock buckthorn in 1921 in a hammock in the Devil's Garden area of Hendry County (s.n., NY). It also was collected in this area in 1958 by William G. Atwater (M-75, FLAS), and in 1970 by George N. Avery at a property now called Camp Everglades Ranch (770, FLAS).

In 1921, Small collected smallflower mock buckthorn in Collier County in "prairies between Everglade and Deep Lake" (s.n., NY). This station was probably within what is now Fakahatchee Strand Preserve State Park, where it was recorded by Austin et al. (1990). It also was collected at "Deep Lake" in 1936 by Walter M. Buswell (s.n., FTG) and in 1949 by R. Bruce Ledin (s.n., FTG). Both of these stations are probably from the Fakahatchee Strand. It was reported for Collier-Seminole State Park (Beck, 1965; Florida Park Service District 4, 1994b), and has been observed there by Florida Park Service biologist R. "Bobby" Hattaway (personal communication, 12 January 2001). Hattaway estimates that there are fewer than 100 plants present in the park. This station needs to be vouchered. Smallflower mock buckthorn was collected within Big Cypress National Preserve in the Bear Island area at East Hinson Marsh in 1980 by David and Sally Black (1010, FTG), although Black & Black (1980) did not report small mock buckthorn for Big Cypress National Preserve. In 1970, Frank C. Craighead also made a collection at "Corkscrew" (s.n., FTG), presumably from Corkscrew Swamp Sanctuary, where it

was reported by Judd (1994). It is assumed to be extant there, but this station needs to be vouchered.

In 1945, Leonard J. Brass made a collection of smallflower mock buckthorn at Ortona in Glades County (15467, US).

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Collier-Seminole State Park, Corkscrew Swamp Sanctuary, and Fakahatchee Strand Preserve State Park.
- Survey Devil's Garden area of Hendry County, including Camp Everglades Ranch.
- Map and monitor known stations on a regular basis.

***Sagittaria isoetiformis* J.G. Sm.
Quillwort Arrowhead**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Jonathan Dickinson State Park; Kiplinger).

Taxonomy: Monocotyledon; Alismataceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Collier, Glades, Lee, and Martin counties.

South Florida Habitats: Depression marshes, ponds, cypress swamps, and wet disturbed sites.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1979) has an illustration.

References: Small, 1933a; Wooten, 1973; Long & Lakela, 1976; Godfrey & Wooten, 1979; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: None.

Historical Context in South Florida: Daniel B. Ward and others first collected quillwort arrowhead in 1960 near Palmdale in Glades County (1-13, FLAS), in the vicinity of what is now the Fisheating Creek Wildlife Management Area. In 1968, Olga Lakela made several collections in and north of Immokalee in Collier County (31331, USF; 31347, USF; 31651, USF). In 1973, William C. Brumbach made a collection in a wet roadside ditch on Sanibel Island in Lee County (8469, NY, US). Quillwort arrowhead is extant in Martin County at two locations: in 1988, Roy O. Woodbury collected it at Jonathan Dickinson State Park (s.n., FTG), and in 1999, Woodmansee made a collection at Kiplinger (299, FTG), a park managed by Martin County.

Major Threats: Drainage of wetland habitats; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Survey Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

***Salvia lyrata* L.
Lyreleaf Sage**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Corkscrew Regional Ecosystem Watershed; Fred C. Babcock-Cecil M. Webb Wildlife Management Area).

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern United States. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Lee, and Martin, counties.

South Florida Habitats: Mesic hammocks, flatwoods, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Bell & Taylor, 1982; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Albert S. Hitchcock first collected lyreleaf sage in 1900 in Fort Myers (276, NY). Additional collections from the Fort Myers area were made by Alvah A. Eaton in 1905 (1423, NY), by John P. Standley in 1916 (144, NY), and by Harold N. Moldenke in 1930 (916, NY). Elliott Brown made the last known collection in Lee County in 1985 along Pine Island Road in North Fort Myers (s.n., USF).

In 1964, Olga Lakela collected lyreleaf sage south of Punta Gorda in Charlotte County (27112, USF), as did Ruben P. Sauleda in 1980 (3398, USF). In 1996, Gann and Bradley collected it in a mesic hammock at the Fred C. Babcock-Cecil M. Webb Wildlife Management Area (661, FTG).

In 1968, Robert W. Long and others collected lyreleaf sage east of Lake Trafford (2745, USF), in the Immokalee area of Collier County. In 2000, Woodmansee observed it in the same area at the Corkscrew Regional Ecosystem Watershed, but this station needs to be vouchered.

In 1978, Clifton E. Nauman and Bruce E. Tatje made a collection near Barley Barber Swamp in northwestern Martin County (280, FAU). G. Donald Gann and Joyce W. Gann also collected it in Martin County in 1982 on Hutchinson Island (s.n., FTG). Both of the Martin County stations need to be surveyed.

Major Threats: Exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Corkscrew Regional Ecosystem Watershed.
- Survey Barley Barber Swamp and Hutchinson Island.
- Map and monitor known stations on a regular basis.

***Salvia riparia* Kunth**
Southern River Sage

South Florida Status: Critically imperiled. One occurrence at Koreshan State Historic Site & Mound Key Archaeological State Park.

Taxonomy: Dicotyledon; Lamiaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to peninsular Florida, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) reports it as frequent in peninsular Florida.

South Florida Distribution: Broward, Glades, Lee, and Miami-Dade counties and the Monroe County mainland. It is probably introduced in Miami-Dade County.

South Florida Habitats: Shell mounds, mesic hammocks, and disturbed sites.

Protection Status: Not listed by any agency.

Identification: There are ten species of *Salvia* in Florida. Wunderlin (1998) has a key.

References: Chapman, 1883; Small, 1933a; Wunderlin, 1998.

Synonyms: *S. privoides* Benth.; *S. privoides* var. *garberi* (Chapm.) Chapm.

Historical Context in South Florida: William G. D’Arcy first collected southern river sage in 1967 in a “hammock on Indian Mounds” eight miles southwest of Lakeport in Glades County (1433, FLAS). In 1968, George N. Avery (530, FTG, USF) and William T. Gillis (7177, FTG) made collections in northwestern Miami-Dade County near Milton E. Thompson Park. This station probably represents an introduced waif population.

In 1964, Frank C. Craighead collected southern river sage at Estero in Lee County (s.n., FTG). In 1973, Susan Todd collected it nearby on Mound Key in Mound Key Archaeological State Park (725, USF). Gann and Florida Park Service biologists R. “Bobby” Hattaway and Sally Braem observed these plants in 2001. Hattaway discovered additional plants on the same day at Koreshan State Historic Site, but this station needs to be vouchered. Elliott Brown also made a collection in North Fort Myers in 1986 (s.n., USF).

Avery collected southern river sage in Broward County in 1976 at Cypress Creek Hammock (1693, USF), in what is now Fern Forest Nature Center. Donovan S. Correll and others also collected it there in 1977 (48487, NY), but this station needs to be surveyed. It also has been reported at several additional stations in Broward County, including Long Key/Flamingo Road Natural Area (Broward County Parks & University of Florida, 1998e), Pine Island Ridge Natural Area (Broward County Parks & University of Florida, 1998g), and Tall Cypress Natural Area (Broward County Parks & University of Florida, 1998l). All of these reports need to be verified.

In 1978, Avery made an additional collection with Lloyd L. Loope at Northwest Cape Sable in Everglades National Park (1835, FLAS). This collection is the basis for the misidentified *Salvia setosa* record for Everglades National Park (e.g., Avery & Loope, 1980b). This station needs to be surveyed.

Southern river sage also has been reported for Dupuis Reserve (Woodbury, no date), which is located in Palm Beach and Martin counties, but this record needs to be verified.

Major Threats: Exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Koreshan State Historic Site.
- Survey Dupuis Reserve, Northwest Cape Sable area of Everglades National Park, Fern Forest Nature Center, Long Key/Flamingo Road Natural Area, Pine Island Ridge Natural Area, and Tall Cypress Natural Area.
- Map and monitor known stations on a regular basis.

***Scirpus robustus* Pursh**
Saltmarsh Bulrush

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Collier-Seminole State Park; Everglades National Park) and one non-conservation area (ditch in Charlotte Harbor).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Widely distributed in North America and tropical America. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the peninsula.

South Florida Distribution: Charlotte, Collier, Lee, and Palm Beach counties and the Monroe County mainland.

South Florida Habitats: Salt marshes and river banks.

Protection Status: Not listed by any agency.

Identification: There are 14 species of *Scirpus* in Florida. Wunderlin (1998) has a key. The IRC Website has a color photo

References: Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Correll & Correll, 1982; Wunderlin, 1998.

Synonyms: *S. maritimus* L. var. *macrostachyus* Michx.

Historical Context in South Florida: Saltmarsh bulrush was collected first in 1940 at Cape Sable in Everglades National Park by "Rude & Gist" (s.n., FLAS). John H. Davis, Jr. also collected it at Cape Sable in 1942 (s.n., FLAS). It is still reported to be present in the park (Reimus, 1996), and is assumed to be extant.

In 1954, Ellsworth P. Killip collected saltmarsh bulrush on Sanibel Island in Lee County (44255, US). W.C. Brumbach also collected it on Sanibel in 1972 (809, US). Allen G. Shuey made an additional collection from Lee County in 1981 along the Caloosahatchee River southwest of Fort Myers (2492, USF). In 1964, R.F. Christensen collected saltmarsh bulrush along the southwest branch of the Loxahatchee River in Palm Beach County (RC-46c, FSU). This station may now be part of the Loxahatchee River-Lake Worth Creek Aquatic Preserve, which should be surveyed. In 1967, Olga Lakela collected saltmarsh bulrush in Collier County along US 29 at the "Illinois Motel" (30760, USF). The location of this station is unknown. Florida Park Service biologist R. "Bobby" Hattaway has observed it at Collier-Seminole State Park (personal communication, 12 January 2001), but this station needs to be vouchered. Several hundred plants are present. Saltmarsh bulrush has also been reported for Estero Bay State Buffer Preserve (Vanasse & Daylor, LLP, 2001), but this report needs to be verified.

In 1969, Allen G. Burdett, Jr. made a collection in Charlotte Harbor in Charlotte County (s.n., USF). Gann and Tiffany Troxler Gann observed it at this same station in 2000. Fewer than 10 plants

were observed in a ditch in an abandoned lot along the Peace River.

Major Threats: Hydrological modifications; fire suppression; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Collier-Seminole State Park.
- Survey Estero Bay State Buffer Preserve and Loxahatchee River-Lake Worth Creek Aquatic Preserve.
- Map and monitor known stations on a regular basis.

***Scleria ciliata* Michx.**

var. *curtissii* (Britton ex Small) J.W. Kessler

Curtiss' Nutrush

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Goulds Pineland; Larry and Penny Thompson Park; J.W. Corbett Wildlife Management Area) and one non-conservation (Natural Forest Community P-305).

Taxonomy: Monocotyledon; Cyperaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain and Cuba. Wunderlin (1998) reports it as rare in Florida in Collier, Duval, Miami-Dade, and Palm Beach counties.

South Florida Distribution: Collier, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Pine rocklands, mesic flatwoods, and coastal strand.

Protection Status: Not listed by any agency.

Identification: Distinguished from other varieties of *S. ciliata* by having achene bodies that are reticulate instead of ridged or papillate (Wunderlin, 1998).

References: Small, 1933a; Core, 1936; Fairey, 1967; Fairey, 1969; Long & Lakela, 1976; Kessler, 1987; Wunderlin, 1998.

Synonyms: *S. curtissii* Britton ex Small; *S. pauciflora* Muhl. ex Willd. var. *curtissii* (Britton ex Small) Fairey.

Historical Context in South Florida: Abram P. Garber first collected Curtiss' nutrush in 1877 in Miami (1423, NY), presumably in pine rocklands near the Miami River. Allan H.

Curtiss made the next collection in 1895 at “Hunting Ground, Biscayne Bay” (5497, NY). This station was south of the Miami River. In 1903, Alvah A. Eaton made a collection in the vicinity of Black Point in southern Miami-Dade County (267, GH). John Kunkel Small made an additional collection in 1912 at Camp Longview (3706, FLAS, NY, US), which was located west of Florida City in southern Miami-Dade County. The only recent collections known from Miami-Dade were made by Bradley: in 1995 at Larry and Penny Thompson Park in the Richmond Pine Rocklands (80, FTG); in 1997 at Natural Forest Community P-305 (851, FTG), a private pineland in southern Miami-Dade County; and in 1998 at Goulds Pineland (1811a, FTG), a conservation area managed by Miami-Dade County.

In 1966, Olga Lakela made a collection on Marco Island in Collier County (29508, FTG), a station that she vouchered again with F. Almeda in 1968 (31558, FLAS). Nearly all of Marco Island has been developed and this taxon probably no longer occurs there. In 1991, Steven L. Orzell and Edwin L. Bridges collected Curtiss' nutrush at the J.W. Corbett Wildlife Management Area in Palm Beach County (16897, FTG), where it is presumably extant.

Major Threats: Fire suppression; exotic pest plant invasions; off-road vehicle use at J.W. Corbett Wildlife Management Area.

Comments: *The Duval County specimen was collected by Allan H. Curtiss in 1894. Curtiss' nutrush may be extirpated there. This taxon may be more common in South Florida than is known.*

Preliminary recommendations:

- Determine status in Cuba and Duval County.
- Survey pine rocklands in the Goulds area, including Andrew Dodge Memorial Pineland, Black Creek Forest, and Institute for Regional Conservation Preserve.
- Map and monitor known stations on a regular basis.
- Acquire Natural Forest Community P-305.
- Review for listing by FNAI.

***Sideroxylon reclinatum* Michx.**
subsp. ***austrifloridense*** (Whetstone) Kartesz & Gandhi
Everglades Bully

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Everglades National Park; Larry and Penny Thompson Park; Pineridge Sanctuary).

Taxonomy: Dicotyledon; Sapotaceae.

Habit: Shrub.

Distribution: Endemic to Miami-Dade County.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Distinguished from var. *reclinatum* by having the lower surface of the leaves persistently pubescent, instead of glabrous or only pubescent along the midvein (Wunderlin, 1998).

References: Whetstone, 1985; Wunderlin, 1998.

Synonyms: *Bumelia reclinata* (Michx.) Vent. var. *austrifloridensis* Whetstone.

Historical Context in South Florida: Nathaniel L. Britton first collected Everglades bully in 1904 at Camp Jackson (218, NY), which was located near the present day main entrance of Everglades National Park. It has been collected a number of times on Long Pine Key in Everglades National Park, the first time in 1904 by John Kunkel Small and Percy Wilson (1852, NY).

In 1915, Small and Charles Mosier collected a specimen in pinelands around Nixon-Lewis Hammock (6400, NY), a station just east of Everglades National Park. Although pinelands immediately adjacent to Nixon-Lewis Hammock have been destroyed, Everglades bully has been observed at two nearby stations in the immediate vicinity: privately owned Grant Hammock, where it was first observed by George N. Avery in 1967 (Avery's Notes, 5 January 1967), and Pine Ridge Sanctuary, where it was recorded by Terry and Barbara Glancy in 1991. Bradley and Loran C. Anderson observed plants at Pineridge Sanctuary in 2000, and Anderson collected a specimen. The Grant Hammock station needs to be surveyed.

In 2000, Bradley and Woodmansee observed plants at Larry and Penny Thompson Park in the Richmond Pine Rockland, but this occurrence needs to be vouchered.

Major Threats: Fire suppression; exotic pest plant invasions.

Comments: *This variety of S. reclinatum was not described until 1985 (Whetstone, 1985). This is one of the species that may be affected by the Everglades restoration.*

Preliminary recommendations:

- Voucher plants at Larry and Penny Thompson Park.
- Survey Grant Hammock.
- Map and monitor known stations on a regular basis.
- Conduct research to determine the effects of the Everglades restoration on Everglades bully.
- Review for listing by FNAI.

***Solanum chenopodioides* Lam.
Black Nightshade**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Cayo Costa State Park; Gasparilla Island State Park; Stump Pass Beach State Park).

Taxonomy: Dicotyledon; Solanaceae.

Habit: Perennial terrestrial herb.

Distribution: United States, the West Indies, Mexico, Central America, and South America. Wunderlin (1998) records it as common nearly throughout Florida.

South Florida Distribution: Charlotte, Glades, Hendry, Lee, Miami-Dade, and Palm Beach counties, and the Monroe County Keys.

South Florida Habitats: Hammocks, pine rocklands, and coastal uplands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Small, 1933a; D'Arcy, 1974; Long & Lakela, 1976; Taylor, 1992; Wunderlin, 1998.

Synonyms: *S. americanum* Mill. var. *baylisii* D'Arcy; *S. gracile* Link; *S. nigrescens* M. Martens & Galeotti, misapplied; *S. ottonis* Hylander.

Historical Context in South Florida: John Kunkel Small first collected black nightshade in 1915 at Humbugus Prairie, a station north of the Miami River in Miami-Dade County (5573, NY). In 1983, George N. Avery made a collection in a pine rockland in Miami-Dade County (2442, FTG). In 1917 Small collected black nightshade along the western shore of Lake Okeechobee between Fisheating Creek and the Three-Mile Canal in Glades County (8216, GH). E.P. Killip made a collection in 1951 on Big Pine Key in Monroe County (41582, US). George R. Cooley collected it in 1951, in the Devil's Garden Hammock in Hendry County (797, USF).

Cooley also made collections on Jupiter Island in Palm Beach County in 1956 (4800, USF) and on Sanibel Island in Lee County in 1967 (11850, USF). The next collection from Lee County was made in 1979 by Sandy Morrill and Jud Harvey on North Captiva Island (187, USF), perhaps in what is now Cayo Costa State Park. In 1990, "Phillips et al." collected it on Cayo Costa Island at Cayo Costa State Park (52, USF). In 1992 Andy Peters and Sally Braem collected it at Gasparilla Island State Park (GI0031, USF). S. Erickson vouchered plants in 1991 at Stump Pass Beach State Park (PC0039, USF). Gann observed fewer than 100 plants there in 2000.

Major Threats: Exotic pest plants invasions; sea-level rise; coastal erosion.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Solidago tortifolia* Elliott
Twistedleaf Goldenrod**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas (Big Cypress National Preserve; Deering Estate at Cutler; Jonathan Dickinson State Park; J.W. Corbett Wildlife Management Area).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as occasional in Florida from the western panhandle to the peninsula.

South Florida Distribution: Collier, Glades, Lee, Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Flatwoods and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Taylor, 1992; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Alvan W. Chapman first collected twistedleaf goldenrod in the middle to late 1800s on “Robert’s Key” in Collier County (s.n., US). This location appears to be part of Marco Island, most of which has been developed. In 1967, Olga Lakela made a collection in the vicinity of Lake Trafford in Immokalee in northern Collier County (30633, USF). Robert W. Long also collected it in this area the following year (2754, USF). It has been reported as uncommon in Big Cypress National Preserve (Black & Black, 1980). Plants are assumed to be extant there, but Big Cypress National Preserve needs to be vouchered.

John Kunkel Small and George V. Nash made the first collection in Miami-Dade County in 1901 in Coconut Grove (s.n., NY). Small made a number of other collections in Miami-Dade County from 1901 until 1918 (8808a, NY), from as far north as Humbugus Prairie north of the Miami River (5558, NY) to as far south as Silver Palm in the Redland area (7979, NY). Twistedleaf goldenrod was not collected again in Miami-Dade County until 1980, when M. Nee collected it “SW of Miami” in an area about to be developed (28609, NY). Ruben P. Sauleda made the next collection in 1980 in western Miami-Dade County along S.W. 56 Street (3356, USF). In 1995, Bradley collected twistedleaf goldenrod at Deering Estate at Cutler (422, FTG), where a small colony of fewer than 100 plants remains.

In 1917, Mary Francis Baker collected twistedleaf goldenrod at Alva in Lee County (141, US), in the vicinity of what is now Caloosahatchee Regional Park. It also was collected at Fort Myers in 1930 by John H. Davis, Jr. (s.n., FLAS) and in 1932 by

Walter M. Buswell (s.n., FLAS, NY). In 1947, R. Bruce Ledin made a collection near Olga just east of Fort Myers along the Caloosahatchee River. George Cooley collected twistedleaf goldenrod a single time in Glades County in 1952 at the Brighton Seminole Indian Reservation (1050, USF).

Roy O. Woodbury made a collection in 1989 at Jonathan Dickinson State Park in Martin County (s.n., FTG). In 1997, Bradley and Woodmansee observed it along the Loxahatchee River in Jonathan Dickinson State Park. Robert Kral made a collection in 1999 on Sewell's Point in Martin County (87982, NY). This collection was made on private land in an area of rapid development, and it is not known if these plants persist. In 1998, Bradley and Woodmansee observed this species at the J.W. Corbett Wildlife Management Area in Palm Beach County, but this station needs to be vouchered.

Major Threats: Fire suppression; exotic pest plant invasions; habitat destruction; recreational off-road vehicle use; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Big Cypress National Preserve and J.W. Corbett Wildlife Management Area.
- Survey Brighton Seminole Indian Reservation and Sewell's Point.
- Map and monitor known stations on a regular basis.

***Spiranthes praecox* (Walter) S. Watson
Greenvein Lady's-tresses**

South Florida Status: Critically imperiled. Two occurrences in four conservation areas (Corkscrew Swamp Sanctuary; J.W. Corbett Wildlife Management Area, Loxahatchee Slough Natural Area, & Pal-Mar Natural Area).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Broward, Collier, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Wet flatwoods, wet prairies, and marshes.

Protection Status: Not listed by any agency.

Identification: Unlike other *Spiranthes* in South Florida, *S. praecox* has a white flower with green stripes on the white lip. However, Chuck McCartney (personal communication, 21 February 2001) reports that white-lipped forms lacking the green stripes also occur. Luer (1972) has illustrations and color photos; Bell & Taylor (1982) has a color photo; Taylor (1998) has a color photo; Tobe et al. (1998) has a photo and an illustration.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *Ibidium praecox* (Walter) House.

Historical Context in South Florida: Oakes Ames first observed greenvein lady's-tresses in the vicinity of Naples in 1904 (Plimpton, 1979). In 1971, P. Genelle and G. Fleming collected a specimen near Naples at Corkscrew Swamp Sanctuary (531, USF). This station has been observed by Roger L. Hammer (Avery's Notes, 4 May 1978) and reported by Judd (1994). It has also been reported for Rookery Bay National Estuarine Research Reserve (Burch, 1998), but this report needs to be verified.

Greenvein lady's-tresses was collected in Lee County by Harold N. Moldenke in 1930 in a moist grassy ditch in Coconut, southwest of Estero Bay (5894, NY), in the vicinity of what is now Estero Bay State Buffer Preserve. Walter M. Buswell collected it once in Broward County west of Pompano in 1937 (s.n., USF).

In 1946, William G. Atwater made the first collection in Palm Beach County (565, FLAS). He collected greenvein lady's-tresses in what is now the J.W. Corbett Wildlife Management Area, a station that was vouchered again by J.S. Seifert in 1972 (s.n., FAU). It has been reported for three nearby conservation areas: Dupuis Reserve (Woodbury, no date), Loxahatchee Slough Natural Area (Farnsworth, 1994c), and Pal-Mar Natural Area (Farnsworth, 1993a). The Loxahatchee Slough Natural Area and Pal-Mar Natural Area stations are assumed to be extant, but need

to be vouchered. The Dupuis Reserve report needs to be verified. William L. McCart made an additional collection in this area in Martin County four miles southeast of Indiantown in 1968 (9764, FAU). Paul M. Cassen made a collection in northeastern Palm Beach County in 1970 on the south side of P.G.A. Boulevard, 3.5 miles west of I-95 (552, FLAS), an area that almost certainly has been developed. In 1986, Maggy Hurchalla made a collection of greenvein lady's-tresses in Martin County in the vicinity of what is now Rocky Point Hammock (s.n., FAU), a Martin County conservation area.

Greenvein lady's-tresses may have been recorded for Fakahatchee Strand Preserve State Park in error (Austin et al., 1979, 1990). This record appears to have been based upon Luer (1972), but a review of Luer does not indicate that greenvein lady's-tresses was definitely present in the Fakahatchee.

Major Threats: Drainage of wetland habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. The South Florida collections were made from March through June, when surveys should be conducted.*

Preliminary recommendations:

- Voucher Loxahatchee Slough Natural Area, and Pal-Mar Natural Area.
- Survey Dupuis Reserve, Estero Bay State Buffer Preserve, Rocky Point Hammock, and Rookery Bay National Estuarine Research Reserve.
- Map and monitor known stations on a regular basis.

***Spiranthes torta* (Thunb.) Garay & H.R. Sweet
Southern Lady's-tresses**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas (Big Cypress National Preserve; Everglades National Park; National Key Deer Refuge) and one non-conservation area (Luis Martinez Army Reserve Center).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, Bermuda, the West Indies, and Central America.

South Florida Distribution: Broward, Charlotte, Collier, Miami-Dade, and Palm Beach counties, and the Monroe County Keys.

South Florida Habitats: Pine rocklands, marl prairies, and flatwoods.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color photos; Chafin (2000) has illustrations and a color photo. This species is very similar to *S. amesiana*. It is distinguished from *S. amesiana* by having an oblong lip with an obtuse apex rather than an ovate lip with an acute apex and glabrous basal calli rather than basal calli with long trichomes (Wunderlin, 1998).

References: Chapman, 1883; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *S. tortilis* (Sw.) Rich.; *Ibidium tortile* (Sw.) House.

Historical Context in South Florida: John Kunkel Small and Percy Wilson first collected southern lady's-tresses in May 1904 in pinelands between Coconut Grove and the town of Cutler in Miami-Dade County (1558, NY). Small and Wilson made two other collections in May 1904, both near the present-day entrance to Everglades National Park. Apparently, the first was between Homestead and Camp Jackson (1922, NY), and the second near Camp Longview (1706, NY). In 1930, J. Fanum collected the first plants inside of what is now Everglades National Park on Long Pine Key (s.n., US). It also has been recently reported for Everglades National Park (Reimus, 1996, 1999). Roger L. Hammer observed six plants on Long Pine Key in 1998 (personal communication, 19 February 2001).

In 1915, three collections were made in pinelands near three hammocks in southern Miami-Dade County outside of what is now Everglades National Park. Small and Charles A. Mosier made the first collection near Nixon-Lewis Hammock (6402, NY), followed by Small and others near Castellow Hammock (6556, NY), and Small and others near Timms Hammock (4672, US). Pinelands around Nixon-Lewis Hammock have been completely obliterated by agricultural activities. Castellow Hammock is now part of

Castellow Hammock Park, but no pineland habitat is present there today. Pinelands still surround Timms Hammock and are protected within the Miami-Dade County park, Camp Owaissa Bauer.

In 1977, Donovan S. Correll and John Popenoe made a collection in a marl prairie near Goulds (48919, FTG). Bradley observed one plant there around 1995, but this station was later destroyed for a housing development. The last occurrence in Miami-Dade County to be discovered was in the Richmond Pine Rocklands. Bradley observed plants at Larry and Penny Thompson Park in 1993, but has been unable to find these plants again during subsequent visits. In 1995, Bradley found additional plants at the Luis Martinez Army Reserve Station, which is adjacent to Larry and Penny Thompson Park. Bradley first observed these plants in a marl prairie in July 1995, and made a voucher collection with Roger L. Hammer and Woodmansee that same month (52, FTG). Bradley observed around 25 plants there in 1999. This station is extant and was last observed in 2000 by Woodmansee, who saw just two plants. As with most terrestrial orchids, the number of flowering plants fluctuates each year, making it difficult to assess the size of the total population.

Roy O. Woodbury and Walter M. Buswell first collected southern lady's-tresses in the Florida Keys on Big Pine Key in 1941 (s.n., USF). This population also was vouchered by Ellsworth P. Killip several times in 1954 (44216, US; 44269, US; 44227, US) and by George N. Avery in 1964 (s.n., USF, FTG). Several stations have been collected and observed, including at least two within the present boundaries of the National Key Deer Refuge. It has been seen more recently there by Roger Hammer, who photographed a single plant in 1996 (personal communication, 19 February 2001).

Several one-time collections are known, the first from near the South New River Canal just west of present-day downtown Fort Lauderdale, where John Kunkel Small made a collection in 1913 (4443, NY). O.E. Frye collected it in a drained pine slough in Charlotte County in 1946 (s.n. FLAS). It also was collected in Palm Beach County in 1968 by P.M. Cassen (406 FLAS) from a private property along Okeechobee Road west of Florida's Turnpike. This station is about one mile south of the City of West Palm Beach Water Catchment Buffer. Finally, Chuck McCartney

made a collection in the Rabenau Camp area in Collier County in 1996 (57, SEL), inside of what is now Big Cypress National Preserve. This population is presumably extant.

Major Threats: Habitat destruction and degradation at Lewis Martinez Army Reserve Station; fire suppression; exotic pest plant invasions.

Comments: *The flowering time for this species is very brief, lasting only a couple of weeks in May or June.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Designate surplus property at the Luis Martinez U.S. Army Reserve Station as a conservation area.

***Strumpfia maritima* Jacq.
Pride-of-Big-Pine**

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (National Key Deer Refuge; Sugarloaf Hammocks), and one non-conservation area (Grassy Key Pride-of-Big-Pine Site).

Taxonomy: Dicotyledon; Rubiaceae.

Habit: Shrub.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal berms, pine rocklands, and the rocky transition zone between pine rocklands and salt marshes.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has color photos; Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color plate; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Correll & Correll, 1982; Scurlock, 1987; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: John Loomis Blodgett first collected pride-of-Big-Pine between 1838 and 1853 on Big Pine Key (s.n., NY). It has been collected on Big Pine by numerous botanists since that time. At least one population exists in the National Key Deer Refuge at the edge of a pine rockland. This population has been vouchered a number of times (e.g., Orzell & Bridges 15968, FTG, USF). U.S. Fish and Wildlife Service biologist Tom Wilmers estimates that there are fewer than 100 plants at this station (personal communication, 16 February 2001).

Allan H. Curtiss made a collection in the late 1800s at “Shore of key in Sugar-loaf Sound” (1124, NY). Francis W. Pennell vouchered a station on Sugarloaf Key in 1917 (9593, US). In 2000, Bradley and Woodmansee observed several colonies on coastal berms in Upper Sugarloaf Hammocks, within the Florida Keys Wildlife and Environmental Area (1289, FTG; 1301, FTG). George N. Avery also observed some of these colonies in the 1960s (Avery’s Notes). In 1909, John Kunkel Small and Joel J. Carter collected pride-of-Big-Pine on Grassy Key in 1909 (3115, NY). A population still occurs on Grassy Key at the privately owned Grassy Key *Strumpfia* Site. Bradley and Wayne Hoffman observed plants there in 1998.

Small made a single collection on Upper Matecumbe Key in 1912 (3913, NY) and Harold N. Moldenke made a single collection on Little Torch Key in 1930 (816, NY). No plants are thought to be extant on either island. Avery reported a number of other unvouchered stations that either he or others observed (Botanical Notes of George N. Avery). In 1963, Frank C. Craighead reported to him that he had seen the species “years ago” on the east end of Bahia Honda Key and on Vaca Key. No recent reports from Bahia Honda Key are known, despite a significant amount of botanical activity. In 1963, Avery observed plants on the Saddlebunch Keys (Avery’s Notes, 30 August 1963) and on the southern end of Cudjoe Key (Avery’s Notes, 22 November 1963). Kruer (1992) also reported an occurrence on Cudjoe. In 1964, Avery observed plants in “deep lagoon hammock” on Summerland Key (Avery’s Notes, 11 February 1964). Cudjoe Key, Saddlebunch Keys, Summerland Key, and Vaca Key should be surveyed.

Major Threats: Exotic pest plant invasions; habitat destruction at Grassy Key Strumpfia Site; sea-level rise; coastal erosion on Sugarloaf Key.

Preliminary recommendations:

- Survey Cudjoe Key, East Summerland Key, Saddlebunch Keys, and Vaca Key.
- Map and monitor known stations on a regular basis.
- Acquire Grassy Key Pride-of-Big-Pine Site.

***Tephrosia spicata* (Walter) Torr. & A. Gray
Spiked Hoarypea**

South Florida Status: Critically imperiled. Four occurrences in three conservation areas and two non-conservation areas (Black Creek Forest & a nearby private property in Goulds; Fred C. Babcock-Cecil M. Webb Wildlife Management Area; Jonathan Dickinson State Park; Montgomery Botanical Center).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Broward, Charlotte, Collier, Lee, Martin, and Miami-Dade counties.

South Florida Habitats: Flatwoods, scrub, and pine rocklands.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo.

References: Chapman, 1883; Small, 1933a; Wood, 1949; Long & Lakela, 1976; Bell & Taylor, 1982; Isely, 1990; Wunderlin, 1998.

Synonyms: *Cracca flexuosa* (Vail) A. Heller; *Cracca spicata* (Walter) Kuntze.

Historical Context in South Florida: Abram P. Garber first collected spiked hoarypea in 1877 in Miami (4399, NY), presumably in sandy pine rocklands near the Miami River. Since that collection, it has been collected in Miami-Dade County from as far north as Buena Vista (Small & DeWinkeler 9173, NY) to as far south as the vicinity of Camp Longview (Small & Wilson 1623, NY). In Miami-Dade County, this species is currently known from only three sites. In 1947, it was collected in a pine rockland fragment at Fairchild Tropical Garden by C.E. Wood and I.D.

Clement (7219, US). In 1998, Bradley and Lynka Woodbury collected plants, at what is probably the same station adjacent to the Fairchild Tropical Garden Research Center, on property owned by the Montgomery Botanical Center (1969, FTG). This pineland fragment is currently not managed as a conservation area. Bradley also collected this species in 1994 in the Goulds area at Black Creek Forest (49, FTG), a conservation area managed by Miami-Dade County. Bradley also observed plants at a property owned by the Miami-Dade County Health Department (NFC H-287), a few blocks away around 1998, but this station needs to be vouchered.

Spiked hoarypea was collected in Fort Myers in Lee County in 1900 by Albert S. Hitchcock (82, NY). Jeanette P. Standley also collected it near Fort Myers in 1916 (167, NY). In 1930, Harold N. Moldenke made two collections in Broward County. The first was made west of Davie (455, NY). The second was made west of Pompano (457a, NY). Olga Lakela made a single collection in Collier County in 1967 in scrub about a mile east of Naples off State Road 864 (30928a, USF). In 1978, John Popenoe collected spiked hoarypea in Martin County at Jonathan Dickinson State Park (1276, FTG), where it is presumably extant. Gann and Bradley collected spiked hoarypea in 1996 at Fred C. Babcock-Cecil M. Webb Wildlife Management Area in Charlotte County (609, FTG, USF).

Major Threats: Habitat destruction at NFC H-287 and the Montgomery Botanical Center.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants on NFC H-287.
- Designate NFC H-287 as a conservation area.
- Develop conservation agreement with Montgomery Botanical Center to manage a viable population of spiked hoarypea in pine rockland fragments at the Center.
- Map and monitor known stations on a regular basis.

***Thelypteris hispida* (Decne.) C.F. Reed
var. *versicolor* (R.P. St. John) Lellinger
Hairy Maiden Fern**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Enchanted Forest Park; Fakahatchee Strand Preserve State Park; Riverbend Park).

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern United States and Cuba. Wunderlin (1998) reports it as frequent in Florida from the western panhandle to the peninsula.

South Florida Distribution: Collier, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Rockland hammocks, mesic hammocks, hydric hammocks, and freshwater tidal swamps.

Protection Status: Not listed by any agency.

Identification: Tobe et al. (1998) has a color photo and illustrations; Nelson (2000) has a color photo, as well as illustrations of pinnule venation of hairy maiden fern, together with easily confused species such as *T. kunthii* and *T. ovata*; the IRC Website has a color photo.

References: Small, 1938; Lakela & Long, 1976; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *T. macilenta* E.P. St. John; *T. quadrangularis* (Fée) Schelpe var. *versicolor* (R.P. St. John) A.R. Sm.; *T. versicolor* Robert P. St. John.

Historical Context in South Florida: Harold N. Moldenke first collected hairy maiden fern in 1930 in moist soil on a canal bank along the Tamiami Trail in Miami-Dade County (847, FLAS). Mary W. Diddell made two collections from hammocks in Miami-Dade County from imprecise locations in 1931 (s.n., FLAS) and 1932 (s.n., FLAS). Hairy maiden fern was not collected again in Miami-Dade County until 1999, when Woodmansee made a collection at Enchanted Forest Park in the city of North Miami (332, FTG). Woodmansee estimates that there are fewer than 100 plants present in a former freshwater tidal swamp along Arch Creek Canal.

In 1935, Robert P. St. John collected hairy maiden fern in the Fakahatchee Strand (471, FLAS), now in Fakahatchee Strand Preserve State Park. Austin et al. (1990) also reported it for the park. It is uncertain how many plants are present, but perhaps just a few dozen (D.F. Austin, personal communication, 20 January 2001). It was reported for the Gum Slough area of Big Cypress National Preserve, where George N. Avery reported seeing one plant in 1978 with Sally Black and Dennis Minsky (Avery's Notes, 1 November 1978). Black & Black (1980) reported it as rare in the park, but it is uncertain how many plants are present.

In 1999, Bradley, Gil Nelson, and Wilson Baker made a collection at Riverbend Park in Palm Beach County (1977, FTG, USF). Fewer than 10 plants were observed.

Major Threats: Exotic pest plant invasions; hydrological modifications; poaching.

Preliminary recommendations:

- Survey Gum Slough area of Big Cypress National Preserve.
- Map and monitor known stations on a regular basis.

***Thelypteris patens* (Sw.) Small ex R.P. St. John
Grid-scale Maiden Fern**

South Florida Status: Critically imperiled. One occurrence in two conservation areas (Bill Sadowski Park & Deering Estate at Cutler).

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: Grid-scale maiden fern has a conspicuously erect stem. Nelson (2000) has three color photos; Chafin (2000) has both illustrations and color photos.

References: Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993;

Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Dryopteris stipularis* (Willd.) Maxon ex Underwood.

Historical Context in South Florida: Alvah A. Eaton first collected grid-scale maiden fern in 1905 at Ross Hammock (s.n., US), part of which is now located within Castellow Hammock Park. A single plant was observed (Eaton, 1906). Small (1938) reported that no additional plants were ever found.

Grid-scale maiden fern was not rediscovered until 1993, when Alan Cressler and Carol Lippincott found forty-one plants growing at Bill Sadowski Park in the Cutler area (s.n., FTG). Bradley re-vochered this population in 1997 (692, FTG) and noted that about two-dozen plants were present. Bradley and Alice Warren-Bradley discovered two plants at the Deering Estate at Cutler in 2000. Bradley observed these plants again in 2001. Both plants were still present, but this station needs to be vouchered.

Major Threats: Exotic pest plant invasions; poaching; long-term drainage on the Miami Rock Ridge.

Comments: *Small (1931) reported large stands of grid-scale maiden fern at Royal Palm Hammock, now within Everglades National Park, but later (1938) stated that earlier reports by him and others had been erroneous.*

Preliminary recommendations:

- Voucher plants at Deering Estate at Cutler.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Conduct conservation biology and conservation horticulture studies.
- Consider reintroducing grid-scale maiden fern to other sites within its historical range, including Castellow Hammock Park.
- Promote a higher regional water table on the Miami Rock Ridge.
- Review for listing by FNAI.

***Thelypteris reticulata* (L.) Proctor**
Lattice-vein Fern

South Florida Status: Critically imperiled. Three occurrences in five conservation areas (Big Cypress National Preserve; Everglades National Park, Frog Pond/L-31 N Transition Lands, & Southern Glades; Fakahatchee Strand Preserve State Park).

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Broward, Collier, Lee, and Miami-Dade counties.

South Florida Habitats: Strand swamps and rockland hammocks.

Protection Status: Listed as endangered by FDACS.

Identification: *T. reticulata* and *T. serrata* are very close in appearance and are dissimilar from other species of *Thelypteris* in South Florida. Of the two, *T. reticulata* has significantly wider pinnae (up to 6.0 cm wide vs. up to 3.5 cm wide in *T. serrata*). Chafin (2000) has an illustration; Nelson (2000) has color photos; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938 Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *Meniscium reticulatum* (L.) Sw.

Historical Context in South Florida: J.E. Layne first collected lattice-vein fern in the spring of 1903 in the Fakahatchee Strand in Collier County (Eaton, 1906; Small, 1938) and Alvah A. Eaton collected it again in the fall of 1903 at the water works at Allapattah, near present-day downtown Miami (779, NY). Small (1938) stated that lattice-vein fern once had been “commonly distributed” in the southern part of the Everglades and in the Big Cypress Swamp, but that “vast areas of its habitats have been destroyed by fire.” The authors have not seen any John Kunkel Small specimens of lattice-vein fern at any of the herbaria sampled, so it is uncertain whether or not he personally observed any plants.

In 1963, Olga Lakela collected lattice-vein fern in a hammock in Everglades National Park (26774, USF), presumably in the vicinity of Royal Palm Hammock, where George N. Avery reported that *C. Eugene Delchamps* and Roland Eves observed it in 1975 (Avery's Notes, 2 February 1975). In 1976, Avery observed plants nearby at Pine Island in a disturbed "*Schinus-Psidium* thicket" where he recorded that lattice-vein fern was fairly common (Avery's Notes, 3 February 1976). Mary Ann Bolla had shown him this site. The authors all observed lattice-vein fern in the same general vicinity on the eastern edge of the Hole-In-The-Donut in 2000. Avery and other members of the Native Plant Workshop discovered an additional station in the same general vicinity in a hammock on the old Aerojet property (Avery's Notes, 20 June 1971). This is considered part of the same occurrence as that in Everglades National Park. Six to eight plants were observed, only one sporulating. Avery and the Native Plant Workshop revisited this station in 1975, but only one plant was observed during this visit (Avery's Notes, 23 March 1975). John Popenoe vouchered this station in 1976 (649, FTG), and Donovan S. Correll, Popenoe, and W.T. Stern re-vouchered it in 1979 (50470, FTG). It appears that this hammock is located in what is now the Southern Glades. This is probably the same station that Hilsenbeck et al. (1979) and Dade County Department of Environmental Resources Management (1993a) are referring to as habitat for lattice-vein fern in the East Everglades and C-111 Basin. Bradley discovered an additional station in the same area in 2000 at Frog Pond/L-31 N Transition Lands, a conservation area just east of the entrance to Everglades National Park. This station was also in a disturbed wetland, and needs to be vouchered.

In 1975, Avery reported an additional station in southern Miami-Dade County, in a guava thicket in an old transverse glade off Quail Roost Drive and S.W. 154 Avenue (Avery's Notes, 3 April 1975). This is the same station where *T. serrata* had been previously collected by Frank C. Craighead and others (see *T. serrata* in part two of this chapter). Gann searched for this station in the late 1990s, but it had apparently been destroyed. Don Keller also reports a station in a guava grove on southwest 392 Street west of Tower Road that was destroyed in 1988 (personal communication, 8 February 2001).

Outside of Miami-Dade County, Avery and Craighead made the first collection after that made by J.L. Layne in 1903, in 1972 in a cypress swamp on Halfway Creek near Estero in Lee County (1733, FTG). Rob Irving of the Lee County Division of Planning reports that much of the Halfway Creek watershed is still undeveloped, and that lattice-vein fern could still be present there (personal communication, 22 January 2001). Additional surveys in that area should be conducted. Donald R. Richardson (1977) also reported lattice-vein fern for Estancia Hammock in the Boca Raton area. Daniel F. Austin reports that part of this station has been set aside as a mitigation site, and that lattice-vein fern still could be present (personal communication, 20 January 2001). However, Austin feels that the probability is high that this station has suffered from mismanagement and invasions of Brazilian-pepper (*Schinus terebinthifolius*).

In 1978, Clifton E. Nauman and Austin collected lattice-vein fern in Fakahatchee Strand Preserve State Park in Collier County (548, USF). This station was re-vouchered by Nauman and others in 1979 (798, FTG). In 1999, Bradley, Tony Pernas, and Amy Ferriter discovered an additional station of lattice-vein fern in Gator Hook Strand in Big Cypress National Preserve (2006, FTG). Fewer than 1,000 plants were observed.

In 1984, Ted Hendrickson and Ann Buckley made one collection along the nature trail at Markham Park, a recreational facility in Broward County (135, FTG, USF). One plant was observed. This station needs to be surveyed.

Major Threats: Exotic pest plant invasions; hydrological modifications; habitat destruction; poaching.

Preliminary recommendations:

- Voucher plants at Frog Pond//L-31 N Transition Lands.
- Survey Estancia Hammock, Halfway Creek, Markham Park, and the Fakahatchee Strand in Florida Panther National Wildlife Refuge.
- Map and monitor known stations on a regular basis.
- Review for listing by FNAI.

***Thelypteris sclerophylla* (Poepp. ex Spreng.)**

C.V. Morton

Stiff Star-hair Fern

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fuchs Hammock Preserve; Harden Hammock).

Taxonomy: Pteridophyte; Thelypteridaceae.

Habit: Perennial lithophytic herb.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Lakela & Long, 1976; Long & Lakela, 1976; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: J.B. McFarlin first collected stiff star-hair fern in 1940 in Fuchs Hammock (s.n., US), now a Miami-Dade County conservation area. It was collected there again by Fred Fuchs, Sr. in 1950 (s.n., US), by Leonard J. Brass in 1961 (32821, ARCH), by Frank C. Craighead in 1964 (s.n., FTG), and by Robert W. Long and others in 1966 (15927, NY, USF). Roger L. Hammer observed this station in 2000 (personal communication, 31 January 2001). Fewer than 10 plants were present.

In 1966, Olga Lakela made a collection on Paradise Key in Everglades National Park (29546, USF), but this specimen may have been made from plants introduced by Frank C. Craighead. Stiff star-hair fern has not been included on any recent plant list for Everglades National Park (e.g., Avery & Loope, 1980b; Reimus, 1996).

Alan Cressler, Don Keller, and Carol Lippincott discovered the only other known station at Harden Hammock, a Miami-Dade County conservation area, in 1989 (D. Keller, personal communication, 8 February 2001). At least 10 plants were observed. Roger L. Hamner surveyed this station in 2001 and found only a single plant (personal communication, 26 January 2001). This station needs to be vouchered.

Major Threats: Exotic pest plant invasions; hydrological modifications (lowering of the water table); poaching.

Preliminary recommendations:

- Voucher plants at Harden Hammock.
- Map and monitor known stations on a regular basis.
- Protect from poaching.
- Consider establishing an *ex situ* collection of germplasm.
- Consider augmenting known populations at Fuchs Hammock Preserve and Harden Hammock.
- Promote a higher regional water table on the Miami Rock Ridge.

***Tillandsia pruinosa* Sw.
Fuzzywuzzy Airplant**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Big Cypress National Preserve; Collier-Seminole State Park; Fakahatchee Strand Preserve State Park).

Taxonomy: Monocotyledon; Bromeliaceae.

Habit: Perennial terrestrial epiphyte.

Distribution: Native to South Florida, the West Indies, Central America, and South America.

South Florida Distribution: Collier County.

South Florida Habitats: Strand swamps and shell mound hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Bell & Taylor (1982) has a color photo; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Long & Lakela, 1976; Smith & Downs, 1977; Bell & Taylor, 1982; Wunderlin, 1998; Flora of North America Editorial

Committee, 2000; Chafin, 2000; Coile 2000; Liogier & Martorell, 2000.

Synonyms: None.

Historical Context in South Florida: Although Ward (1978) gives credit to Fred Fuchs Jr. for discovering this species in the Fakahatchee Strand in 1956, it was actually collected first by Roy O. Woodbury in 1948 (s.n., US). It has been collected there by a number of botanists since that time, and was observed in Fakahatchee Strand Preserve State Park in 2000 by Gann and Woodmansee on a field trip organized by Florida Park Service biologist Mike Owen.

In 1982, George N. Avery observed fuzzywuzzy airplant at Collier-Seminole State Park (Avery's Notes, 5 June 1982), followed by Florida Park Service biologist R. "Bobby" Hattaway in 1996 (personal communication, 12 January 2001), but this station needs to be vouchered. Fewer than 100 plants are thought to be present.

Fuzzywuzzy airplant has been reported for Big Cypress National Preserve (Black & Black, 1980; Gunderson & Loope, 1982a), where it is assumed to be present, but it needs to be vouchered. It has been reported for Corkscrew Swamp Sanctuary (Judd, 1994) and Rookery Bay National Estuarine Research Reserve (Burch, 1998), but these stations need to be verified.

Major Threats: Poaching; exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Big Cypress National Preserve and Collier Seminole State Park.
- Continue ongoing surveys at Fakahatchee Strand Preserve State Park.
- Survey Corkscrew Swamp Sanctuary and Rookery Bay National Estuarine Research Reserve.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

Tolumnia bahamensis
(Nash ex Britton & Millsp.) Braem
Variegated Orchid

South Florida Status: Critically imperiled. Two occurrences in two conservation areas and one non-conservation area (Jonathan Dickinson State Park & Jupiter Cemetery; Jupiter Ridge Natural Area).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial terrestrial herb. Sometimes epiphytic on Florida rosemary (*Ceratiola ericoides*).

Distribution: Native to South Florida and the Bahamas.

South Florida Distribution: Palm Beach and Martin counties.

South Florida Habitats: Coastal scrub.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Luer (1972) has illustrations and color prints.

References: Small, 1933a; Correll, 1950; Luer, 1972; Long & Lakela, 1976; Correll & Correll, 1982; Sauleda, 1986; Folsom, 1998; Wunderlin, 1998; Coile, 2000.

Synonyms: *Oncidium bahamense* Nash ex Britton & Millsp.; *Oncidium variegatum* (Sw.) Sw., misapplied.

Historical Context in South Florida: Variegated orchid was discovered in Florida in West Palm Beach in 1904 by Frank Idner, who sent two specimens to Oakes Ames (Correll, 1950). It was not seen again until 1926 (Correll, 1950). In 1969, W.W.G. Moir made another collection west of West Palm Beach (6a, AMES). It was found again in northeastern Palm Beach County about a mile west of Lake Worth in 1958 by two teenage brothers, Purkey and Johnny Davis (Baxter, 1958). The boys collected about 30 plants. A subsequent search was conducted by J.F. Baxter, R.E. Pinnell, P.F. Rolph, and the Davis family, but no additional plants were found. Subsequently, the site was developed. It also has been reported for Jupiter Ridge Natural Area in northeastern Palm Beach County (Farnsworth, 1994b), and a single plant is known to remain there (F. Griffiths, personal communication, 27 August 2001).

A number of observations and one collection have been made in the vicinity of the Jupiter Cemetery, which is located near the Palm Beach-Martin County line. This station was seen as early as 1971 by C. Eugene Delchamps and others (Avery's Notes, 1 April 1971). Bruce F. Hansen and others vouchered this station in 1980 (7102, USF), where it was reported to be a common epiphyte. Stan Folsom and Paul Martin Brown observed this occurrence in 1998 (Folsom, 1998).

The Jupiter Cemetery is immediately adjacent to scrub habitat in Jonathan Dickinson State Park. According to Ruben Sauleda (1986), he introduced variegated orchid to Jonathan Dickinson State Park in 1966, but an additional large population was later discovered in a remote area of the park that apparently was not introduced. Chuck McCartney and Woodmansee observed two plants in the park in 2000. There were apparently more plants at that station before it was logged. At least one other station in the park may have been extirpated due to poaching (C. McCartney, personal communication, 12 February 2001).

Two collections also were made in the vicinity of Hobe Sound in Martin County in the mid-1960s (Lassiter 43, USF; Vagner s.n., USF). Chuck McCartney also vouchered this station in 1988 (20, SEL). It is unknown whether or not this station is extant.

Major Threats: Poaching; fire suppression; exotic pest plant invasions.

Comments: *Sauleda & Adams (1989) argued that this species was introduced to Florida by Bahamian settlers in the vicinity of the Jupiter Cemetery, but the broad range of the species in Palm Beach and Martin counties, as well as the number of different stations collected, make this argument untenable. Craighead (1963) reported variegated orchid for Broward County, presumably in error.*

Preliminary recommendations:

- Take photographic voucher of plant at Jupiter Ridge Natural Area.
- Map and monitor known stations on a regular basis.
- Protect from poaching.

- Consider reintroducing variegated orchid to other sites within its historical range.

***Trichomanes krausii* Hook. & Grev.
Kraus' Bristle Fern**

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Castellow Hammock Park; Fuchs Hammock Preserve & Meissner Hammock Preserve).

Taxonomy: Pteridophyte; Hymenophyllaceae.

Habit: Perennial epiphytic herb.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Rockland hammocks; epiphytic on roots and trunks of strangler fig (*Ficus aurea*), wild mastic (*Sideroxylon foetidissimum*), and other hardwood trees.

Protection Status: Listed as endangered by FDACS and as imperiled to critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; Wunderlin & Hansen (2000) has illustrations; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Wessels Boer, 1962; Lakela & Long, 1976; Long & Lakela, 1976; Nauman, 1986b; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: None.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter (1381, NY), and Alvah A. Eaton (s.n., US) made collections of Kraus' bristle fern in 1903. Eaton's collection was from a hammock 25 miles south of Cutler, probably in the vicinity of Camp Longview, which was located some three to four miles west of present-day Florida City. Small and Carter's collection only gave the locality as between Cutler and Camp Longview. In 1904, Small made an additional collection in Miami-Dade County without precise locality data (s.n., USF).

In 1906, Small made the first collection with precise locality data from "Caldwells Hammock near Silver Palm School" (2378, NY).

This hammock is present-day Silver Palm Hammock, a Miami-Dade County conservation area. No modern records of Kraus' bristle fern could be found for this hammock. Small and others vouchered several additional hammocks in 1915, including Goodburn Hammock (s.n., NY), Hattie Bauer Hammock (s.n., NY), Nixon-Lewis Hammock (5882, NY), Shields Hammock (s.n., NY), and Timms Hammock (s.n., NY). Small independently collected specimens at Timms Hammock in 1915 (5948, NY), and Nixon-Lewis Hammock in 1915 (s.n., NY) and 1916 (7411, NY, USF). Of these sites, Goodburn Hammock and Shields Hammock have been destroyed. Nixon-Lewis Hammock has been fragmented by road building and agriculture, and doubtfully contains any Kraus' bristle fern. Hattie Bauer Hammock is a Miami-Dade County conservation area, and Timms Hammock is contained within the Miami-Dade County park, Camp Owaissa Bauer. No modern observations of Kraus' bristle fern have been made at Hattie Bauer Hammock, and it appears to be extirpated there. Several observations were made in Timms Hammock. Fran C. Young, one of the early leaders of the Dade County Native Plant Workshop, showed George N. Avery several plants in Timms Hammock in 1966 (Avery's Notes, 4 August 1966). Avery and Young observed additional plants in Timms Hammock in 1968 (Avery's Notes, 24 September 1968). This station needs to be surveyed.

In 1916, Small made a collection at Fuchs Hammock (7418, NY), now a Miami-Dade County park. Other collections were made at Fuchs Hammock by Donovan S. Correll in 1936 (6093, NY), Frank C. Craighead and Monroe R. Birdsey in 1959 (s.n., FTG), P.B. Tomlinson in 1963 (29563, FTG), Robert W. Long in 1966 (1926, USF), David and Sally Black in 1976 (3, FTG), Alan Herndon in 1987 (1731, FTG), and Bradley in 1997 (859, FTG). In 1997, Bradley also vouchered plants at Meissner Hammock, which is located adjacent to Fuchs Hammock (937, FTG). The Meissner Hammock station is considered to be part of the same occurrence as the one at Fuchs Hammock.

In 1976, Avery (1283, FTG) and Sally and David Black (1, FTG) collected Kraus' bristle fern in Castellow Hammock at Castellow Hammock Park. Avery, the Blacks, and Daniel F. Austin also observed plants in Ross Hammock within Castellow Hammock Park in 1976 (Avery's Notes, 16 December 1976). Gann and

Bradley observed plants within Castellow Hammock Park in the late 1990s, and Roger L. Hammer observed plants there in 2001 (personal communication, 10 August 2001).

Plants also have been reported for Long Pine Key in Everglades National Park. Frank C. Craighead made a collection there in 1962 (s.n., 1962) and Olmsted et al. (1983) also reported plants there. However, according to Craighead's botanical notes, he was attempting to introduce bristle ferns into Everglades National Park, and Kraus' bristle fern does not appear to be native there. Craighead's collection appears to have been from a translocated plant.

Major Threats: Exotic pest plant invasions; long-term drainage on the Miami Rock Ridge.

Comments: *Kraus' bristle fern, as with other species of Trichomanes, Tectaria and other ferns have undoubtedly been negatively affected by widespread drainage on the Miami Rock Ridge. These species will have a precarious foothold in our area until the underlying aquifer can be recharged.*

Preliminary recommendations:

- Survey Timms Hammock in Camp Owaissa Bauer.
- Map and monitor known stations on a regular basis.
- Consider reintroducing Kraus' bristle fern to other sites within its historical range, including Hattie Bauer Hammock.
- Promote a higher regional water table on the Miami Rock Ridge.

***Trichomanes punctatum* Poir.**
subsp. ***floridanum* Wess. Boer.**
Florida Bristle Fern

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Castellow Hammock Park; Fuchs Hammock Preserve & Meissner Hammock).

Taxonomy: Pteridophyte; Hymenophyllaceae.

Habit: Perennial lithophytic herb.

Distribution: Endemic to Florida in Miami-Dade and Sumter counties.

South Florida Distribution: Miami-Dade County.

South Florida Habitats: Limestone sinkholes in rockland hammocks; lithophytic or epiphytic on moist limestone walls of sinkholes and on the bases of tree trunks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Chafin (2000) has illustrations and a color photo; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Small, 1931b; Small, 1938; Lakela & Long, 1976; Long & Lakela, 1976; Nauman, 1986b; Flora of North America Editorial Committee, 1993; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *T. sphenoides* Kunze, misapplied.

Historical Context in South Florida: John Kunkel Small and George V. Nash first collected Florida bristle fern in 1901 at Snapper Creek Hammock (s.n., NY), in what may have been R. Hardy Matheson Preserve, Matheson Hammock Park, or a nearby private property. In 1915, Small collected it again in the same area with Charles A. Mosier (s.n., NY).

In 1903, Small made a collection without definite locality between Cutler and Camp Longview (1478, NY), which was located to the west of present-day Florida City. Also in 1903, Alvah A. Eaton made a collection from Castellow Hammock (263, GH), in what is now Castellow Hammock Park. In 1906, Small and Joel J. Carter made a collection at Ross Hammock (2379a, NY), a portion of which is located within Castellow Hammock Park. George N. Avery observed plants in Castellow Hammock in 1975 with C. Eugene Delchamps, and again in 1976 with Mary Ann Bolla (Avery's Notes, 13 July 1975, 24 September 1976). Gann and Bradley observed plants there in the late 1990s. Eaton collected Florida bristle fern in Silver Palm Hammock (s.n., GH), which is located about a mile east of Castellow Hammock. Don Keller reports seeing it there around 1980 (personal communication, 8 February 2001). Surveys by Gann and others have failed to locate any plants.

In 1909, Small and Carter made a single collection from Royal Palm Hammock in Everglades National Park (s.n., NY; s.n., US).

It was reported by Safford (1917), but no recent observations are known.

Small and others made collections from several additional hammocks in 1915: Hattie Bauer Hammock (s.n., FSU, NY), Nixon-Lewis Hammock (5882, US), Shields Hammock (s.n., NY), and Fuchs Hammock (5204, NY). Shields Hammock later was destroyed, and Nixon-Lewis Hammock has been mostly destroyed. Hattie Bauer Hammock is now a Miami-Dade County conservation area, while Fuchs Hammock is part of the Fuchs Hammock Preserve. Numerous collections have been made at Hattie Bauer Hammock (e.g. Small 7422, NY; D.S. Correll 6025, NY; and McFarlin s.n., FSU). Thomas Darling, Jr. made the last known collection there in 1960 (s.n., US). The Fuchs Hammock plants were vouchered again in 1954 by Leonard J. Brass (25192, ARCH), and observed by George N. Avery in 1971 and 1976 (Avery's Notes, 24 October 1971, 5 February 1976). Alan Cressler observed plants there in 1993, following Hurricane Andrew in 1992 (Cressler, 1993). In 1983, Avery observed plants at Meissner Hammock immediately adjacent to Fuchs Hammock (Avery's Notes, 28 January 1983). Bradley vouchered this population in 1997 (938, FTG). Small (1916) reported Florida bristle fern for Addison Hammock, now located within Deering Estate at Cutler, but it never was vouchered for the site, nor has it recently been observed.

Major Threats: Exotic pest plant invasions; lowering of the water table on the Miami Rock Ridge.

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Consider reintroducing Florida bristle fern to other sites within its historical range, including Everglades National Park.
- Promote a higher regional water table on the Miami Rock Ridge.
- Review for listing by USFWS.

Tridens flavus* (L.) Hitchc. var. *flavus
Tall Redtop

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Deering Estate at Cutler; Jonathan Dickinson State Park & Riverbend Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the United States. Wunderlin (1998) reports it as common nearly throughout Florida.

South Florida Distribution: Broward, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Mesic and rockland hammocks, particularly on edges and in canopy gaps.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Long & Lakela, 1976; Hall, 1978; Wunderlin, 1998.

Synonyms: *Triodia flava* (L.) Hitchc.

Historical Context in South Florida: Alvah A. Eaton first collected tall redtop in 1903 along the Little River in northern Miami-Dade County (482, US). In 1906, Albert S. Hitchcock made a collection in Miami (671, US), presumably from Brickell Hammock, followed by Agnes Chase in 1907 (3906, US). John Kunkel Small and George K. Small made the last collection from the Brickell area in 1913 (4731, NY). Small collected tall redtop at what is now Deering Estate at Cutler in 1916 (7983, US). It also was collected there by Anne F. Bellenger in 1967 (673, USF), George N. Avery in 1968 (491, USF), and Bradley in 1995 (61, FTG). Fewer than 100 plants exist along the edge of a rockland hammock. It also was reported for the USDA Subtropical Horticulture Research Station, north of the Deering Estate (Avery's Notes, 30 September 1975), but this population was probably introduced. A small stand was seen growing under a cultivated tree.

In 1930, Harold N. Moldenke made a collection in the Hollywood area of Broward County (798, NY). In 1997, Bradley and Woodmansee discovered tall redtop along the Loxahatchee River

in Palm Beach County. Plants were found both at Riverbend Park (141, FTG; 539, FTG), a conservation area managed by Palm Beach County, and in Jonathan Dickinson State Park. The Jonathan Dickinson State Park station needs to be vouchered. Plants were observed in hammocks and in disturbed areas on the edges of hammocks.

Major Threats: Exotic pest plant invasions; wild hog damage; off-target damage from exotic pest plant control programs.

Comments: *This is a temperate taxon at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Consider introducing tall reedtop to other sites within its historical range, including Alice Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens.

***Triplasis americana* P. Beauv.
Perennial Sandgrass**

South Florida Status: Two occurrences in two conservation areas (County Line Scrub; Seabranche Preserve State Park).

Taxonomy: Monocotyledon; Poaceae.

Habit: Perennial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) records it as occasional in Florida from the northern counties south to the central peninsula and Broward County.

South Florida Distribution: Broward, Martin, and Miami-Dade counties.

South Florida Habitats: Scrub and scrubby flatwoods.

Protection Status: Not listed by any agency.

Identification: Hitchcock & Chase (1950) has an illustration.

References: Small, 1933a; Hitchcock & Chase, 1950; Hall, 1978; Wunderlin, 1998.

Synonyms: None.

Historical Context in South Florida: Ted Hendrickson first collected perennial sandgrass in 1989 in the Miramar area of Broward County (s.n., FTG). It has been reported for the same

area at Snake Creek/Miramar Pineland Natural Area (anonymous, 1995c), but this report should be verified. In 1996, Gann and Bradley collected a specimen near the Broward County line in Miami-Dade County at County Line Scrub, a Miami-Dade County Preserve (811, FTG). In 1998, Bradley and Woodmansee collected a specimen at Seabranche Preserve State Park in Martin County (1212, FTG).

Major Threats: Exotic pest plant invasions.

Comments: *This is an inconspicuous grass that may be overlooked. It may be more common than reported here.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.
- Survey Snake Creek/Miramar Pineland Natural Area.

***Ulmus americana* L.
American Elm**

South Florida Status: Critically imperiled. Three occurrences in four conservation areas (Caloosahatchee Regional Park; Corkscrew Regional Ecosystem Watershed & Corkscrew Swamp Sanctuary; Six Mile Cypress Slough Preserve).

Taxonomy: Dicotyledon; Ulmaceae.

Habit: Tree.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Collier, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Strand swamps and mesic hammocks.

Protection Status: Not listed by any agency.

Identification: Nelson (1994) has an illustration; Tobe et al. (1998) has an illustration and color photos.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Godfrey, 1988; Nelson, 1994; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *U. americana* var. *floridana* (Chapm.) Little; *U. floridana* Chapm.

Historical Context in South Florida: Paul C. Standley first collected American elm in 1916 in the vicinity of Fort Myers (12989, US). In 1997, Bradley and Woodmansee collected this species at the Six Mile Cypress Slough Preserve just southeast of Fort Myers (182, FTG, USF). American elm was reported to occur at Caloosahatchee Regional Park (anonymous, no date.), where it was observed in 2001 by Gann and Lee County biologists Roger Clark and Rob Irving. Several hundred plants are present there, but this station needs to be vouchered. It also is present at the Corkscrew Regional Ecosystem Watershed, which is located in both Lee and Collier counties. It was reported there by Hilsenbeck (1997) and observed there by Woodmansee in 2000, but this station needs to be vouchered. Dick Workman also collected it at the adjacent Corkscrew Swamp Sanctuary in Collier County in 1997 (s.n., USF).

In 1924, John Kunkel Small and others collected American elm in Palm Beach County along the eastern shore of Lake Okeechobee (11159, NY). This species was probably extirpated there by the almost complete destruction of hammocks along the eastern edge of the lake. Roy O. Woodbury collected American elm in 1988 in Martin County at Jonathan Dickinson State Park (s.n., FTG), but it has not been observed there in many years. Woodbury also made a collection in 1989 in “wet woods” five miles north of Indiantown (s.n., FTG). It is unknown whether or not this station, which is in the vicinity of the Barley Barber Swamp Sanctuary, is extant.

Major Threats: Exotic pest plant invasions; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Caloosahatchee Regional Park and Corkscrew Regional Ecosystem Watershed.
- Survey Jonathan Dickinson State Park.
- Map and monitor known stations on a regular basis.

***Utricularia juncea* Vahl**
Southern Bladderwort

South Florida Status: Critically imperiled. Three occurrences in three conservation areas and one non-conservation area (Loxahatchee Slough Natural Area & Pal-Mar CARL Site; Jonathan Dickinson State Park; Royal Palm Beach Pines Natural Area).

Taxonomy: Dicotyledon; Lentibulariaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern and central United States, the West Indies, Central America, and South America. Wunderlin (1998) reports it as occasional nearly throughout Florida.

South Florida Distribution: Martin, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has an illustration.

References: Small, 1933a; Godfrey & Wooten, 1981; Wunderlin, 1998; Liogier & Martorell, 2000.

Synonyms: *Stomoisia juncea* (Vahl) Barnhart; *Stomoisia virgatula* Barnhart.

Historical Context in South Florida: John Kunkel Small and Joel J. Carter first collected southern bladderwort in 1906 at Long Prairie in Miami-Dade County (2703, NY). Long Prairie was historically located within present-day Homestead and Florida City, but it has been destroyed. Southern bladderwort also was collected in Miami-Dade County by John H. Davis Jr. along the Tamiami Trail near "Y road" in an area of scrub cypress (s.n., FLAS), presumably in the Pinecrest area of what is now Big Cypress National Preserve.

John Popenoe made the first collection in Martin County in 1976 at Jonathan Dickinson State Park (769, FTG), where it is presumably extant. In 1991, Steven L. Orzell and Edwin L. Bridges collected southern bladderwort at the Pal-Mar CARL Site in Martin County (18257, FTG, USF). Southern bladderwort also has been reported for Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties in the vicinity of the Pal-Mar

CARL Site, and for Loxahatchee Slough Natural Area in Palm Beach County (Farnsworth, 1994c). The Loxahatchee Slough Natural Area station needs to be vouchered, while the Dupuis Reserve station needs to be verified. All three stations are considered to be the same occurrence. It also has been reported for Royal Palm Beach Pines Natural Area in Palm Beach County (Farnsworth, 1995c; Black, 1996), which is located to the south of the Loxahatchee Slough Natural Area. This station also needs to be vouchered.

Southern bladderwort also has been reported for Corkscrew Swamp Sanctuary (Avery's Notes, 27 October 1982; Judd, 1994), which is located in both Collier and Lee counties, but this report needs to be verified.

Major Threats: Drainage of flatwoods habitats; fire suppression; exotic pest plant invasions; wild hog damage.

Comments: *Additional surveys may indicate that this species is more common than indicated here, and it may be down-ranked to imperiled in South Florida in the future.*

Preliminary recommendations:

- Voucher plants at Loxahatchee Slough Natural Area and Royal Palm Beach Pines Natural Area.
- Survey Corkscrew Swamp Sanctuary, Dupuis Reserve, Pal-Mar, and Pal-Mar Natural Area.
- Map and monitor known stations on a regular basis.

***Vaccinium corymbosum* L.
Highbush Blueberry**

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Fakahatchee Strand Preserve State Park; Fisheating Creek Wildlife Management Area).

Taxonomy: Dicotyledon; Ericaceae.

Habit: Shrub.

Distribution: Native to eastern North America. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Collier and Glades counties.

South Florida Habitats: Hydric hammocks and floodplain forests.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Nelson (1994) has an illustration and a color photo; Nelson (1996) has a color photo; Tobe et al. (1998) has an illustration and color photos.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Godfrey, 1988; Taylor, 1992; Nelson, 1994; Nelson, 1996; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *V. amoenum* Aiton; *V. arkansanum* Ashe; *V. ashei* Reade; *V. australe* Small; *V. elliotii* Chapm.; *V. fuscatum* Aiton; *V. virgatum* Aiton; *Cyanococcus amoenus* (Aiton) Small; *Cyanococcus elliotii* (Chapm.) Small; *Cyanococcus fuscatus* (Aiton) Small; *Cyanococcus holophyllus* Small; *Cyanococcus virgatus* (Aiton) Small.

Historical Context in South Florida: Frank C. Craighead first collected highbush blueberry in 1962 in the Fakahatchee Strand (s.n., FTG), within what is now Fakahatchee Strand Preserve State Park. It was found later there by Julie Jones in 1979 (Avery's Notes, 22 August 1979).

In 1979, John Popenoe made a collection near Palmdale in the vicinity of the Fisheating Creek Campground (1604, FTG, USF), which is now part of the Fisheating Creek Wildlife Management Area. Highbush blueberry is assumed to be extant there.

Major Threats: Exotic pest plants.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Vallesia antillana* Woodson
Pearlberry**

South Florida Status: Critically imperiled. Five occurrences in four conservation areas (Biscayne National Park; National Key Deer Refuge on Big Pine Key; National Key Deer Refuge on Cudjoe Key; Dove Creek Hammocks & John Pennekamp Coral Reef State Park) and one non-conservation area (Boot Key).

Taxonomy: Dicotyledon; Apocynaceae.

Habit: Shrub or small tree.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Monroe County.

South Florida Habitats: Rockland hammocks and coastal berms.

Protection Status: Pearlberry is listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has a color photo; Nelson (1994) has a color photo; Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Tomlinson, 1980; Correll & Correll, 1982; Scurlock, 1987; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: *V. glabra* (Cav.) Link, misapplied; *V. chiococcoides* Kunth, misapplied.

Historical Context in South Florida: Allan H. Curtiss first collected pearlberry in 1896 on the island of Key West (5620, NY). Curtiss' collection is the only one known for Key West.

Pearlberry has been found on three islands in the lower Florida Keys. It was collected on Big Pine Key in Cactus Hammock, now part of the National Key Deer Refuge, in 1954 by George R. Cooley (6225, USF). A number of other botanists have made collections and observations in and around this hammock, where the species still occurs. The authors have observed plants at this station as recently as 2001. Hundreds of plants occur there, making this the largest known population of pearlberry in South Florida. In 1964, Frank C. Craighead and others made a collection nearby on Cudjoe Key (s.n., USF). Weiner (1980) also reported it for this island in a privately owned hammock (hammock L9/38b), now part of the National Key Deer Refuge. This station is assumed to be extant, and to be part of the same occurrence as that on Big Pine Key.

In 1965, George N. Avery observed several plants on a beach ridge on Sugarloaf Key (Avery's Notes, 1 July 1965). No other reports are known from Sugarloaf key.

One station was discovered in the middle Keys by Avery in 1962 on Boot Key (Avery's Notes, 17 February 1962). This station was observed in 1998 by Bradley, where it was a relatively common shrub in the understory on a coastal berm.

John Kunkel Small vouchered the first plant discovered in the upper Florida Keys in 1916 on Angelfish Key off of the northern tip of Key Largo (7305, US). This island is now part of the Ocean Reef Club and most of the hammock there has been destroyed. It is unlikely that this species persists in that location. Pearlberry also was reported just to the north of Angelfish Key on Palo Alto Key, now part of John Pennekamp Coral Reef State Park (Weiner, 1980), but this station needs to be surveyed. Pearlberry was reported by Carter et al. (1976) for Biscayne National Park, and reported again by Avery (1978c) and Hammer & Bradley (1998). In 2001, Gann and Bradley discovered pearlberry at Adams Key in Biscayne National Park. Only one plant was noted. Later in 2001, Gann and Bradley found two plants on Old Rhodes Key, also in Biscayne National Park. Geographic coordinates were recorded for both stations, but they need to be vouchered.

Frank C. Craighead collected pearlberry on Key Largo in 1956 (s.n., Everglades National Park herbarium) and in 1963 (s.n., FTG). Karen Achor found pearlberry on Key Largo in 1977 at a site that became "The Fishing Club" (Avery's Notes, 26 May 1977). Gann and Florida Park Service biologist Janice A. Duquesnel found one plant in John Pennekamp Coral Reef State Park on Key Largo in 1998. Geographical coordinates were recorded. Woodmansee found two plants in 2000 on Key Largo at Dove Creek Hammocks (510, FTG), in the Florida Keys Wildlife and Environmental Area. It was found on the nearby El Radabob Key in 1971 when George N. Avery observed it there (Avery's Notes, 10 June 1971). This site is now part of John Pennekamp Coral Reef State Park. Pearlberry is still present there, and was observed in 2000 by the authors and Florida Park Service biologists J.A. Duquesnel and James G. Duquesnel. Several dozen plants are thought to occur.

Pearlberry was collected on the mainland on three occasions by Craighead in Everglades National Park. He made one collection on "Cape Sable" in 1959 (s.n., Everglades National Park herbarium), and on East Cape Sable, probably the same station,

in 1961 (s.n., FTG). In 1955, he made a single collection on Monroe Lake Mound (s.n., Everglades National Park Herbarium). This location is presumably in the vicinity of Monroe Lake about 12 miles east of Flamingo in Miami-Dade County. Despite quite a bit of botanical activity in the area, no additional plants have been found. It is possible that this population was destroyed by Hurricane Donna in 1960.

Major Threats: Exotic pest plant invasions.

Preliminary recommendations:

- Voucher plants at Adams Key and Old Rhodes Key in Biscayne National Park.
- Survey Palo Alto Key in John Pennekamp Coral Reef State Park, and Elliott Key, Old Rhodes Key, Sands Key, and Totten Key in Biscayne National Park.
- Map and monitor known stations on a regular basis.
- Acquire Boot Key.

***Vanilla inodora* Schiede
Fuchs' Vanilla**

South Florida Status: Critically imperiled. One occurrence in three conservation areas (Jimmy Graham Boat Ramp, Peck Lake Park, & Seabranch Preserve State Park).

Taxonomy: Monocotyledon; Orchidaceae.

Habit: Perennial vine.

Distribution: Native to South Florida, the West Indies, Mexico, Central America, and South America.

South Florida Distribution: Martin and Miami-Dade counties.

South Florida Habitats: Bayheads and baygalls.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: This is one of three leafy vanilla orchids in South Florida. Besides *V. inodora*, *V. phaeantha* Rchb. f. is native (see below), and *V. mexicana* Mill., the commercial vanilla, is exotic. Luer (1972) has illustrations and color photos of all three species; Chafin (2000) has an illustration of *V. inodora*.

References: Luer, 1972; Long & Lakela, 1976; Wunderlin, 1998; Chafin, 2000; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *V. mexicana* Mill., misapplied.

Historical Context in South Florida: Fred Fuchs, Sr. and Fred Fuchs, Jr. discovered Fuchs' vanilla in 1953 in a bayhead south of Homestead (Luer, 1972), apparently in what is now the Southern Glades. Plants were found in several hammocks within a radius of several miles, but orchid collectors eventually extirpated these plants. Frank C. Craighead vouchered this population in 1960 (s.n., FTG). Unfortunately, attempts to translocate this species met with failure, and all of the plants that were removed from the wild eventually died.

Donald R. Richardson, Ruben P. Sauleda, and Bruce F. Hansen rediscovered Fuchs' vanilla in 1980 in Martin County in a baygall south of Stuart (830, FTG; Hansen & Sauleda, 1985). This population is located within three conservation areas including Peck Lake Park, which is managed by Martin County, and Seabranck Preserve State Park, which is managed by the Florida Park Service. The authors have observed both stations. Woodmansee observed one plant at Peck Lake Park in 2000; this population appears to be suffering from poaching. Both stations need to be monitored as soon as possible. Fuchs' vanilla also has been reported in the same area at Jimmy Graham Boat Ramp, a park owned by Martin County (S. Vardaman, personal communication, 16 October 2000), where it is assumed to be extant.

Major Threats: Poaching; exotic pest plant invasions; hydrological modifications.

Comments: *This species will almost certainly be extirpated in South Florida and the continental United States if something is not done immediately to stop poaching and reintroduce a more secure population in the southern Everglades.*

Preliminary recommendations:

- Take photographic voucher of plants at Jimmy Graham Boat Ramp.
- Map plants every year.
- Tag all individual plants. Monitor plants on a monthly basis.
- Protect from poaching.
- Establish an *ex situ* collection of germplasm.
- Consider augmenting population in Martin County.

- Consider reintroducing Fuchs' vanilla to Southern Glades.

***Vernonia gigantea* (Walter) Trel.
Giant Ironweed**

South Florida Status: Critically imperiled. Four occurrences in four conservation areas (Cayo Costa State Park; Halpatokee Regional Park; Jonathan Dickinson State Park; Twin Rivers).

Taxonomy: Dicotyledon; Asteraceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the eastern and central United States. Wunderlin (1998) reports it as common in Florida from the northern counties to the central peninsula.

South Florida Distribution: Lee and Martin counties.

South Florida Habitats: Hammocks and floodplain forests.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has an illustration and color photos.

References: Chapman, 1883; Small, 1933a; Long & Lakela, 1976; Cronquist, 1980; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *V. altissima* Nutt.; *V. gigantea* subsp. *ovalifolia* (Torr. & A. Gray) Urbatsch; *V. ovalifolia* Torr. & A. Gray.

Historical Context in South Florida: R. Bruce Ledin first collected giant ironweed in 1947 in a hammock in Martin County (s.n., FLAS), unfortunately without any additional locality data. The next collection was not made until 1999 when Woodmansee collected it at Twin Rivers, a Martin County conservation area (422, FTG). Woodmansee collected it at an additional station in 2000 at Halpatokee Regional Park (555, FTG). It also has been reported for Jonathan Dickinson State Park (Florida Park Service District 5, no date), and will be included on an upcoming plant list for the Park (Roberts et al., in prep.). It is assumed to be extant there, but this station needs to be vouchered. Giant ironweed was reported for Cayo Costa State Park in Lee County (Florida Park Service District 4, 1994a), and was observed there on Cayo Costa in 2001 by Gann and Florida Park Service biologist R. "Bobby" Hattaway. This station needs to be vouchered.

Major Threats: Exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Small (1913) reported this species for Key West, Monroe County. This was an unusual report that was apparently made without any supporting voucher specimens. It is treated here as a false report.*

Preliminary recommendations:

- Voucher plants at Cayo Costa in Cayo Costa State Park.
- Map and monitor known stations on a regular basis.

***Viola palmata* L.
Early Blue Violet**

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Corkscrew Regional Ecosystem Watershed & Corkscrew Swamp Sanctuary; Royal Palm Beach Pines Natural Area.

Taxonomy: Dicotyledon; Violaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent in Florida from the northern counties to the central peninsula.

South Florida Distribution: Charlotte, Lee, and Palm Beach counties.

South Florida Habitats: Flatwoods.

Protection Status: Not listed by any agency.

Identification: Godfrey & Wooten (1981) has two illustrations of this species, as *V. esculenta* and *V. septemloba*.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Wunderlin, 1998.

Synonyms: *V. chalcosperma* Brainerd; *V. esculenta* Elliott ex Greene; *V. palmata* var. *triloba* (Schwein.) Ging. ex DC.; *V. pedatifida* G. Don, misapplied; *V. sagittata* Aiton, misapplied; *V. septemloba* Leconte; *V. triloba* Schwein.; *V. triloba* var. *dilatata* (Elliott) Brainerd.

Historical Context in South Florida: William Kellogg first collected early blue violet in 1907 in Owanita in Lee County (s.n., GH), a station near what is now Hickey Creek Mitigation Park Wildlife and Environmental Area. It has been reported for

Corkscrew Swamp Sanctuary (Judd, 1994) and at Corkscrew Regional Ecosystem Watershed (Hilsenbeck, 1997), each of which is located in Lee and Collier counties. Early blue violet is assumed to be present at the latter two sites, but both need to be vouchered.

In 1924, Roland M. Harper collected early blue violet 15 miles west of Jupiter in Palm Beach County (s.n., GH), in the vicinity of what is now Pal-Mar and Pal-Mar Natural Area. Unfortunately, it has not been observed at either site. Early blue violet has been reported to occur at the Royal Palm Beach Pines Natural Area (Farnsworth, 1995c; Black, 1996), and it is assumed to be present there. This station needs to be vouchered.

Two historical collections are known from Charlotte County. O.E. Frye made a collection "In palmetto clumps" at an unspecified locality in 1946 (s.n., FLAS), and R.R. Smith and T. Myint made a collection just south of Bermont in 1961 (27, FLAS), in the vicinity of the Fred C. Babcock-Cecil M. Webb Wildlife Management Area.

Major Threats: Fire suppression; hydrological modifications; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Corkscrew Regional Ecosystem Watershed, Corkscrew Swamp Sanctuary, and Royal Palm Beach Pines Natural Area.
- Survey Fred C. Babcock-Cecil M. Webb Wildlife Management Area, Hickey Creek Mitigation Park Wildlife and Environmental Area, Pal-Mar, and Pal-Mar.
- Map and monitor known stations on a regular basis.

***Viola primulifolia* L.
Primroseleaf Violet**

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Bessemer; Danforth; Jonathan Dickinson State Park).

Taxonomy: Dicotyledon; Violaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Charlotte, Collier, Martin, and Palm Beach counties.

South Florida Habitats: Flatwoods and wet hammocks.

Protection Status: Not listed by any agency.

Identification: Taylor (1992) has a color photo; Tobe et al. (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Godfrey & Wooten, 1981; Taylor, 1992; Tobe et al., 1998; Wunderlin, 1998.

Synonyms: *V. rugosa* Small.

Historical Context in South Florida: Paul C. Standley first collected primroseleaf violet in 1916 near Marco Island in Collier County (12755, US). In 1966, Olga Lakela made another collection on Marco Island (29526, USF). It was reported for Corkscrew Swamp Sanctuary (Judd, 1994), which is located in both Lee and Collier counties, but this report needs to be verified. In 1941, W.A. Murrill collected primroseleaf violet two miles southeast of Punta Gorda in Charlotte County (s.n., FLAS). In 1963, R.R. Smith and T. Myint made a collection north of Palm Beach Gardens in Palm Beach County (908, FLAS).

In 1999, Woodmansee collected primroseleaf violet at Bessemer (440, FTG), a conservation area in Martin County. In 2000, he also recorded it for Danforth, also a conservation area in Martin County, but this station needs to be vouchered. It also has been reported at Jonathan Dickinson State Park in Martin County (Florida Park Service District 5, no date). Woodmansee and Chuck McCartney observed primroseleaf violet along the Kitching Creek trail at Jonathan Dickinson State Park in 2000, but this station needs to be vouchered.

Major Threats: Hydrological modifications; exotic pest plants; wild hog damage.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Danforth and Jonathan Dickinson State Park.
- Survey Corkscrew Swamp Sanctuary.
- Map and monitor known stations on a regular basis.

***Wolffiella gladiata* (Hegelm.) Hegelm.
Florida Mudmidget**

South Florida Status: Critically imperiled. Five occurrences in five conservation areas (Arthur R. Marshall Loxahatchee National Wildlife Refuge; Bessemer; Corkscrew Swamp Sanctuary; Fakahatchee Strand Preserve State Park; Six Mile Cypress Slough Preserve).

Taxonomy: Monocotyledon; Lemnaceae.

Habit: Short-lived aquatic herb.

Distribution: Native to the United States and Mexico. Wunderlin (1998) reports it as frequent in Florida from the western panhandle to the peninsula.

South Florida Distribution: Collier, Lee, Martin, and Palm Beach counties.

South Florida Habitats: Cypress swamps and ditches.

Protection Status: Not listed by any agency.

Identification: There is an illustration in Godfrey & Wooten (1979).

References: Thompson, 1897; Small, 1933a; Long & Lakela, 1976; Godfrey & Wooten, 1979; Flora of North America Editorial Committee, 2000.

Synonyms: *W. floridana* (Donn. Sm.) C.H. Thompson; *Wolffia gladiata* Hegelm. var. *floridana* Donn. Sm.

Historical Context in South Florida: South Florida populations of Florida mudmidget are poorly represented in herbaria. We have seen a single collection made by P. Genell and G. Flemming in

1971 at Corkscrew Swamp Sanctuary in Collier County (581, USF). It was not recorded for this station by Judd (1994), although it was probably overlooked there.

It has been reported for the Fakahatchee Strand Preserve State Park (Austin et al., 1990), where it is assumed to be extant. Florida mudmidget was reported in 1974 for Palm Beach County at the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Austin, 1974). Bradley and Woodmansee observed this occurrence in 2000 in cypress swamps along the eastern edge of the refuge. In 1997, Bradley and Woodmansee observed it at the Six Mile Cypress Slough Preserve in Lee County. Woodmansee also observed it in 1999 at Bessemer, a conservation area in Martin County. All four of occurrences need to be vouchered.

Major Threats: Hydrological modifications; exotic pest plant invasions.

Comments: *This species is probably often overlooked because of its diminutive stature. It may be more common than is indicated, and could be down ranked to imperiled or rare in the future.*

Preliminary recommendations:

- Voucher plants at Arthur R. Marshall Loxahatchee National Wildlife Refuge, Bessemer, Fakahatchee Strand Preserve State Park, and Six Mile Cypress Slough Preserve.
- Map and monitor known stations on a regular basis.

***Woodwardia areolata* (L.) T. Moore**
Netted Chain Fern

South Florida Status: Critically imperiled. Two occurrences in two conservation areas (Big Cypress National Preserve; Halpatokee Regional Park).

Taxonomy: Pteridophyte; Blechnaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to eastern and central North America. Wunderlin (1998) reports it as common in Florida from the northern counties to the central peninsula.

South Florida Distribution: Glades, Lee, and Martin counties, and the Monroe County mainland.

South Florida Habitats: Freshwater swamps.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Tobe et al. (1998) has color photos and an illustration; Nelson (2000) has a color photo; the IRC Website has a color photo.

References: Chapman, 1883; Small, 1931b; Small, 1938; Lakela & Long, 1976; Bell & Taylor, 1982; Flora of North America Editorial Committee, 1993; Tobe et al., 1998; Wunderlin, 1998; Nelson, 2000; Wunderlin & Hansen, 2000.

Synonyms: *W. angustifolia* Sm.; *Lorinseria areolata* (L.) C. Presl.

Historical Context in South Florida: Alvah A. Eaton first collected netted chain fern in 1904 in a ditch in Fort Myers (1165, GH). He also reported it from along the Caloosahatchee River at Fort Myers (Eaton, 1906), where only sterile plants were observed. Netted chain fern was not observed again until 1960 when it was collected by a group of Daniel B. Ward's students from the University of Florida ½ mile west of Palmdale in Glades County (s.n., FLAS). This is in the vicinity of the newly acquired Fisheating Creek Wildlife Management Area. In 1998, Bradley and Gil Nelson made the first collection in Big Cypress National Preserve, just west of Loop Road and south of Monroe Station in Monroe County (1642, FTG). Fewer than 10 plants were observed growing in a strand swamp. In 1999, Woodmansee made a collection at Halpatickee Regional Park in Martin County (403, FTG). Fewer than 10 plants were seen growing along a ditch leading into the south fork of the St. Lucie River. It has been reported for Dupuis Reserve (Woodbury, no date), which is located in both Martin and Palm Beach counties, but this station needs to be verified.

Major Threats: Hydrological modifications; exotic pest plant invasions; recreational off-road vehicle use; wild hog damage; poaching.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida. Wunderlin (1998) erroneously reported this species for Miami-Dade County.*

Preliminary recommendations:

- Survey Dupuis Reserve and Fisheating Creek Wildlife Management Area.
- Map and monitor known stations on a regular basis.

Xyris fimbriata Elliott
Fringed Yelloweyedgrass

South Florida Status: Critically imperiled. Three occurrences in three conservation areas (Bessemer; Jonathan Dickinson State Park; Savannas Preserve State Park in Martin County).

Taxonomy: Monocotyledon; Xyridaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent in Florida in the northern counties south to the central peninsula.

South Florida Distribution: Martin County.

South Florida Habitats: Depression marshes.

Protection Status: Not listed by any agency.

Identification: Bell & Taylor (1982) has a color photo; Tobe et al. (1998) has an illustration and a color photo.

References: Chapman, 1884; Small, 1933a; Godfrey & Wooten, 1979; Bell & Taylor, 1982; Tobe et al., 1998; Wunderlin, 1998; Flora of North America Editorial Committee, 2000.

Synonyms: None.

Historical Context in South Florida: Edwin L. Bridges and Randy L. Mears first collected fringed yelloweyedgrass in 1995 in a depression marsh at Jonathan Dickinson State Park in Martin County (23903, USF). Bradley observed this occurrence around 1998. Steven L. Orzell and Bridges also made a collection in 1995 in Martin County at Savannas Preserve State Park (23990, FTG). Fringed yelloweyedgrass was also collected in 2000 by Woodmansee at Bessemer (567, FTG), a conservation area in Martin County.

Major Threats: Drainage of depression marshes; exotic pest plant invasions; fire suppression.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Map and monitor known stations on a regular basis.

***Zanthoxylum coriaceum* A. Rich.
Biscayne Pricklyash**

South Florida Status: Critically imperiled. Two occurrences in three conservation areas (Hugh Taylor Birch State Park; Crandon Park & Virginia Key and Marine Stadium).

Taxonomy: Dicotyledon; Rutaceae.

Habit: Shrub to small tree.

Distribution: Native to South Florida and the West Indies.

South Florida Distribution: Broward, Miami-Dade, and Palm Beach counties.

South Florida Habitats: Maritime hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Nelson (1996) has a color photo; Chafin (2000) has illustrations and a color photo; the IRC Website has a color photo.

References: Small, 1933a; Long & Lakela, 1976; Porter, 1976; Little, 1978; Tomlinson, 1980; Correll & Correll, 1982; Nelson, 1994; Nelson, 1996; Wunderlin, 1998; Chafin, 2000; Coile, 2000.

Synonyms: None.

Historical Context in South Florida: Abram P. Garber first collected Biscayne pricklyash in 1877 on Virginia Key in Miami-Dade County. George N. Avery observed plants on Virginia Key several times from 1967 to 1983 (Avery's Notes, 1967-1983). It still is present on the island at Virginia Key and Marine Stadium, which is managed by the City of Miami. Gann and Bradley observed plants there in 1999 with City of Miami naturalist Juan Fernandez. Gann and Fernandez also observed plants in 2001. In 1915, John Kunkel Small and Charles A. Mosier collected Biscayne pricklyash on "sand-dunes opposite Lemon City" (5819, US), a station about four to five miles north of the southern tip of Miami Beach. All maritime hammocks on this portion of Miami Beach have been destroyed. In 1965, John Popenoe collected

Biscayne pricklyash at Crandon Park on Key Biscayne (s.n., FTG). Frank C. Craighead also collected it there later that year (s.n., USF). The species is extant there and has been observed on several occasions by the authors.

Allan H. Curtiss first collected Biscayne pricklyash in Broward County in 1897 on a beach ridge in Fort Lauderdale in Broward County (5844, NY), probably in or near what is now Hugh Taylor Birch State Park. Olga Lakela and Robert W. Long collected it at the park (s.n., USF), presumably in the 1960s. Avery observed this station in 1967 (Avery's Notes, 10 April 1967). Buckley & Hendrickson (1983b) also reported it for the park. It was observed there as recently as 1999 by Gann and Florida Park Service biologist Janice A. Duquesnel. Fewer than 10 trees remain. A single collection of this species was made at Boynton Beach in Palm Beach County by Kenneth W. Loucks and Erdman West in 1930 (s.n., FLAS).

Fairchild Tropical Garden (FTG) has conducted conservation horticultural studies and has successfully propagated plants from seed. FTG and the Florida Park Service have initiated an introduction program at Bill Baggs Cape Florida State Park on Key Biscayne. FTG maintains a collection of South Florida germplasm.

Major Threats: Habitat destruction and exotic pest plant invasions.

Comments: *Biscayne pricklyash* is dioecious.

Preliminary recommendations:

- Voucher plants at Virginia Key and Marine Stadium.
- Map and monitor known stations on a regular basis.
- Continue introduction program at Bill Baggs Cape Florida State Park.
- Consider reintroduction to other sites within its historical range.

***Zanthoxylum flavum* Vahl**
Yellowwood

South Florida Status: Critically imperiled. Three occurrences in two conservation areas (Bahia Honda State Park; Key West National Wildlife Refuge) and one non-conservation area (Key West Golf Course on Stock Island).

Taxonomy: Dicotyledon; Rutaceae.

Habit: Small tree.

Distribution: Native to South Florida, Bermuda, and the West Indies.

South Florida Distribution: Monroe County Keys.

South Florida Habitats: Coastal berms and rockland hammocks.

Protection Status: Listed as endangered by FDACS and as critically imperiled by FNAI.

Identification: Scurlock (1987) has a color photo.

References: Nuttall, 1849; Chapman, 1883; Sargent, 1891; Small, 1913; Small, 1933a; Long & Lakela, 1976; Porter, 1976; Little, 1978; Tomlinson, 1980; Correll & Correll, 1982; Scurlock (1987); Nelson, 1994; Wunderlin, 1998; Coile, 2000; Liogier & Martorell, 2000.

Synonyms: *Z. cribrosum* Spreng.; *Z. floridanum* Nutt.

Historical Context in South Florida: John Loomis Blodgett first collected yellowwood between 1838 and 1853 on the island of Key West (s.n., NY). He described the tree he vouchered as a "Large tree...growing near the sea – timber fine." Nuttall (1849) stated that Blodgett had reported yellowwood to be common on Key West. Sargent (1891) repeated this, but also stated that it was sought for its valuable wood. Blodgett appears to be the only person who ever collected it on Key West. In 1881, Allan H. Curtiss made a collection on Bahia Honda Key (433, NY, US). At present, there two trees at Bahia Honda State Park. Gann and Florida Park Service biologist Janice A. Duquesnel observed these trees in 2000. Sargent (1891) reported that it occurred on Boca Chica Key and the Marquesas Keys. While it has been extirpated on Boca Chica, the population at the Marquesas is extant on one island in Key West National Wildlife Refuge. Gann and Bradley vouchered it there in 1996 (465, FTG). Fewer than 100 plants are extant. In 1981, George N. Avery recorded several trees at the

Key West Golf Course on Stock Island (Avery 1679, FTG), but that number has been reduced to two remaining plants (J.A. Duquesnel, personal communication, 9 January 2002).

Fairchild Tropical Garden (FTG) and the Florida Park Service (FPS) have mapped plants at Bahia Honda State Park and at the Key West Golf Course, and are in the process of mapping all plants at Key West National Wildlife Refuge. When possible, the sex of individual trees is determined. FTG has conducted conservation horticultural studies and has successfully propagated plants from seed. FTG and FPS have initiated a formal augmentation program at Bahia Honda State Park. All translocated plants are mapped and are monitored on a regular basis. FTG maintains a collection of South Florida germplasm.

Major Threats: Destruction of plants; habitat destruction; exotic pest plant invasions.

Comments: *The Florida Keys represents the only native range of yellowwood in the continental United States. Logging of this species may have contributed to its demise in Florida, although habitat destruction was clearly the largest factor.*

Yellowwood is dioecious.

Preliminary recommendations:

- Complete mapping of plants at Key West National Wildlife Refuge.
- Map and monitor plants at Bahia Honda State Park and at Key West National Wildlife Refuge on a regular basis.
- Monitor plants at Key West Golf Course on a quarterly basis.
- Continue with augmentation program at Bahia Honda State Park.
- Assess appropriateness and study feasibility of introducing yellowwood to other sites within its historical range, including Little Hamaca Park on Key West.
- Assess appropriateness and study feasibility of the restoring rockland hammocks on Boca Chica Key, Key West, and Stock Island and reintroducing yellowwood.

***Zornia bracteata* J.F. Gmel.
Viperina**

South Florida Status: Critically imperiled. Four occurrences in six conservation areas and three non-conservation areas (Coral Reef Park; Deering Estate at Cutler & Ludlam Pineland; Richmond Pine Rocklands at Larry and Penny Thomson Park, Miami Metrozoo, U.S. Air Force Property, University of Miami South Campus, and former U.S. Naval Observatory; Ron Ehman Park).

Taxonomy: Dicotyledon; Fabaceae.

Habit: Perennial terrestrial herb.

Distribution: Native to the southeastern coastal plain. Wunderlin (1998) reports it as frequent nearly throughout Florida.

South Florida Distribution: Miami-Dade County, where it is disjunct from Highlands County.

South Florida Habitats: Pine rocklands.

Protection Status: Not listed by any agency.

Identification: Taylor (1998) has a color photo.

References: Chapman, 1883; Small, 1933a; Mohlenbrock, 1961; Long & Lakela, 1976; Isely, 1990; Wunderlin, 1998.

Synonyms: *Z. tetraphylla* Michx.

Historical Context in South Florida: John Kunkel Small first collected viperina in 1915 in a pineland near Ross Hammock in Miami-Dade County (6534, NY; 6615, NY), in the vicinity of what is now Castellow Hammock Park. It was not collected again until 1968, when George N. Avery found plants at a pine rockland fragment near Chapman Field (484, USF). This station was mostly destroyed soon thereafter, but Avery did find a few plants in one small station in 1974 (Avery's Notes, 1974).

Viperina is known currently from six conservation areas in Miami-Dade County. Avery reported it for what is now the Deering Estate at Cutler as early as 1978 (Avery's Notes, 1 January 1978). Avery vouchered this station, recording on the herbarium label only that the station was south of Coral Gables (1806, FTG). Bradley observed this station as recently as 1999. Avery found it in 1979 at what is now Ludlam Pineland, a conservation area located just north of the Deering Estate. Bradley observed it there in the 1990s. Bradley and Woodmansee observed it there in 2000. The

Deering Estate at Cutler and Ludlam Pineland stations are considered to be the same occurrence.

In 1993, Bradley observed it at Larry and Penny Thompson Park in the Richmond Pine Rocklands, an occurrence observed again in 2000 by Bradley and Woodmansee. Bradley also observed it in the Richmond Pine Rocklands at Miami Metrozoo in 1993, where it is assumed to be extant. It also is known from three non-conservation areas within the Richmond Pine Rocklands. Bradley observed it at the U.S. Air Force Property in 1993, followed by Bradley and Woodmansee in 2000 (Bradley et al., 2000a). In 1996, Bradley and Gann observed it at the U.S. Naval Observatory, now owned by the University of Miami (Bradley & Gann, 1996). Woodmansee observed this station again in 2000 (Bradley et al., 2000a). In 2000, Bradley and Woodmansee observed it on the University of Miami South Campus (Bradley et al., 2000a). Geographic coordinates were recorded for all of the Richmond Pine Rocklands stations, but they all need to be vouchered.

In 1995, Bradley collected *viperina* at Coral Reef Park (92, FTG), a station that was vouchered again by Gann and Tiffany Troxler Gann in 1997 (25, FTG). Bradley also collected it at Ron Ehman Park in 1995 (100, FTG). Both of these stations are assumed to be extant.

Major Threats: Habitat destruction in the Richmond Pine Rocklands; fire suppression; exotic pest plant invasions.

Comments: *This is a temperate species at the southern end of its range, and it always may have been uncommon in South Florida.*

Preliminary recommendations:

- Voucher plants at Air Force Property, Larry and Penny Thompson Park, Ludlam Pineland, Miami Metrozoo, University of Miami South Campus, and University of Miami's Naval Observatory property.
- Map and monitor known stations on a regular basis.

Chapter 6

The Floristic Status of South Florida Conservation Areas

This chapter provides information on any conservation area in South Florida for which we have any reliable data. The IRC Website (www.regionalconservation.org) has a list of all conservation areas in South Florida. Data on any conservation area in South Florida can be submitted to IRC for inclusion in future editions of this manual. Full data references for conservation areas can be found on the IRC Website.

Existing plant data is comprised of published and unpublished plant lists, herbarium specimens, and personal observations. A plant list is considered reliable if it appears to be based upon field observations by the authors of the list. Plant lists that appear to be based upon probable or likely occurrences of plants, in other words, what people think might be there, have been rejected.

The data contained in this chapter are provided so that park superintendents, land managers, and others can quickly review the status of rare plants in individual conservation areas. However, the information is not meant to be used alone, but in conjunction with the implementation guidelines (Chapter 3) and the species accounts (Chapters 4 and 5) provided elsewhere in this manual. Plants that were collected in the vicinity of a site are only mentioned if an action concerning them is recommended.

In the sections on additional data the following abbreviations have been used: U.S. Fish and Wildlife Service (US); Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FL); Florida Natural Areas Inventory (FNAI); and Florida Exotic Pest Plant Council (FLEPPC). Listing ranks are E (endangered), T (threatened), C (commercially exploited), SX (extirpated in the state), SH (historical in the state), S1 (critically imperiled in the state), S2 (imperiled in the state), and S3 (rare in the state). Codes next to plant names are E (extirpated at the site), H (historical at the site), R (reported for the site), and C (cultivated at the site).

A.D. "Doug" Barnes Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 60.4 acres; approximately 12 acres of natural area (Jue et al., 2001).

Existing plant data: Hammer (1992a) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations. S.R. Hill and others have collected herbarium specimens.

Critically imperiled plants present at the site: Crenulate leadplant (*Amorpha herbacea* var. *crenulata*).

Comments: Fairchild Tropical Garden mapped and recorded other data on crenulate leadplant at this site in 2000 (Fisher, 2000).

Preliminary recommendations:

- Continue mapping *Amorpha herbacea* var. *crenulata* at least every three years.
- Monitor *Amorpha herbacea* var. *crenulata* at least every year.
- Acquire Amorpha Railroad Site and add to A.D. "Doug" Barnes Park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Amorpha herbacea</i> var. <i>crenulata</i>	E	E	S1
<i>Angadenia berteroi</i>		T	
<i>Bletia purpurea</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Cyrtopodium punctatum</i> (E)		E	S1
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia pinetorum</i> (R)			S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Phyla stoechadifolia</i>		E	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pteris bahamensis</i>		T	S3
<i>Tillandsia balbisiana</i>		T	

<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia utriculata</i>	E	
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Eugenia uniflora*, *Lantana camara*, *Melia azedarach*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Cyperus involucratus*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Alice C. Wainwright Park

Location: Miami-Dade County.

Manager: City of Miami.

Size: 21.5 acres; 11.5 acres of rockland hammock (Jue et al., 2001).

Comments: This site contains one of the remnant fragments of historical Brickell Hammock, once the largest and most diverse rockland hammock on the South Florida mainland.

Existing plant data: Hammer (1996a) prepared a preliminary list of vascular plants. G.N. Avery, C. McCartney, Gann, and Bradley have made field observations. R.W. Long collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Alice C. Wainwright Park: Young palm orchid (*Tropidia polystachya*).

Other critically imperiled plants present at the site: Black calabash (*Amphitecna latifolia*) and bitterbush (*Picramnia pentandra*).

Critically imperiled plants reported for the site: Biscayne spleenwort (*Asplenium xbiscaynianum*).

Extirpated plants collected in the vicinity of the site: Balsam torchwood (*Amyris balsamifera*), hammock groundsel (*Baccharis dioica*), and spoonleaf peperomia (*Peperomia magnoliifolia*).

Historical plants collected in the vicinity of the site: Clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*) and Mrs. Lott's vanilla (*Vanilla dilloniana*).

Critically imperiled plants collected in the vicinity of the site: Marsh's dutchman's-pipe (*Aristolochia pentandra*), modest spleenwort (*Asplenium verecundum*), Biscayne spleenwort (*Asplenium xbiscaynianum*), Gulf licaria (*Licaria triandra*), and tall redbottom (*Tridens flavus* var. *flavus*).

Preliminary recommendations:

- Map *Amphitecna latifolia*, *Picramnia pentandra*, and *Tropidia polystachya* at least every three years.
- Monitor *Amphitecna latifolia*, *Picramnia pentandra*, and *Tropidia polystachya* at least every year.
- Consider augmentations of *Amphitecna latifolia* and *Tropidia polystachya*.
- Consider introductions of *Amyris balsamifera*, *Aristolochia pentandra*, *Baccharis dioica*, *Licaria triandra*, *Peperomia magnoliifolia*, *Tillandsia fasciculata* var. *clavispica*, *Tridens flavus* var. *flavus*, and *Vanilla dilloniana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asplenium dentatum</i>		E	S1S2
<i>Asplenium xbiscaynianum</i>			S1
<i>Calyptanthes pallens</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Eugenia confusa</i>		E	S2S3
<i>Ilex krugiana</i>		T	S3
<i>Leiphaimos parasitica</i>		E	S2
<i>Okenia hypogaea</i>		E	S2
<i>Picramnia pentandra</i>		E	S1
<i>Prunus myrtifolia</i>		T	S2
<i>Scleria lithosperma</i>		E	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

Tropidia polystachya
Zamia integrifolia

E SX
C

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Casuarina glauca*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Asystasia gangetica*, *Epipremnum pinnatum*, *Ficus altissima*, *Jasminum sambac*, *Leucaena leucocephala*, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

Andrew Dodge Memorial Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 4.25 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Klein & Bradley (1996) prepared a preliminary list of vascular plants.

Critically imperiled plants present at the site: Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*).

Critically imperiled plants collected in the vicinity of the site: Sand ticktrefoil (*Desmodium lineatum*), purplehead sneezeweed (*Helenium flexuosum*), and Curtiss' nutrush (*Scleria ciliata* var. *curtissii*).

Preliminary recommendations:

- Add site to future editions of Florida Conservation Lands.
- Voucher *Chamaesyce deltoidea* subsp. *adhaerens*.

- Survey for *Desmodium lineatum*, *Helenium flexuosum*, and *Scleria ciliata* var. *curtissii*.
- Map *Chamaesyce deltoidea* subsp. *adhaerens* at least every three years.
- Monitor *Chamaesyce deltoidea* subsp. *adhaerens* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i>			
subsp. <i>adhaerens</i>	E	E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Psidium longipes</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Tetrazygia bicolor</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Albizia lebbek*, *Pennisetum purpureum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Ricinus communis*, *Terminalia catappa*, and *Wedelia trilobata*.

Arch Creek Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 10.31 acres (Jue et al., 2001).

Comments: Includes Arch Creek Addition of Jue et al. (2001).

Existing plant data: The Dade County Native Plant Workshop (1983) and Hammer (1987b) prepared preliminary lists of vascular plants. There is also an anonymous (1993g) plant list. G.N. Avery made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants collected in the vicinity of the site:
Black calabash (*Amphitecna latifolia*).

Preliminary recommendations:

- Consider introduction of *Amphitecna latifolia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Pithecellobium keyense</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Lantana camara*, *Melia azedarach*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Ruellia tweediana*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Cyperus involucratus*, *Jasminum sambac*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

**Arthur R. Marshall Loxahatchee
National Wildlife Refuge**

Location: Palm Beach County.

Manager: United States Fish and Wildlife Service.

Size: 148,488.37 acres (Jue et al., 2001).

Comments: Includes Strazzulla Tract of Jue et al. (2001).

Existing plant data: Austin (1974) prepared a preliminary list of vascular plants. G.N. Avery, the authors, and others have made

field observations. F.C. Craighead, S. Black, and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Arthur R. Marshall Loxahatchee National Wildlife Refuge: Ray fern (*Schizaea pennula*).

Other critically imperiled plants present at the site: Delicate violet orchid (*Ionopsis utricularioides*), hairy primrosewillow (*Ludwigia pilosa*), yellow waterlily (*Nymphaea mexicana*), and Florida mudmidget (*Wolffiella gladiata*).

Critically imperiled plants collected in the vicinity of the site: Bog smartweed (*Polygonum setaceum*).

Comments: The Everglades restoration may have an effect on ray fern and other rare plants in the refuge.

Preliminary recommendations:

- Voucher *Ludwigia pilosa*, *Nymphaea mexicana*, and *Wolffiella gladiata*.
- Survey for *Polygonum setaceum*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Control Old World climbing fern (*Lygodium microphyllum*), which poses a severe threat to the critically imperiled *Schizaea pennula*.
- Conduct research to determine the effects of the Everglades restoration on rare plants in the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Harrisella filiformis</i>		T	
<i>Ionopsis utricularioides</i>		E	S1
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Schizaea pennula</i>		E	S1
<i>Tillandsia balbisiana</i>		T	

Tillandsia fasciculata var. *densispica* E
Tillandsia utriculata E

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Eichhornia crassipes*, *Hydrilla verticillata*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pistia stratiotes*, *Psidium guajava*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Hibiscus tiliaceus*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Tribulus cistoides*, and *Urena lobata*.

Atlantic Dunes Park

Location: Palm Beach County.
Manager: City of Delray Beach.
Size: 7 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) prepared an abbreviated plant list. USFWS (1996) reported on observations of *Jacquemontia reclinata*.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

- Preliminary recommendations:**
- Conduct floristic inventory and prepare preliminary list of vascular plants.
 - Continue mapping *Jacquemontia reclinata* at least every three years.
 - Monitor *Jacquemontia reclinata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Lantana depressa</i> var. <i>floridana</i>		E	S2

Attwood Addition, Indian Key Historic State Park

Location: The Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 6 acres.

Comments: This site is included in Indian Key Historic State Park by Jue et al. (2001), but it is located on Upper Matecumbe Key and is disjunct from the island of Indian Key.

Existing plant data: Gann, J.A. Duquesnel, and Bradley have made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Red stopper (*Eugenia rhombea*).

Critically imperiled plants collected in the vicinity of the site: Marsh's dutchman's-pipe (*Aristolochia pentandra*).

Preliminary recommendations:

- Voucher *Eugenia rhombea*.
- Continue mapping *Eugenia rhombea* at least every three years.
- Monitor *Eugenia rhombea* at least every year.
- Consider introduction of *Aristolochia pentandra*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Eugenia rhombea</i>		E	S1
<i>Exostema caribaeum</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Schaefferia frutescens</i>		E	S2
<i>Smilax havanensis</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, and *Tribulus cistoides*.

Bahia Honda State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 491.25 acres (Jue et al., 2001).

Existing plant data: Hammer (1991), Bradley et al. (1995), and Hammer (1996b) prepared preliminary lists of vascular plants. Weiner (1980, as amended) prepared a plant list for hammocks on the Atkinson Tract, which is now part of Bahia Honda State Park. Kruer (1992) reported observations in hammocks in the park. Gann and J.A. Duquesnel have made field observations throughout the park. A.H. Curtiss, J.K. Small, G.N. Avery, J. Popenoe, D.B. Ward, Bradley and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Smallflower lilythorn (*Catesbaea parviflora*), Havana clustervine (*Jacquemontia havanensis*), and yellowwood (*Zanthoxylum flavum*).

Comments: The critically imperiled black calabash (*Amphitecna latifolia*) has been planted at the site outside of its historical range.

Preliminary recommendations:

- Map *Catesbaea parviflora* at least every three years. Continue mapping *Jacquemontia havanensis* and *Zanthoxylum flavum* at least every three years.
- Monitor *Catesbaea parviflora*, *Jacquemontia havanensis*, and *Zanthoxylum flavum* at least on an annual basis.
- Continue augmentation of *Zanthoxylum flavum*.

- Remove cultivated plants of *Amphitecna latifolia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Argusia gnaphalodes</i>		E	S3
<i>Byrsonima lucida</i>		T	S3
<i>Catesbaea parviflora</i>		E	S1
<i>Chamaesyce garberi</i>	T	E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina arborescens</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Evolvulus convolvuloides</i> (H)		E	
<i>Hippomane mancinella</i>		E	S2
<i>Jacquemontia havanensis</i>		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Smilax havanensis</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Zanthoxylum flavum</i>		E	S1

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Ficus microcarpa*, *Manilkara zapota*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Tribulus cistoides*.

Barefoot Beach Preserve

Location: Collier County.
Manager: Collier County.
Size: 342 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) prepared an abbreviated plant list. Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Albizia lebeck*, *Casuarina equisetifolia*, *Casuarina glauca*, *Scaevola sericea*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

Barley Barber Swamp

Location: Martin County.
Manager: Florida Power and Light.
Size: 435.61 acres (Jue et al., 2001).

Existing plant data: Cox (1988) prepared a preliminary list of vascular plants in hammocks on the site.

Critically imperiled plants collected in the vicinity of the site:
Lyreleaf sage (*Salvia lyrata*).

Recommendations

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Salvia lyrata*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Myrcianthes fragrans</i>		T	

FLEPPC Category I Exotics: *Psidium guajava* and *Schinus terebinthifolius*.

Bartlett Estate

Location: Broward County.

Manager: Florida Trust for Historic Preservation.

Size: 35 acres.

Comments: This site contains the historic Bonnett House.

Existing plant data: Johnson & Muller (1993a) prepared an abbreviated plant list. Scott Zona collected a herbarium specimen of *Coccothrinax argentata*.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Coccothrinax argentata</i>		T	S3
<i>Drypetes lateriflora</i>		T	
<i>Pithecellobium keyense</i>		T	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Bessemer

Location: Martin County.

Manager: Martin County.

Size: 432 acres (Jue et al., 2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Pinebarren aster (*Aster reticulatus*), bluethread (*Burmannia biflora*), yellow butterwort (*Pinguicula lutea*), primroseleaf violet (*Viola primulifolia*), Florida mudmidget (*Wolffiella gladiata*), fringed yelloweyedgrass (*Xyris fimbriata*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Pinguicula lutea* and *Wolffiella gladiata*.
- Map critically imperiled species at least every three years.
- Monitor critically imperiled species at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Lilium catesbaei</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula lutea</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Eichhornia crassipes*, *Imperata cylindrica*, *Lantana camara*, *Lygodium microphyllum*, *Panicum repens*, *Psidium cattleianum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens* and *Urena lobata*.

Big and Little George Hammocks

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 18.21 acres (Jue et al., 2001).

Comments: This conservation area is comprised of two nearby but disjunct hammocks: Big George Hammock and Little George Hammock. The historical name of Big George Hammock is White Lightning Hammock and the historical name of Little George Hammock is Little George Gann Hammock (Gann, 2001a).

Existing plant data: Avery (1979b) prepared a preliminary plant list of Little George Hammock. G.N. Avery and Gann have made field observations. Avery collected a herbarium specimen of tall neottia (*Spiranthes elata*) in Big George Hammock. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Historical plants collected at the site: Tall neottia (*Spiranthes elata*).

Preliminary recommendations:

- Conduct floristic inventory and amend preliminary list of vascular plants.
- Survey for *Spiranthes elata* in Big George Hammock every year in March.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Pteris bahamensis</i>		T	S3
<i>Sacoila lanceolata</i> var. <i>paludicola</i>		T	S1
<i>Spiranthes elata</i> (H)		E	S1
<i>Tillandsia variabilis</i>		T	
<i>Zamia integrifolia</i>		C	

Big Cypress National Preserve

Location: Collier and Miami-Dade counties, and the Monroe County mainland.

Manager: National Park Service.

Size: 729,000 acres (Jue et al., 2001).

Existing plant data: Black & Black (1980) prepared a preliminary plant list. Plants lists for various regions of the preserve also have been prepared (e.g. Gunderson & Loope, 1982a; Gunderson & Loope, 1982b). G.N. Avery, C. McCartney, the authors, and many others have made field observations. F.C. Craighead, D.S. Correll & H.B. Correll, G.N. Avery, D. Black & S. Black, Bradley, J. Muss, and many others have collected herbarium specimens. Muss et al. have a new plant list in press. This is a relatively well-botanized park, but recent additions of land to the preserve make additional floristic inventory work essential.

Historical plants collected at the site: Upright burhead (*Echinodorus berteroi*), Florida quillwort (*Isoetes flaccida*), and cypress peperomia (*Peperomia glabella*).

Historical plants reported for the site: Texas lady's-tresses (*Spiranthes brevilabris*).

Critically imperiled plants protected only at Big Cypress National Preserve: Fakahatchee bluethead (*Burmannia flava*), Maryland goldenaster (*Chrysopsis mariana*), pepperbush (*Croton humilis*), stiff sunflower (*Helianthus radula*), Wright's waternymph (*Najas wrightiana*), yerba linda (*Peperomia rotundifolia*), and entire-winged bristle fern (*Trichomanes holopterum*).

Other critically imperiled plants present at the site: Yellow screwstem (*Bartonia virginica*), giant sedge (*Carex gigantea*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), shortleaf skeleton grass (*Gymnopogon brevifolius*), St. Peter's-wort (*Hypericum crux-andreae*), delicate violet orchid (*Ionopsis utricularioides*), hidden orchid (*Maxillaria crassifolia*), oak mistletoe (*Phoradendron leucarpum*), smallflower mock buckthorn (*Sageretia minutiflora*), twistedleaf goldenrod (*Solidago tortifolia*), southern lady's-tresses (*Spiranthes torta*); lattice-vein fern (*Thelypteris reticulata*), fuzzywuzzy airplant (*Tillandsia pruinosa*), and netted chain fern (*Woodwardia areolata*).

Critically imperiled plants formerly present at the site: Atlantic pigeonwings (*Clitoria mariana*), roadside leafbract (*Malachra urens*), lesser creeping rush (*Juncus repens*), and bog smartweed (*Polygonum setaceum*).

Critically imperiled plants reported for the site: Seminole false foxglove (*Agalinis filifolia*), American lotus (*Nelumbo lutea*), pantropical widelip orchid (*Liparis nervosa*), Florida dancinglady orchid (*Oncidium ensatum*), hairy maiden fern (*Thelypteris hispidula* var. *versicolor*), hoopvine (*Trichostigma octandrum*), and leafy vanilla (*Vanilla phaeantha*).

Extirpated plants collected in the vicinity of the site: Florida roseling (*Callisia cordifolia*).

Historical plants collected in the vicinity of the site: Florida milkweed (*Asclepias feayi*), scaldweed (*Cuscuta gronovii*), and pineland lobelia (*Lobelia homophylla*).

Critically imperiled plants collected in the vicinity of the site: Narrow strap fern (*Campyloneurum angustifolium*), giant sedge (*Carex gigantea*), rough barnyard grass (*Echinochloa muricata*), Big Cypress star orchid (*Epidendrum strobiliferum*), goldenclub (*Orontium aquaticum*), racemed milkwort (*Polygala polygama*), and southern bladderwort (*Utricularia juncea*).

Preliminary recommendations:

- Voucher *Solidago tortifolia* and *Tillandsia pruinosa*.
- Survey for *Nelumbo lutea* and *Vanilla phaeantha*.
- Map and monitor *Solidago tortifolia* and *Tillandsia pruinosa*.
- Continue prescribed fire program and exotic pest plant eradication programs. Reduce impacts of recreational off-road vehicle traffic and eliminate where possible. Control and reduce population of wild hogs. Limit impacts of oil drilling on rare plants.

In the Bear Island area:

- In the Bear Island area, voucher *Hypericum crux-andreae*.
- Map and monitor *Bartonia virginica*, *Burmannia flava*, *Chrysopsis mariana*, *Gymnopogon brevifolius*, *Helianthus radula*, *Hypericum crux-andreae*, and *Sageretia minutiflora*.

In the Deep Lake area:

- Survey for *Lobelia homophylla*, *Echinochloa muricata*, and *Ionopsis utricularioides*.
- Consider introduction of *Callisia cordifolia*.

In the Gator Hook Strand area:

- Map and monitor *Thelypteris reticulata*.

In Halfway Creek area:

- Map and monitor *Najas wrightiana*.

In the Kissimmee Billy Strand area:

- Survey for *Agalinis filifolia*, *Burmannia flava*, *Clitoria mariana*, and *Hypericum crux-andreae*.
- Map and monitor *Burmannia flava*, *Carex gigantea*, and *Ionopsis utricularioides*.

In the Monument Road area:

- Survey for *Juncus repens* and *Peperomia glabella*.

In the Oasis Ranger Station area:

- Voucher *Dalea carthagenensis* var. *floridana*.
- Map and monitor *Dalea carthagenensis* var. *floridana*.

In the Okaloacoochee Slough area:

- Survey for *Asclepias feayi*, *Carex gigantea*, *Cuscuta gronovii*, and *Orontium aquaticum*.
- Contingent upon results of surveys, consider introduction of *Cuscuta gronovii*.

In the Pinecrest/Loop Road area:

- Survey for *Campyloneurum angustifolium*, *Echinodorus berteroi*, *Isoetes flaccida*, *Polygonum setaceum*, *Thelypteris hispidula* var. *versicolor*, *Trichostigma octandrum*, and *Utricularia juncea*.
- Map and monitor *Carex gigantea*, *Croton humilis*, *Dalea carthagenensis* var. *floridana*, *Ionopsis utricularioides*, *Maxillaria crassifolia*, *Peperomia rotundifolia*, *Trichomanes holopterum*, and *Woodwardia areolata*.

In the Rabenau Camp area:

- Survey for *Polygala polygama* and *Spiranthes brevilabris*.
- Map and monitor *Ionopsis utricularioides*, *Phoradendron leucarpum*, and *Spiranthes torta*.
- Contingent upon results of surveys, consider reintroduction of *Spiranthes brevilabris*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aeschynomene pratensis</i> var. <i>pratensis</i>		E	S2
<i>Aletris bracteata</i>		E	S2
<i>Angadenia berteroi</i>		T	
<i>Asplenium serratum</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Burmannia flava</i>		E	S1

<i>Calopogon multiflorus</i>	E	S2S3
<i>Calyptanthus pallens</i>	T	
<i>Catopsis berteroniana</i>	E	S1S2
<i>Catopsis floribunda</i>	E	S1
<i>Chamaesyce pergamaena</i>	T	
<i>Chrysophyllum oliviforme</i>	T	
<i>Colubrina arborescens</i>	E	
<i>Cordia globosa</i>	E	
<i>Croton humilis</i>	E	
<i>Ctenitis sloanei</i>	E	S2
<i>Cynanchum blodgettii</i>	T	
<i>Cyrtopodium punctatum</i>	E	S1
<i>Dalea carthagenensis</i> var. <i>floridana</i>	E	S1
<i>Drypetes lateriflora</i>	T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>		S2
<i>Encyclia cochleata</i>	E	S2
<i>Encyclia tampensis</i>	C	
<i>Epidendrum anceps</i>	E	
<i>Epidendrum floridense</i>	E	
<i>Epidendrum nocturnum</i>	E	S2
<i>Epidendrum rigidum</i>	E	
<i>Glandularia maritima</i>	E	S3
<i>Guzmania monostachia</i>	E	S1S2
<i>Habenaria nivea</i>	T	
<i>Harrisella filiformis</i>	T	
<i>Hibiscus poeppigii</i>	E	
<i>Ionopsis utricularioides</i>	E	S1
<i>Jacquemontia curtisii</i>	T	S2
<i>Jacquemontia pentanthos</i>	E	S2
<i>Lantana depressa</i> var. <i>sanibelensis</i>	E	S1
<i>Lilium catesbaei</i>	T	
<i>Linum carteri</i> var. <i>smallii</i>	E	S2
<i>Maxillaria crassifolia</i>	E	S1
<i>Melanthera parvifolia</i>	T	
<i>Microgramma heterophylla</i>	E	S2
<i>Myrcianthes fragrans</i>	T	
<i>Nephrolepis biserrata</i>	T	
<i>Ocimum campechianum</i>	E	
<i>Ophioglossum palmatum</i>	E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Passiflora pallens</i>	E	S2
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>	E	S2
<i>Peperomia glabella</i> (H)	E	

<i>Peperomia obtusifolia</i>	E	S2
<i>Polyradicion lindenii</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Pteris bahamensis</i>	T	S3
<i>Roystonea regia</i>	E	S2
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Spiranthes brevilabris</i>	E	
<i>Spiranthes laciniata</i>	T	
<i>Spiranthes longilabris</i>	T	
<i>Spiranthes torta</i>	E	S1
<i>Thelypteris reticulata</i>	E	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia pruinosa</i>	E	S1
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Trichomanes holopterum</i>	E	S1
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zephyranthes simpsonii</i>	T	SH

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Casuarina equisetifolia*, *Casuarina glauca*, *Colocasia esculenta*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Hydrilla verticillata*, *Imperata cylindrica*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Solanum viarum*, *Syngonium podophyllum*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Dalbergia sissoo*, *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Syzygium jambos*, and *Urena lobata*.

**Big Torch Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 103.65 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants known at the site: None:

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Reynosia septentrionalis</i>		T	
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Manilkara zapota*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Oeceoclades maculata* and *Sansevieria hyacinthoides*.

**Big Torch Key Parcels 884 and 885,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 67.19 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2001) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations and have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of [Florida Conservation Lands](#).
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Chamaesyce garberi</i>	T	E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Linum arenicola</i>		E	S1S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2

<i>Reynosia septentrionalis</i>	T	
<i>Rhynchospora floridensis</i>		S2
<i>Solanum verbascifolium</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Nephrolepis multiflora*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Oeceoclades maculata*, and *Phoenix reclinata*.

Bill Baggs Cape Florida State Park

Location: Miami-Dade County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 431.63 acres (Jue et al., 2001).

Comments: This site is constantly threatened by development efforts, including the installation of sports fields for the Town of Key Biscayne.

Existing plant data: Numerous plant lists have been prepared for the park beginning with Hammer & Popenoe (1979). Gann, Bradley, E. Golden, J.A. Duquesnel, and others have made field observations. W.T. Gillis, J. Popenoe, Gann & Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Bill Baggs Cape Florida State Park: White spikerush (*Eleocharis albida*).

Other critically imperiled plants present at the site: Florida flatsedge (*Cyperus floridanus*) and Florida shrubverbena (*Lantana depressa* var. *floridana*).

Critically imperiled plants collected in the vicinity of the site: Beach clustervine (*Jacquemontia reclinata*) and Biscayne pricklyash (*Zanthoxylum coriaceum*).

Comments: Introductions of *Jacquemontia reclinata* and *Zanthoxylum coriaceum* have been initiated at the site. The state-

listed species *Calypttranthes pallens* and *Senna mexicana* var. *chapmanii* have been planted at the site outside of their historical ranges.

Preliminary recommendations:

- Map *Cyperus floridanus*, *Eleocharis albida*, and *Lantana depressa* var. *floridana* at least every three years.
- Monitor *Cyperus floridanus*, *Eleocharis albida*, and *Lantana depressa* var. *floridana* at least every year.
- Extirpate *Lantana camara* from the site and destroy hybrids with *L. depressa* var. *floridana*.
- Consider augmentation of *Eleocharis albida*.
- Continue ongoing efforts to introduce *Jacquemontia reclinata* and *Zanthoxylum coriaceum*.
- Remove cultivated plants of *Calypttranthes pallens* and *Senna mexicana* var. *chapmanii* from the site.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Argusia gnaphalodes</i>		E	S3
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cyperus floridanus</i>		E	S1
<i>Cyrtopodium punctatum</i> (E)		E	S1
<i>Erithalis fruticosa</i>		T	
<i>Lantana depressa</i> var. <i>floridana</i>		E	S2
<i>Melanthera parvifolia</i> (E)		T	
<i>Okenia hypogaea</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Pteris bahamensis</i> (E)		T	S3
<i>Reynosia septentrionalis</i> (E, C)		T	
<i>Scaevola plumieri</i>		T	
<i>Zamia integrifolia</i> (C)		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colubrina asiatica*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*,

Scaevola sericea, *Schinus terebinthifolius*, *Solanum viarum*, *Syngonium podophyllum*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Bill Sadowski Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 29.26 acres; approximately 20.5 acres of pine rockland and rockland hammock (Jue et al., 2001).

Existing plant data: The Dade County Native Plant Workshop (1985) prepared a preliminary list of vascular plants, which was amended by Lippincott (1992b), and Bradley & Hammer (1996). Bradley has made field observations. Bradley, A. Cressler, Woodmansee and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Grid-scale maiden fern (*Thelypteris patens*).

Historical plants collected in the vicinity of the site: Tall neottia (*Spiranthes elata*).

Critically imperiled plants collected in the vicinity of the site: Young palm orchid (*Tropidia polystachya*).

Critically imperiled plants reported for the vicinity of the site: Pineland strongback (*Bourreria cassinifolia*).

Preliminary recommendations:

- Map *Thelypteris patens* at least every three years.
- Monitor *Thelypteris patens* at least every year.
- Consider introductions of *Bourreria cassinifolia*, *Spiranthes elata*, and *Tropidia polystachya*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Angadenia berteroi</i>		T	
<i>Asplenium dentatum</i>		E	S1S2
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Galactia pinetorum</i>			S2
<i>Ilex krugiana</i>		T	S3
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Leiphaimos parasitica</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Picramnia pentandra</i>		E	S1
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchosia parvifolia</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tectaria fimbriata</i>		E	S2
<i>Tectaria heracleifolia</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris augescens</i>		T	
<i>Thelypteris patens</i>		E	
<i>Thelypteris reptans</i>		E	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	

<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Eugenia uniflora*, *Hydrilla verticillata*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Tectaria incisa*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Biscayne National Park

Location: Miami-Dade County.

Manager: National Park Service.

Size: 172,924.07 acres (Jue et al., 2001).

Existing plant data: Carter et al. (1976), Avery (1978c), Hammer (1987a), and Hammer & Bradley (1998) prepared preliminary lists of vascular plants. Stalter et al. (1999) published a plant list in the journal *Sida*. The authors have made field observations and are currently conducting floristic inventory work for the National Park Service. N.L. Britton, J.K. Small, F.C. Craighead, G.N. Avery, the authors, and others have collected herbarium specimens.

Extirpated plants collected at the site: Ribbon fern (*Nevrodium lanceolatum*) and Yucatan sage (*Salvia micrantha*).

Historical plants collected at the site: Florida Keys lady's-tresses (*Spiranthes polyantha*).

Critically imperiled plants protected only at Biscayne National Park: Marsh's Dutchman's-pipe (*Aristolochia pentandra*) and Sargent's cherry palm (*Pseudophoenix sargentii*).

Other critically imperiled plants present at the site: Yellow nicker (*Caesalpinia major*), lignumvitae (*Guajacum sanctum*), Swartz's snoutbean (*Rhynchosia swartzii*), and pearlberry (*Vallesia antillana*).

Critically imperiled plants formerly present at the site: Black calabash (*Amphitecna latifolia*) and red stopper (*Eugenia rhombea*).

Critically imperiled plants reported for the site: Mahogany mistletoe (*Phoradendron rubrum*).

Comments: The island sections of this park are being overrun by exotic pest plants, especially latherleaf (*Colubrina asiatica*).

Preliminary recommendations:

- Voucher *Opuntia corallicola*
- Map *Opuntia corallicola* at least every three years.
- Monitor *Opuntia corallicola* at least every year.
- Control *Colubrina asiatica* and other exotic pest plants that threaten rare plants in Biscayne National Park.

On Adams Key:

- Voucher *Vallesia antillana*.
- Continue surveys for *Rhynchosia swartzii*.
- Continue mapping *Vallesia antillana* at least every three years.
- Monitor *Vallesia antillana* at least every year.

On Elliott Key:

- Voucher *Caesalpinia major*.
- Continue surveys for *Amphitecna latifolia*, *Phoradendron rubrum*, and *Vallesia antillana*.
- Continue mapping *Pseudophoenix sargentii* at least every three years.
- Map *Aristolochia pentandra*, *Caesalpinia major*, and *Rhynchosia swartzii* at least every three years.
- Continue monitoring *Pseudophoenix sargentii* at least every year.
- Monitor *Aristolochia pentandra*, *Caesalpinia major*, and *Rhynchosia swartzii* at least every year.
- Continue augmentation of *Pseudophoenix sargentii*.
- Consider reintroductions of *Salvia micrantha* and *Spiranthes polyantha*.

On Meig's Key:

- Map *Eugenia rhombea* at least every three years.
- Monitor *Eugenia rhombea* at least every year.

On Old Rhodes Key:

- Voucher *Eugenia rhombea* and *Vallesia antillana*.
- Continue surveys for *Phoradendron rubrum*.
- Consider reintroduction of *Nevrodium lanceolatum* on mangrove margins of the island.
- Map *Eugenia rhombea* at least every three years.
- Monitor *Eugenia rhombea* at least every year.

On Sands Key:

- Initiate surveys for *Guajacum sanctum*, *Phoradendron rubrum*, and *Vallesia antillana*.

On Totten Key:

- Voucher *Guajacum sanctum*.
- Continue surveys for *Caesalpinia major*, *Eugenia rhombea*, *Phoradendron rubrum*, and *Vallesia antillana*.
- Map *Guajacum sanctum* at least every three years.
- Monitor *Guajacum sanctum* at least every year.

On mainland

- Voucher *Pavonia paludicola*.
- Map and monitor *Pavonia paludicola*.

Additional data:

Listed Plants:

	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Argusia gnaphalodes</i>		E	S3
<i>Argythamnia blodgettii</i> (H)		E	S2
<i>Aristolochia pentandra</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Bouyeria succulenta</i>		E	
<i>Caesalpinia major</i>		E	
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Celosia nitida</i>		E	
<i>Chamaesyce porteriana</i>		E	S2
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina arborescens</i>		E	
<i>Colubrina elliptica</i>		E	

<i>Crossopetalum rhacoma</i>	T	S3
<i>Dalbergia brownii</i>	E	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>	T	
<i>Drypetes diversifolia</i>	E	S2
<i>Drypetes lateriflora</i>	T	
<i>Encyclia boothiana</i> var. <i>erythronioides</i>	E	S1
<i>Encyclia tampensis</i>	C	
<i>Erithalis fruticosa</i>	T	
<i>Eugenia confusa</i>	E	S2S3
<i>Eugenia rhombea</i>	E	S1
<i>Exostema caribaeum</i>	E	S2
<i>Gossypium hirsutum</i> (E)	E	
<i>Guajacum sanctum</i>	E	S2
<i>Harrisia simpsonii</i>	E	S2
<i>Hippomane mancinella</i>	E	S2
<i>Jacquinia keyensis</i>	T	S3
<i>Leiphaimos parasitica</i>	E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Microgramma heterophylla</i> (E)	E	S2
<i>Nevrodium lanceolatum</i> (E)	E	S1
<i>Okenia hypogaea</i>	E	S2
<i>Opuntia corallicola</i>	E	S1
<i>Opuntia stricta</i>	T	
<i>Paspalidium chapmanii</i>	E	
<i>Passiflora multiflora</i>	E	S1
<i>Phyla stoechadifolia</i>	E	
<i>Pithecellobium keyense</i>	T	
<i>Polystachya concreta</i> (E)	E	
<i>Prunus myrtifolia</i> (R)	T	S2
<i>Pseudophoenix sargentii</i>	E	S1
<i>Pteris bahamensis</i>	T	
<i>Reynosia septentrionalis</i>	T	
<i>Rhynchosia swartzii</i>	E	S1
<i>Salvia micrantha</i> (E)		SX
<i>Scaevola plumieri</i>	T	
<i>Schaefferia frutescens</i>	E	S2
<i>Smilax havanensis</i>	T	
<i>Spiranthes polyantha</i> (E)	E	S1S2
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	

<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Trema lamarckianum</i>	E	S2
<i>Vallesia antillana</i>	E	S1
<i>Zamia integrifolia</i> (C)	C	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Colubrina asiatica*, *Eugenia uniflora*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Ficus altissima*, *Hibiscus tiliaceus*, *Jasminum sambac*, *Leucaena leucocephala*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Tribulus cistoides*, and *Wedelia trilobata*.

Black Creek Forest

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 6.98 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.q) plant list. Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*) and spiked hoarypea (*Tephrosia spicata*).

Critically imperiled plants collected in the vicinity of the site: Sand ticktrefoil (*Desmodium lineatum*), purplehead sneezeweed

(*Helenium flexuosum*), and Curtiss' nutrush (*Scleria ciliata* var. *curtissii*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Chamaesyce deltoidea* subsp. *adhaerens*.
- Survey for *Desmodium lineatum*, *Helenium flexuosum*, and *Scleria ciliata* var. *curtissii*.
- Map *Chamaesyce deltoidea* subsp. *adhaerens* and *Tephrosia spicata* at least every three years.
- Monitor *Chamaesyce deltoidea* subsp. *adhaerens* and *Tephrosia spicata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Angadenia berteroi</i>		T	
<i>Asplenium dentatum</i>		E	S1S2
<i>Calyptanthes pallens</i>		T	
<i>Chamaesyce porteriana</i>		E	S2
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Ilex krugiana</i>		T	S3
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Spermacoce terminalis</i>		T	
<i>Tectaria heracleifolia</i>		T	
<i>Thelypteris augescens</i>		T	
<i>Thelypteris reptans</i>		E	S1
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Trema lamarckianum</i>		E	S2
<i>Tripsacum floridanum</i>		T	S2

Zamia integrifolia

C

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Ardisia elliptica*, *Bischofia javanica*, *Nephrolepis cordifolia*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Tectaria incisa*.

FLEPPC Category II Exotics: *Oeceoclades maculata* and *Ricinus communis*.

Black Point Park and Marina

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 117.88 acres; approximately 57 acres of tidal swamp (Jue et al., 2001).

Existing plant data: Bradley has made field observations. Bradley and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Swampbush (*Pavonia paludicola*).

Preliminary recommendations:

- Map *Pavonia paludicola* at least every three years.
- Monitor *Pavonia paludicola* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Pavonia paludicola</i>		E	
<i>Pteris bahamensis</i>		T	S3

FLEPPC Category I Exotics: *Ardisia elliptica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colubrina asiatica*, *Jasminum fluminense*, *Neyraudia reynaudiana*, *Pennisetum purpureum*,

Scaevola sericea, *Schinus terebinthifolius*, *Thespesia populnea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Passiflora foetida*, *Pteris vittata*, *Ricinus communis*, and *Wedelia trilobata*.

Blazingstar Preserve

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 24.14 acres (Jue et al., 2001).

Comments: This site is called Osborne Property in Jue et al. (2001).

Existing plant data: There is an anonymous (1994b) plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Add site to future editions of [Florida Conservation Lands](#).
- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map and monitor state-list endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Albizia julibrissin*, *Psidium cattleianum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Blowing Rocks Preserve

Location: Martin County.
Manager: The Nature Conservancy.
Size: 66.67 acres (Jue et al., 2001).

Existing plant data: Richardson et al. (1992) published a plant list in Florida Scientist. Johnson & Muller (1993a) prepared an abbreviated plant list. G.N. Avery, J. Popenoe, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants reported for the site: Big alfalfa dodder (*Cuscuta indecora*).
Critically imperiled plants collected in the vicinity of the site: White spikerush (*Eleocharis albida*) and yellow nicker (*Caesalpinia major*).

- Preliminary recommendations:**
- Survey for *Cuscuta indecora* and *Eleocharis albida*.
 - Consider introduction of *Caesalpinia major*.
 - Contingent upon results of surveys, consider introduction of *Eleocharis albida*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Chamaesyce cumulicola</i>		E	S2
<i>Chrysophyllum oliviforme</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Glandularia maritima</i>		E	S3
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Lantana camara*, *Scaevola sericea*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

**Blue Heron Hammock,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 51.45 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2000) prepared a preliminary plant list. Bradley & Woodmansee have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Comments: The state-listed West Indian mahogany (*Swietenia mahagoni*) has naturalized at the site outside of historical range.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.
- Remove *Swietenia mahagoni*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Chamaesyce porteriana</i>		E	S2
<i>Cordia globosa</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	

<i>Gossypium hirsutum</i>	E	S3
<i>Gyneria latifolia</i>	E	S2
<i>Jacquinia keyensis</i>	T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia stricta</i>	T	
<i>Pithecellobium keyense</i>	T	
<i>Reynosa septentrionalis</i>	T	
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Albizia lebeck*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Eugenia uniflora*, *Manilkara zapota*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Antigonon leptopus*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, and *Terminalia catappa*.

Boca Chica Beach

Location: Monroe County Keys.

Manager: Monroe County.

Size: 6 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley and Woodmansee have made field observations and have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Ageratum littorale</i>		E	S2
<i>Argusia gnaphalodes</i>		E	S3
<i>Erithalis fruticosa</i>		T	
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Thrinax radiata</i>		E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Scaevola sericea*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Tribulus cistoides*.

Bocilla Preserve

Location: Lee County.

Manager: Lee County.

Size: 197 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.r) plant list.

Critically imperiled plants reported for the site: Aboriginal pricklyapples (*Harrisia aboriginum*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Harrisia aboriginum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Jacquinia keyensis</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Melaleuca quinquenervia*, and *Schinus terebinthifolius*.

Boystown Pineland

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 76.71 acres (Jue et al., 2001).

Existing plant data: Bradley et al. (1993) prepared a preliminary list of vascular plants. Bradley has made field observations. Bradley has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:
Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Bletia purpurea</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Glandularia maritima</i>		E	S3
<i>Ilex krugiana</i>			S3
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Tetrazygia bicolor</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Jasminum dichotomum*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Caloosahatchee Regional Park

Location: Lee County.

Manager: Lee County.

Size: 768 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.) plant list. Gann, R. Clark, and R. Irving have made field observations. The IRC website (Gann et al., 2001a) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants protected only at Caloosahatchee Regional Park: Swamp tupelo (*Nyssa sylvatica* var. *biflora*).

Other critically imperiled plants present at the site: Trumpet creeper (*Campsis radicans*), sand blackberry (*Rubus cuneifolius*), and American elm (*Ulmus americana*).

Extirpated plants collected in the vicinity of the site: Tampa mock vervain (*Glandularia tampensis*).

Historical plants collected in the vicinity of site: Florida milkweed (*Asclepias feayi*), matted waterstarwort (*Callitriche peploides*), scaldweed (*Cuscuta gronovii*), coastalplain flatsedge (*Cyperus cuspidatus*), helmet skullcap (*Scutellaria integrifolia*), Chapman's purpletop tridens (*Tridens flavus* var. *chapmanii*).

Critically imperiled plants collected in the vicinity of the site: Seminole false foxglove (*Agalinis filifolia*), chaffweed (*Anagallis minima*), hammock false rein orchid (*Habenaria distans*), Savannah panicum (*Phanopyrum gymnocarpon*), Fernald's beakrush (*Rhynchospora fernaldii*), twistedleaf goldenrod (*Solidago tortifolia*), and sparkleberry (*Vaccinium arboreum*).

Comments: This is a very important site along the bank of the Caloosahatchee River. Wild hogs, and invasive exotic pest plants such as wild taro (*Colocasia esculenta*) and Brazilian-pepper (*Schinus terebinthifolius*), are heavily impacting this site.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Campsis radicans*, *Nyssa sylvatica* var. *biflora*, *Rubus cuneifolius*, *Vaccinium arboreum*, and *Ulmus americana*.
- Survey for *Agalinis filifolia*, *Anagallis minima*, *Asclepias feayi*, *Callitriche peploides*, *Cuscuta gronovii*, *Cyperus cuspidatus*, *Phanopyrum gymnocarpon*, *Rhynchospora fernaldii*, *Scutellaria integrifolia*, *Solidago tortifolia*, and *Tridens flavus* var. *chapmanii*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider introduction of *Habenaria distans*.
- Contingent upon results of surveys, consider introductions of *Asclepias feayi*, *Callitriche peploides*, *Cuscuta gronovii*, *Cyperus cuspidatus*, *Scutellaria integrifolia*, and *Tridens flavus* var. *chapmanii*.
- Control wild hogs and invasive exotic pest plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Myrcianthes fragrans</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Ardisia elliptica*, *Bischofia javanica*, *Colocasia esculenta*, *Eugenia uniflora*, *Melaleuca quinquenervia*, *Melia azedarach*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium guajava*, *Ruellia tweediana*, *Schinus terebinthifolius*, and *Senna pendula* var. *glabrata*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Dalbergia sissoo*, *Urena lobata*, and *Wedelia trilobata*.

Camp Owaissa Bauer

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 99.35 acres of natural areas (Jue et al., 2001).

Comments: Includes Owaissa Bauer Pineland Addition #1 of Jue et al. (2001).

Existing plant data: Loope et al. (1979) prepared a preliminary list of vascular plants for pine rocklands at the site. Hammer (1989a) prepared a preliminary list of vascular plants, that was amended by Fairchild Tropical Garden (1990b, 1991c). G.N. Avery, R.L. Hammer, Gann, Bradley, and others have made field observations. J.K. Small, Avery, Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Pineland strongback (*Bouyeria cassinifolia*), Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*), lobed croton (*Croton lobatus*), longclaw orchid (*Eltroplectris calcarata*), hammock shrubverbena (*Lantana canescens*), holly vine fern (*Lomariopsis kunzeana*), and goatsfoot (*Passiflora sexflora*).

Critically imperiled plants formerly present at the site: Narrow strap fern (*Campyloneurum angustifolium*), tailed strap fern (*Campyloneurum costatum*), and Kraus' bristle fern (*Trichomanes krausii*).

Critically imperiled plants observed at the site: Bearded skeleton grass (*Gymnopogon ambiguus*) and Costa Rican lady's-tresses (*Spiranthes costaricensis*).

Comments: The critically imperiled bitterbush (*Picramnia pentandra*) was planted at the site outside of its historical range and has escaped from cultivation.

Preliminary recommendations:

- Voucher *Bouyeria cassinifolia*.
- Re-voucher *Croton lobatus* whenever plants are present.

- Continue surveys for *Gymnopogon ambiguus*.
- Survey for *Trichomanes krausii*.
- Survey for *Croton lobatus* following fires or other disturbances.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider reintroductions of *Campyloneurum angustifolium*, *Campyloneurum costatum*, and *Gymnopogon ambiguus*.
- Remove cultivated and escaped plants of *Picramnia pentandra*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Alvaradoa amorphoides</i>		E	S1
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bletia purpurea</i>		T	
<i>Bourreria cassinifolia</i>		E	S1
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Campyloneurum angustifolium</i> (E)		E	S1
<i>Campyloneurum costatum</i> (E)		E	S2
<i>Catopsis berteroniana</i>		E	S1S2
<i>Catopsis floribunda</i>		E	S1
<i>Celosia nitida</i> (E)		E	
<i>Chamaesyce deltoidea</i> subsp. <i>adhaerens</i>	E	E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina cubensis</i> var. <i>floridana</i>		E	S1
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Cynanchum blodgettii</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Eltroplectris calcarata</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	

<i>Galactia pinetorum</i>		S2
<i>Ilex krugiana</i>	T	S3
<i>Ipomoea microdactyla</i>	E	S1S2
<i>Ipomoea tenuissima</i>	E	S1S2
<i>Jacquemontia curtisii</i>	T	S2
<i>Koanophyllon villosum</i>	E	S2
<i>Lantana canescens</i>	E	S1
<i>Lantana depressa</i> var. <i>depressa</i>	E	S3
<i>Leiphaimos parasitica</i>	E	S2
<i>Linum arenicola</i>	E	S1S2
<i>Linum carteri</i> var. <i>carteri</i>	E	S1
<i>Lomariopsis kunzeana</i>	E	S1
<i>Melanthera parvifolia</i>	T	
<i>Myrcianthes fragrans</i> (C)	T	
<i>Nephrolepis biserrata</i>	T	
<i>Passiflora pallens</i>	E	S2
<i>Passiflora sexflora</i>	E	S2
<i>Pecluma ptilodon</i> var. <i>caespitosa</i> (E)	E	S2
<i>Peperomia obtusifolia</i>	E	S2
<i>Phyla stoechadifolia</i>	E	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Poinsettia pinetorum</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchosia parvifolia</i>	T	
<i>Rhynchospora floridensis</i>		S2
<i>Sachsia polycephala</i>	T	S2
<i>Scutellaria havanensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Spiranthes costaricensis</i> (H)	E	S1
<i>Spiranthes torta</i> (E)	E	S1
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris reptans</i>	E	S1
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3

<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Trichomanes krausii</i>	E	S1
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Adenantha pavonina*, *Antigonon leptopus*, *Leucaena leucocephala*, *Merremia tuberosa*, *Murraya paniculata*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Terminalia catappa*, *Terminalia muelleri*, *Tribulus cistoides*, and *Wedelia trilobata*.

Cape Romano–Ten Thousand Islands Aquatic Preserve

Location: Collier County.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 53,913 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) produced an abbreviated plant list. Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides an abbreviated list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Scaevola sericea*, and *Schinus terebinthifolius*.

Carlin Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 110.44 (Jue et al., 2001).

Existing plant data: U.S. Fish and Wildlife Service (2000) reported on the occurrence of *Asimina tetramera*.

Critically imperiled plants present at the site: Fourpetal pawpaw (*Asimina tetramera*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map *Asimina tetramera* at least every three years.
- Monitor *Asimina tetramera* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asimina tetramera</i>	E	E	S1

Castellow Hammock Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 114.79 acres (Jue et al., 2001).

Comments: Includes Castellow Hammock #28, Castellow Hammock #33, and Ross Hammock of Jue et al. (2001).

Existing plant data: Woodbury (1937), Phillips (1940), Fairchild Tropical Garden (1991d), Hammer (1992f), and others have prepared preliminary lists of vascular plants. G.N. Avery, R.L. Hammer, the authors, and others have made field observations. J.K. Small, Avery, Hammer, Gann & Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants. This is one of the best-botanized sites in South Florida.

Extirpated plants collected at the site: Lined bristle fern (*Trichomanes lineolatum*).

Critically imperiled plants protected only at Castellow Hammock Park: Woolly maidenhair (*Adiantum villosum*) and American melonleaf (*Cayaponia americana*).

Other critically imperiled plants present at the site: Modest spleenwort (*Asplenium verecundum*), Beyrich's hooded orchid (*Galeandra beyrichii*), hammock lantana (*Lantana canescens*), goatsfoot (*Passiflora sexflora*), Kraus' bristle fern (*Trichomanes krausii*), and Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Critically imperiled plants formerly present at the site: Biscayne spleenwort (*Asplenium xbiscaynianum*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), holly vine fern (*Lomariopsis kunzeana*), and young palm orchid (*Tropidia polystachya*).

Extinct plants collected in the vicinity of the site: Narrowleaf hoarypea (*Tephrosia angustissima* var. *angustissima*).

Critically imperiled plants collected in the vicinity of the site: Sand ticktrefoil (*Desmodium lineatum*), grid-scale maiden fern (*Thelypteris patens*), and viperina (*Zornia bracteata*).

Critically imperiled plants observed in the vicinity of the site: Lobed croton (*Croton lobatus*).

Comments: Longclaw orchid (*Eltroplectris calcarata*) was reported for the park (Hammer, 1992f), but these plants were introduced and are no longer present. Much of Castellow Hammock Park was historically pine rockland, but the site has been fire suppressed for the last several decades. Many species native to pine rockland and the ecotone between pine rockland and rockland hammock have been lost from the site, including the critically imperiled Florida prairieclover (*Dalea carthagenensis* var. *floridana*).

Preliminary recommendations:

- Survey for *Asplenium xbiscaynianum* and *Lomariopsis kunzeana*.
- Survey for *Croton lobatus* following fires or other disturbances.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider reintroductions of *Dalea carthagenensis* var. *floridana*, *Thelypteris patens*, *Trichomanes lineolatum*, and *Tropidia polystachya*.
- Contingent upon results of surveys, consider reintroduction of *Asplenium xbiscaynianum* through the reintroduction of *A. dentatum*.
- Consider restoring pine rocklands at the site.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Alvaradoa amorphoides</i>		E	S1
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Asplenium dentatum</i> (H)		E	S1S2
<i>Asplenium verecundum</i>		E	S1
<i>Asplenium xbiscaynianum</i> (H)			S1
<i>Bletia purpurea</i> (H)		T	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Catopsis berteroniana</i> (H)		E	S1S2
<i>Catopsis floribunda</i> (H)		E	S1
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentea</i>		T	S3

<i>Colubrina cubensis</i> var. <i>floridana</i>	E	S1
<i>Crossopetalum ilicifolium</i>	T	S2
<i>Ctenitis sloanei</i>	E	S2
<i>Cyrtopodium punctatum</i> (E)	E	S1
<i>Dalea carthagenensis</i> var. <i>floridana</i> (E)	E	S1
<i>Drypetes lateriflora</i>	T	
<i>Encyclia cochleata</i> (E)	E	S2
<i>Encyclia tampensis</i>	C	
<i>Epidendrum floridense</i> (E)	E	
<i>Epidendrum nocturnum</i>	E	S2
<i>Epidendrum rigidum</i>	E	
<i>Galactia pinetorum</i> (E)		S2
<i>Galeandra beyrichii</i>	E	S1
<i>Ilex krugiana</i>	T	S3
<i>Ipomoea microdactyla</i>	E	S1S2
<i>Koanophyllon villosum</i>	E	S2
<i>Lantana canescens</i>	E	S1
<i>Lantana depressa</i> var. <i>depressa</i>	E	S3
<i>Leiphaimos parasitica</i>	E	S2
<i>Lomariopsis kunzeana</i> (H)	E	S1
<i>Nephrolepis biserrata</i>	T	
<i>Odontosoria clavata</i> (E)	E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Passiflora pallens</i>	E	S2
<i>Passiflora sexflora</i>	E	S2
<i>Peperomia obtusifolia</i>	E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchosia parvifolia</i> (E)	T	
<i>Rhynchospora floridensis</i>		S2
<i>Selaginella armata</i> var. <i>eatonii</i> (E)	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Stylosanthes calcicola</i> (E)	E	S2
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris augescens</i>	T	
<i>Thelypteris reptans</i>	E	S1

<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Trichomanes krausii</i>	E	S1
<i>Trichomanes lineolatum</i> (E)	E	
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i>	E	S1
<i>Tropidia polystachya</i> (E)	E	SX
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina glauca*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Agave sisalana*, *Epipremnum pinnatum*, *Leucaena leucocephala*, *Merremia tuberosa*, *Murraya paniculata*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Cayo Costa State Park

Location: Lee County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 2,412.28 acres (Jue et al., 2001).

Comments: This park is comprised of most of Cayo Costa Island and the southern portion of North Captiva Island. State Lands on Buck Key were briefly managed as part of this park, but are now managed as part of J.N. "Ding" Darling National Wildlife Refuge.

Existing plant data: Johnson & Muller (1993b) prepared an abbreviated plant list. The Florida Park Service District 4 (1994a) prepared a preliminary list of vascular plants. Gann and R.

Hattaway have made field observations. R.P. Wunderlin, A.F. Johnson, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants reported for the site: Florida milkweed (*Asclepias feayi*).

Critically imperiled plants present at the site: Black nightshade (*Solanum chenopodioides*) and giant ironweed (*Vernonia gigantea*).

Critically imperiled plants reported for the site: Spiny hackberry (*Celtis pallida*) and aboriginal pricklyapples (*Harrisia aboriginum*).

Historical plants collected in the vicinity of the site: Flatglobe dodder (*Cuscuta umbellata*), Florida amaranth (*Amaranthus floridanus*).

Critically imperiled plants collected in the vicinity of the site: Sanibel Island love grass (*Eragrostis tracyi*).

Preliminary recommendations:

On Cayo Costa Island:

- Survey for *Amaranthus floridanus*, *Asclepias feayi*, and *Harrisia aboriginum*.
- Map *Solanum chenopodioides* and *Vernonia gigantea* at least every three years.
- Monitor *Solanum chenopodioides* and *Vernonia gigantea* at least every year.
- Consider reintroduction of *Celtis pallida*.

On North Captiva Island:

- Survey for *Amaranthus floridanus*, *Asclepias feayi*, *Cuscuta umbellata*, *Eragrostis tracyi*, and *Solanum chenopodioides*.
- Contingent upon results of surveys, consider introduction of *Cuscuta umbellata*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Celosia nitida</i>		E	
<i>Celtis pallida</i> (E)		E	S1

<i>Chamaesyce cumulicola</i>	E	S2
<i>Encyclia tampensis</i>	C	
<i>Eragrostis tracyi</i> (H)	E	SH
<i>Jacquinia keyensis</i>	T	S3
<i>Lantana depressa</i> var. <i>sanibelensis</i>	E	S1
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia stricta</i>	T	
<i>Pithecellobium keyense</i>	T	
<i>Scaevola plumieri</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Eugenia uniflora*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Cyperus involucratus*, *Jasminum sambac*, *Leucaena leucocephala*, *Phoenix reclinata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

Chapman Field Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 566 acres (Jue et al., 2001).

Existing plant data: Roessler (1995) prepared a preliminary list of vascular plants. G.N. Avery and Bradley have collected herbarium specimens.

Critically imperiled plants present at the site: Swampbush (*Pavonia paludicola*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Voucher *Pavonia paludicola*.
- Map *Pavonia paludicola* at least every three years.
- Monitor *Pavonia paludicola* at least every year.

Additional data:**Listed Plants:**

	US	FL	FNAI
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Pavonia paludicola</i>		E	
<i>Pithecellobium keyense</i>		T	
<i>Poinsettia pinetorum</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Solanum verbascifolium</i>		T	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Dioscorea bulbifera*, *Jasminum fluminense*, *Lantana camara*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Scaevola sericea*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Cyperus involucratus*, *Leucaena leucocephala*, *Merremia tuberosa*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Charlotte Harbor State Buffer Preserve

Location: Charlotte and Lee counties.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 43,614 acres (Jue et al., 2001).

Comments: Includes Charlotte Harbor Environmental Center of Jue et al. (2001).

Existing plant data: U.S. Fish and Wildlife Service (2000) reported on the translocation of *Deeringothamnus pulchellus* to Charlotte Harbor Environmental Center.

Historical plants collected in the vicinity of the site: Pinewoods bluestem (*Andropogon arctatus*) and sensitive pea (*Chamaecrista nictitans* var. *nictitans*).

Critically imperiled plants collected in the vicinity of the site: Fernald's beaksedge (*Rhynchospora fernaldii*).

Comments: The critically imperiled pretty false pawpaw (*Deeringothamnus pulchellus*) has been translocated to the park, but no recruitment has been noted (USFWS, 2000).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Amaranthus floridanus*, *Andropogon arctatus*, *Helianthus debilis* subsp. *vestitus*, and *Rhynchospora fernaldii*.
- Continue projects to acquire additional land for the park.
- Continue introduction of *Deeringothamnus pulchellus*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Deeringothamnus pulchellus</i> (C)	E	E	S1

Cholee Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 812 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.c) plant list.

Comments: The state-listed *Pithecellobium keyense* has been planted at the site outside of its historical range.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Lycopodiella cernua</i>		C	
<i>Pithecellobium keyense</i> (C)	T		

FLEPPC Category I Exotics: *Abrus precatorius*, *Melaleuca quinquenervia*, and *Nephrolepis cordifolia*.

FLEPPC Category II Exotics: *Passiflora foetida*, *Sansevieria hyacinthoides*, and *Wedelia trilobata*.

City of West Palm Beach Water Catchment Buffer

Location: City of West Palm Beach.
Manager: City of West Palm Beach.
Size: 14,592 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1993b) prepared a preliminary list of vascular plants.

Critically imperiled plants present at the site: Slender club-moss (*Lycopodiella caroliniana*).

Critically imperiled plants collected in the vicinity of the site: Southern lady's-tresses (*Spiranthes torta*).

- | |
|---|
| <p>Preliminary recommendations:</p> <ul style="list-style-type: none"> • Voucher <i>Lycopodiella caroliniana</i>. • Survey for <i>Spiranthes torta</i>. • Map <i>Lycopodiella caroliniana</i> at least every three years. • Monitor <i>Lycopodiella caroliniana</i> at least every year. |
|---|

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bletia purpurea</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Lycopodiella cernua</i>		C	
<i>Nephrolepis biserrata</i>		T	

<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Tillandsia balbisi</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Ardisia elliptica*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium cattleianum*, *Psidium guajava*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Pteris vittata*, *Urena lobata*, and *Wedelia trilobata*.

Coconut Creek Natural Area

Location: Broward County.

Manager: Broward County.

Size: 10.9 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1995a) plant list. Broward County Parks & University of Florida (1998a) prepared a preliminary list of vascular plants. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None

Preliminary recommendations:

- Map and monitor state-list endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Bischofia javanica*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Lantana camara*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna*

pendula var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Pteris vittata*, *Ricinus communis*, *Solanum torvum*, *Urena lobata*, and *Wedelia trilobata*.

Collier-Seminole State Park

Location: Collier County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 7,271.09 acres (Jue et al., 2001).

Existing plant data: Beck (ca. 1965) produced a preliminary list of vascular plants, which was amended by Avery & Alvarez (1982), and Florida Park Service District 4 (1994b). G.N. Avery, R. Hattaway, and Gann have made field observations. Avery, O. Lakela, J. Beckner, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants collected at the site: Coastalplain flatsedge (*Cyperus cuspidatus*).

Critically imperiled plants protected only at Collier-Seminole State Park: Florida scrub skullcap (*Scutellaria arenicola*).

Other critically imperiled plants present at the site: Hammock false rein orchid (*Habenaria distans*), smallflower mock buckthorn (*Sageretia minutiflora*), saltmarsh bulrush (*Scirpus robustus*), Florida scrub skullcap (*Scutellaria arenicola*), and fuzzywuzzy airplant (*Tillandsia pruinosa*).

Historical plants collected in the vicinity of the site: Sand spikerush (*Eleocharis montevidensis*).

Preliminary recommendations:

- Voucher *Sageretia minutiflora*, *Scirpus robustus*, and *Tillandsia pruinosa*.
- Survey for *Cyperus cuspidatus* and *Eleocharis montevidensis*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Asplenium serratum</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Cyrtopodium punctatum</i>		E	S1
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Epidendrum anceps</i>		E	
<i>Epidendrum floridense</i>		E	
<i>Epidendrum rigidum</i>		E	
<i>Habenaria distans</i>		E	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Myrcianthes fragrans</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Passiflora pallens</i>		E	S2
<i>Polyradicion lindenii</i>		E	S2
<i>Polystachya concreta</i>		E	
<i>Roystonea regia</i>		E	S2
<i>Scaevola plumieri</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia pruinosa</i>		E	S1
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Eugenia uniflora*, *Hymenachne amplexicaulis*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Panicum repens*, *Psidium guajava*, *Ruellia tweediana*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, and *Urena lobata*.

Coral Cove Park

Location: Palm Beach County.

Manager: Palm Beach County.
Size: 30 acres (Jue et al., 2001).
Comments: Includes Coral Cove South of Jue et al. (2001).

Existing plant data: USFWS (1996) reported observations of *Jacquemontia reclinata*.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Continue mapping *Jacquemontia reclinata* at least every three years.
- Monitor *Jacquemontia reclinata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquemontia reclinata</i>	E	E	S1

Coral Pines Park

Location: Village of Pinecrest.
Manager: Village of Pinecrest.
Size: 9.8 acres; approximately 2.5 acres of pine rockland (Jue et al., 2001).

Existing plant data: Gann & T.T. Gann, and Bradley have made field observations. Gann & Gann, and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Crenulate leadplant (*Amorpha herbacea* var. *crenulata*).

Comments: This is a fire-suppressed site, and the population of crenulate leadplant has probably declined as a result. Fairchild

Tropical Garden mapped and recorded other data on crenulate leadplant at this site in 2000 (Fisher, 2000).

Preliminary recommendations:

- Voucher *Amorpha herbacea* var. *crenulata*.
- Continue mapping *Amorpha herbacea* var. *crenulata* at least every three years.
- Continue monitoring *Amorpha herbacea* var. *crenulata* at least every year.
- Consider augmentation of *Amorpha herbacea* var. *crenulata*.
- Develop and implement prescribed fire program.

Additional data:

Listed Plants:

	US	FL	FNAI
<i>Amorpha herbacea</i> var. <i>crenulata</i>	E	E	S1
<i>Angadenia berteroi</i>		T	
<i>Chamaesyce pergama</i>		T	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Smilax havanensis</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Casuarina glauca*, *Dioscorea alata*, *Ficus microcarpa*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Pteris vittata*, *Solanum diphyllum*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Coral Reef Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 47.56 acres; approximately 6 acres of pine rockland (Jue et al., 2001).

Existing plant data: Bradley, and Gann & T.T. Gann have made field observations. Bradley and Gann & Gann have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Viperina (*Zornia bracteata*).

Preliminary recommendations:

- Map *Zornia bracteata* at least every three years.
- Monitor *Zornia bracteata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Rhynchospora floridensis</i>			S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Asparagus densiflorus*, *Bischofia javanica*, *Lantana camara*, *Neyraudia reynaudiana*, *Paederia*

cruddasiana, *Pennisetum purpureum*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Passiflora foetida* and *Rhynchelytrum repens*.

Corkscrew Regional Ecosystem Watershed (CREW)

Location: Collier and Lee counties.

Manager: South Florida Water Management District.

Size: 23,370 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.d) plant list. Hilsenbeck (1997) prepared a preliminary list of vascular plants, apparently from the Lee County portion of the site. Anderson (1997) prepared a preliminary list of vascular plants for the Flint Pen Strand portion of the site. Woodmansee has made field observations. E.L. Bridges and R.L. Mears have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants, but additional inventory work is needed, particularly in the Collier County portion of the site.

Historical plants reported for the site: Angularfruit milkvine (*Matelea gonocarpus*).

Critically imperiled plants protected only at CREW: Chaffweed (*Anagallis minima*).

Other critically imperiled plants present at the site: Trinius threeawn (*Aristida purpurascens* var. *virgata*), Dixie aster (*Aster tortifolius*), warty sedge (*Carex verrucosa*), rough barnyard grass (*Echinochloa muricata*), teal love grass (*Eragrostis hypnoides*), St. Peter's-wort (*Hypericum crux-andreae*), oak mistletoe (*Phoradendron leucarpum*), Harper's beaksedge (*Rhynchospora harperi*), lyreleaf sage (*Salvia lyrata*), American elm (*Ulmus americana*), and early blue violet (*Viola palmata*).

Critically imperiled plants reported for the site: Pinebarren aster (*Aster reticulatus*), yankeeweed (*Eupatorium compositifolium*), warty panicum (*Panicum verrucosum*), and yellow butterwort (*Pinguicula lutea*).

Historical plants collected in the vicinity of the site:
Pinewoods bluestem (*Andropogon arctatus*) and scrubland goldenaster (*Chrysopsis subulata*).

Critically imperiled plants collected in the vicinity of the site:
Fairy beaksedge (*Rhynchospora pusilla*).

Preliminary recommendations:

- Complete floristic inventory and amend list of vascular plants.
- Voucher *Anagallis minima*, *Aristida purpurascens* var. *virgata*, *Aster tortifolius*, *Carex verrucosa*, *Eragrostis hypnoides*, *Phoradendron leucarpum*, *Pinguicula lutea*, *Rhynchospora harperi*, *Rhynchospora pusilla*, *Salvia lyrata*, and *Viola palmata*.
- Survey for *Andropogon arctatus*, *Aster reticulatus*, *Chrysopsis subulata*, *Eupatorium compositifolium*, *Matelea gonocarpus*, *Panicum verrucosum*, and *Rhynchospora pusilla*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Continue projects to acquire additional land for the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Encyclia tampensis</i>		C	
<i>Lilium catesbaei</i>		T	
<i>Myrcianthes fragrans</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Pinguicula lutea</i>		T	
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>		T	
<i>Sacoila lanceolata</i> var. <i>paludicola</i>		T	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Eichhornia crassipes*, *Imperata cylindrica*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Pistia stratiotes*, *Psidium guajava*, *Rhodomyrtus tomentosa*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Limnophila sessiliflora* and *Urena lobata*.

Corkscrew Swamp Sanctuary

Location: Collier and Lee counties.

Manager: National Audubon Society.

Size: 10,895 acres (Jue et al., 2001).

Existing plant data: Judd (1994) prepared a preliminary list of vascular plants. G.N. Avery, R.L. Hammer, Gann, and others have made field observations. W.T. Gillis, O. Lakela, R. Workman, G. Guala and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants reported for the site: Southern wood fern (*Dryopteris ludoviciana*), wingleaf primrosewillow (*Ludwigia decurrens*), and Florida lady's-tresses (*Spiranthes floridana*).

Critically imperiled plants protected only at Corkscrew Swamp Sanctuary: Scarlet rosemallow (*Hibiscus coccineus*).

Other critically imperiled plants present at the site: Tailed strap fern (*Campyloneurum costatum*), warty sedge (*Carex verrucosa*), bigseed alfalfa dodder (*Cuscuta indecora*), teal love grass (*Eragrostis hypnoides*), oak mistletoe (*Phoradendron leucarpum*), yellow butterwort (*Pinguicula lutea*), smallflower mock buckthorn (*Sageretia minutiflora*), greenvein lady's-tresses (*Spiranthes praecox*), American elm (*Ulmus americana*), early blue violet (*Viola palmata*), and Florida mudmidget (*Wolffiella gladiata*).

Critically imperiled plants reported for the site: Trumpet creeper (*Campsis radicans*), water horn fern (*Ceratopteris pteridoides*), yankeeweed (*Eupatorium compositifolium*), delicate violet orchid (*Ionopsis utricularioides*), Browne's savory (*Micromeria brownei* var. *pilosiuscula*), yellow waterlily (*Nymphaea*

mexicana), swamp tupelo (*Nyssa sylvatica* var. *biflora*), sprawling hoarypea (*Tephrosia hispidula*), fuzzywuzzy airplant (*Tillandsia pruinosa*), southern bladderwort (*Utricularia juncea*), primroseleaf violet (*Viola primulifolia*), and tall yelloweyedgrass (*Xyris platylepis*).

Critically imperiled plants collected in the vicinity of the site:
Fairy beaksedge (*Rhynchospora pusilla*).

Preliminary recommendations:

- Voucher *Campyloneurum costatum*, *Carex verrucosa*, *Eragrostis hypnoides*, *Phoradendron leucarpum*, *Pinguicula lutea*, *Sageretia minutiflora*, and *Viola palmata*.
- Survey for *Campsis radicans*, *Carex gigantea*, *Ceratopteris pteridoides*, *Dryopteris ludoviciana*, *Eupatorium compositifolium*, *Ionopsis utricularioides*, *Ludwigia decurrens*, *Micromeria brownei* var. *pilosiuscula*, *Nymphaea mexicana*, *Nyssa sylvatica* var. *biflora*, *Rhynchospora pusilla*, *Spiranthes floridana*, *Tephrosia hispidula*, *Tillandsia pruinosa*, *Utricularia juncea*, *Viola primulifolia*, and *Xyris platylepis*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asplenium serratum</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Campyloneurum costatum</i>		E	S2
<i>Catopsis floribunda</i>		E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Cyrtopodium punctatum</i>		E	S1
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum floridense</i>		E	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Habenaria nivea</i>		T	
<i>Harrisella filiformis</i>		T	
<i>Ionopsis utricularioides</i> (R)		E	S1
<i>Lilium catesbaei</i>		T	
<i>Linum carteri</i> var. <i>smallii</i>		E	S2
<i>Myrcianthes fragrans</i>		T	

<i>Nephrolepis biserrata</i>	T	
<i>Osmunda cinnamomea</i>	C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Passiflora pallens</i>	E	S2
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>	E	S2
<i>Peperomia obtusifolia</i>	E	S2
<i>Pinguicula caerulea</i>	T	
<i>Pinguicula lutea</i>	T	
<i>Polyradicion lindenii</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Roystonea regia</i>	E	S2
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>	T	
<i>Sacoila lanceolata</i> var. <i>paludicola</i>	T	S1
<i>Spiranthes laciniata</i>	T	
<i>Spiranthes longilabris</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	

FLEPPC Category I Exotics: *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Pistia stratiotes*, *Psidium guajava*, *Schinus terebinthifolius*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Pteris vittata* and *Urena lobata*.

County Line Scrub, Miami-Dade County

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 15.02 acres (Jue et al., 2001).

Existing plant data: There are two anonymous plant lists (1991, 1993h). Gann & Bradley have made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants protected only at County Line Scrub: Rolfs' oak (*Quercus xrolfsii*).

Other critically imperiled plants present at the site: Perennial sandgrass (*Triplasis americana*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map critically imperiled plants at least every three years.
- Monitor critically imperiled plants at least every year.

Listed Plants:

	US	FL	FNAI
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Tillandsia utriculata</i>		E	
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Cestrum diurnum*, *Dioscorea alata*, *Lantana camara*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens* and *Wedelia trilobata*.

Crandon Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 903.9 acres; 434 acres of natural area (Jue et al., 2001).

Existing plant data: Numerous lists and partial lists have been prepared for this park beginning with Fairchild Tropical Garden (1991e). G.N. Avery, R.L. Hammer, and the authors have made field observations. Avery, J. Popenoe, Bradley, and others have collected herbarium specimens.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*), Florida shrubverbena

(*Lantana depressa* var. *floridana*), and Biscayne pricklyash (*Zanthoxylum coriaceum*).

Critically imperiled plants formerly present at the site: Florida prairieclover (*Dalea carthagenensis* var. *floridana*).

Preliminary recommendations:

- Continue mapping *Jacquemontia reclinata* at least every three years.
- Map *Lantana depressa* var. *floridana* and *Zanthoxylum coriaceum* at least every three years.
- Monitor *Jacquemontia reclinata*, *Lantana depressa* var. *floridana*, and *Zanthoxylum coriaceum* at least every year.
- Extirpate *Lantana camara* from the site and destroy hybrids with *L. depressa* var. *floridana*.
- Consider reintroduction of *Dalea carthagenensis* var. *floridana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Bouyeria succulenta</i>		E	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cyrtopodium punctatum</i>		E	S1
<i>Dalea carthagenensis</i> var. <i>floridana</i> (E)		E	S1
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Lantana depressa</i> var. <i>floridana</i>		E	S2
<i>Okenia hypogaea</i>		E	S2
<i>Pithecellobium keyense</i>		T	
<i>Reynosa septentrionalis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Zamia integrifolia</i>		C	
<i>Zanthoxylum coriaceum</i>		E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Colubrina asiatica*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Scaevola sericea*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Flacourtia indica*, *Leucaena leucocephala*, *Melinis minutiflora*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Crocodile Lake National Wildlife Refuge

Location: Monroe County Keys.

Manager: United States Fish and Wildlife Service.

Size: 6,688.04 acres (Jue et al., 2001).

Existing plant data: Karen Achor prepared a preliminary plant list for some of the hammocks in the refuge (Weiner, 1980 as amended). G.N. Avery, Bradley, and Woodmansee have made field observations. Bradley has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Red stopper (*Eugenia rhombea*), lignumvitae (*Guajacum sanctum*), and Swartz's snoutbean (*Rhynchosia swartzii*).

Extirpated plants collected in the vicinity of site: Slimbristle sandbur (*Cenchrus brownii*) and ribbon fern (*Nevrodium lanceolatum*).

Historical plants collected in the vicinity of site: Widespread polypody (*Pecluma dispersa*).

Critically imperiled plants collected in the vicinity of the site: Tropical sprangletop (*Leptochloa virgata*) and plume polypody (*Pecluma plumula*).

Preliminary recommendations:

- Voucher *Guajacum sanctum*.
- Map *Eugenia rhombea*, *Guajacum sanctum*, and *Rhynchosia swartzii* at least every three years.
- Monitor *Eugenia rhombea*, *Guajacum sanctum*, and *Rhynchosia swartzii* at least every year.
- Consider introductions of *Cenchrus brownii*, *Nevrodium lanceolatum* and *Pecluma dispersa*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Calyptanthes zuzygium</i>		E	S2
<i>Canella winterana</i>		E	S2
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Colubrina elliptica</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Dalbergia brownii</i>		E	
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia boothiana</i> var. <i>erythronioides</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Eugenia rhombea</i>		E	S1
<i>Exostema caribaeum</i>		E	S2
<i>Guajacum sanctum</i>		E	S2
<i>Harrisia simpsonii</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Leiphaimos parasitica</i>		E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Microgramma heterophylla</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Passiflora multiflora</i>		E	S1
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pithecellobium keyense</i>		T	
<i>Psychotria ligustrifolia</i>		E	S1
<i>Reynosia septentrionalis</i>		T	
<i>Rhynchosia swartzii</i>		E	S1
<i>Schaefferia frutescens</i>		E	S2
<i>Scleria lithosperma</i>		E	
<i>Smilax havanensis</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia balbisiana</i>		T	

<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Trema lamarckianum</i>	E	S2

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Ficus microcarpa*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Epipremnum pinnatum*, *Flacourtia indica*, *Leucaena leucocephala*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Pennisetum setaceum*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Wedelia trilobata*.

Crystal Lake Sand Pine Scrub Natural Area

Location: Broward County.

Manager: Broward County.

Size: 24.3 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.e) plant list, and an anonymous (1995b) plant list. Broward County Parks & University of Florida (1998b) prepared a preliminary list of vascular plants. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Conradina grandiflora</i>		T	S3

<i>Lechea cernua</i>	T	S3
<i>Tillandsia balbisiensis</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Eugenia uniflora*, *Lantana camara*, *Neyraudia reynaudiana*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Asystasia gangetica*, *Callisia fragrans*, *Flacourtia indica*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Curry Hammock State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 665.22 acres (Jue et al., 2001).

Existing plant data: Weiner (1980, as amended) prepared a preliminary list of plants for hammocks on Fat Deer Key and Long Point Key. Kruer (1992) made observations in hammocks on Fat Deer Key and Long Point Key. The Florida Park Service District 5 (1997a) prepared a preliminary list of vascular plants. Gann, J.A. Duquesnel, and Bradley have made field observations. Gann and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Critically imperiled plants collected in the vicinity of the site: Big sandbur (*Cenchrus myosuroides*).

Comments: Several critically imperiled plants have been found at privately owned sites adjacent to Curry Hammock Park (*Indigofera mucronata* var. *keyensis* at the Burnt Point Florida Keys Indigo Site, *Strumpfia maritima* at the Grassy Key Pride-of-Big-Pine Site,

and *Cyperus fuliginous*, *Indigofera mucronata* var. *keyensis*, and *Opuntia triacanthos* at the Valhalla Rock Barren Site).

Preliminary recommendations:

- Conduct surveys for *Cenchrus myosuroides*.
- Acquire Burnt Point Florida Keys Indigo Site, Grassy Key Pride-of-Big-Pine Site, and Valhalla Rock Barren, and add to Curry Hammock State Park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Ageratum littorale</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Coccothrinax argentata</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Gymninda latifolia</i>		E	S2
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Thrinax morrisii</i> (H)		E	S3
<i>Thrinax radiata</i>		E	S2

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

Cypress Knee Slough Preserve

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 30.3 acres (Jue et al., 2001).

Existing plant data: Post Buckley, Schuh, & Jernigan, Inc. (1997) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor *Tillandsia fasciculata* var. *densispica*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Pistia stratiotes*, *Psidium guajava*, *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Ricinus communis*.

Dagny Johnson Key Largo Hammocks Botanical State Park

Location: Monroe County in the Florida Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 2,415.49 acres (Jue et al., 2001).

Comments: This is called Key Largo Hammock Botanical State Park in Jue et al. (2001).

Existing plant data: Weiner (1980, as amended) prepared preliminary lists of vascular plants for the rockland hammocks in the park, based upon field work by K. Achor & G.N. Avery. Krueer

(1992) also prepared preliminary plant lists for most of the hammocks in the park. The Florida Park Service District 5 (1995) prepared a preliminary list of vascular plants. Avery, Gann, J.A. Duquesnel, Bradley, W. Hoffman, J. Nemeč and others have made field observations. Avery, T. Alexander, Bradley, Gann, and Duquesnel have collected herbarium specimens.

Extirpated plants collected at the site: Cinnecord (*Acacia choriophylla*) and tall windmill grass (*Chloris elata*).

Critically imperiled plants protected only at Dagny Johnson Key Largo Hammock Botanical State Park: Mahogany mistletoe (*Phoradendron rubrum*).

Other critically imperiled plants present at the site: Red stopper (*Eugenia rhombea*), lignumvitae (*Guajacum sanctum*), Havana clustervine (*Jacquemontia havanensis*), and Swartz's snoutbean (*Rhynchosia swartzii*).

Extirpated plants collected in the vicinity of the site: Slimbristle sandbur (*Cenchrus brownii*).

Historical plants collected in the vicinity of site: Widespread polypody (*Pecluma dispersa*).

Critically imperiled plants collected in the vicinity of the site: Tropical sprangletop (*Leptochloa virgata*) and plume polypody (*Pecluma plumula*).

Comments: The Florida Park Service has mapped *Jacquemontia havanensis* and *Phoradendron rubrum* at the park, and has an ongoing monitoring program for *Phoradendron rubrum*. Fairchild Tropical Garden and the Florida Park Service have established an experimental out-planting of the critically imperiled *Opuntia corallicola*. The Florida Park Service has initiated an augmentation of *Phoradendron rubrum*.

Preliminary recommendations:

- Continue mapping *Phoradendron rubrum* annually.
- Continue mapping *Jacquemontia havanensis* at least every three years.
- Map *Eugenia rhombea*, *Guajacum sanctum*, and *Rhynchosia swartzii* at least every three years.
- Continue ongoing monitoring of *Phoradendron rubrum*.
- Monitor *Eugenia rhombea*, *Guajacum sanctum*, *Jacquemontia havanensis*, and *Rhynchosia swartzii* at least every year.
- Continue experimental out-planting of *Opuntia corallicola*.

- Continue ongoing augmentation of *Phoradendron rubrum*.
- Consider reintroductions of *Acacia choriophylla* and *Chloris elata*.
- Consider introductions of *Cenchrus brownii* and *Pecluma dispersa*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acacia choriophylla</i> (E)		E	
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Argusia gnaphalodes</i>		E	S3
<i>Bourreria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Calyptanthes zuzygium</i>		E	S2
<i>Canella winterana</i>		E	S2
<i>Catopsis berteroniana</i> (H)		E	S1S2
<i>Celosia nitida</i> (H)		E	
<i>Chrysophyllum oliviforme</i>		T	
<i>Colubrina elliptica</i>		E	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Dalbergia brownii</i>		E	
<i>Dodonaea elaeagnoides</i>		E	S1
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia boothiana</i> var. <i>erythronioides</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Eugenia rhombea</i>		E	S1
<i>Exostema caribaeum</i>		E	S2
<i>Gossypium hirsutum</i>		E	S3
<i>Guajacum sanctum</i>		E	S2
<i>Harrisia simpsonii</i>		E	S2
<i>Hippomane mancinella</i>		E	S2
<i>Hypelate trifoliata</i>		E	S1
<i>Jacquemontia havanensis</i>		E	S1
<i>Jacquinia keyensis</i>		T	S3
<i>Leiphaimos parasitica</i>		E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3

<i>Maytenus phyllanthoides</i>	T	
<i>Microgramma heterophylla</i>	E	S2
<i>Opuntia stricta</i>	T	
<i>Passiflora multiflora</i>	E	S1
<i>Phoradendron rubrum</i>	E	S1
<i>Pithecellobium keyense</i>	T	
<i>Psychotria ligustrifolia</i>	E	S1
<i>Pteris bahamensis</i> (H)	T	S3
<i>Reynosia septentrionalis</i>	T	
<i>Rhynchosia swartzii</i>	E	S1
<i>Schaefferia frutescens</i>	E	S2
<i>Scleria lithosperma</i>	E	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Swietenia mahagoni</i>	T	S3
<i>Thrinax morrisii</i>	E	S3
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Trema lamarckianum</i>	E	S2
<i>Vanilla barbellata</i>	E	S2

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Melia azedarach*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Callisia fragrans*, *Cryptostegia madagascariensis*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Murraya paniculata*, *Oeceoclades maculata*, *Pennisetum setaceum*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, and *Tribulus cistoides*.

Danforth

Location: Martin County.

Manager: Martin County.
Size: 27 acres (Jue et al., 2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Pinebarren aster (*Aster reticulatus*), grassleaf Barbara's buttons (*Marshallia tenuifolia*), rose pogonia (*Pogonia ophioglossoides*), and primroseleaf violet (*Viola primulifolia*).

Preliminary recommendations:

- Voucher *Viola primulifolia*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Lechea divaricata</i> (R)		E	S2
<i>Lycopodiella cernua</i>		C	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pogonia ophioglossoides</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium cattleianum*, *Rhodomyrtus tomentosa*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Urena lobata* and *Wedelia trilobata*.

Daskas

Location: Martin County.

Manager: Martin County.

Size: 2 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:

Conradina grandiflora

Tillandsia utriculata

US

FL

FNAI

T

S3

E

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Lygodium microphyllum*, *Mimosa pigra*, *Nephrolepis cordifolia*, *Psidium cattleianum*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens* and *Wedelia trilobata*.

Deering Estate at Cutler

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 441.23 acres (Jue et al., 2001).

Comments: Includes Deering Estate North Addition, Deering Estate Powers Addition, and Deering Estate South Addition of Jue et al. (2001).

Existing plant data: Numerous plant lists have been prepared for this site beginning with Small (1916). The first modern list was by McKinley & Burns (1983). G.N. Avery, R.L. Hammer, Gann, Bradley, and others have made field observations. J.K. Small, D.S. Correll, M. McMahon, K. Fanning, Hammer, Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants. This is one of the best-botanized sites in South Florida.

Critically imperiled plants present at the site: Carter's orchid (*Basiphyllaea corallicola*), brown-hair comb fern (*Ctenitis submarginalis*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), Florida ticktrefoil (*Desmodium floridanum*), twistedleaf goldenrod (*Solidago tortifolia*), grid-scale maiden fern (*Thelypteris patens*), tall redtop (*Tridens flavus* var. *flavus*), and viperina (*Zornia bracteata*).

Critically imperiled plants formerly present at the site: Marsh's Dutchman's-pipe (*Aristolochia pentandra*), modest spleenwort (*Asplenium verecundum*), Biscayne spleenwort (*Asplenium xbiscaynianum*), swampbush (*Pavonia paludicola*).

Critically imperiled plants reported for the site: Crenulate leadplant (*Amorpha herbacea* var. *crenulata*), Carter's flax (*Linum carteri* var. *carteri*), and Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Historical plants collected in the vicinity of the site: Tall neottia (*Spiranthes elata*).

Critically imperiled plants collected in the vicinity of the site: Scurf hoarypea (*Tephrosia chrysophylla*) and young palm orchid (*Tropidia polystachya*).

Critically imperiled plants reported for the vicinity of the site: Pineland strongback (*Bourreria cassinifolia*).

Comments: Fairchild Tropical Garden has established an experimental population of the critically imperiled crenulate leadplant (*Amorpha herbacea* var. *crenulata*). The critically imperiled bitterbush (*Picramnia pentandra*) and the state-listed redberry stopper (*Eugenia confusa*) have been planted at the site outside of their historical ranges and have escaped from cultivation.

Preliminary recommendations:

- Voucher *Ctenitis submarginalis*, *Desmodium floridanum*, and *Thelypteris patens*.

- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Continue experimental out-planting of *Amorpha herbacea* var. *crenulata*.
- Consider reintroductions of *Aristolochia pentandra*, *Asplenium verecundum*, *Asplenium xbiscaynianum*, and *Pavonia paludicola*.
- Consider introductions of *Bourreria cassinifolia*, *Spiranthes elata*, *Tephrosia chrysophylla*, and *Tropidia polystachya*.
- Remove cultivated and naturalized plants of *Eugenia confusa* and *Picramnia pentandra*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Adiantum tenerum</i>		E	S3
<i>Amorpha herbacea</i> var. <i>crenulata</i> (E, C)	E	E	S1
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Aristolochia pentandra</i> (E)		E	S1
<i>Asplenium dentatum</i>		E	S1S2
<i>Asplenium verecundum</i> (E)		E	S1
<i>Asplenium xbiscaynianum</i> (E)			S1
<i>Basiphyllaea corallicola</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Catopsis berteroniana</i> (E)		E	S1S2
<i>Celosia nitida</i> (E)			E
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i>	E	E	S1
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Ctenitis submarginalis</i>		E	
<i>Cynanchum blodgettii</i>		T	
<i>Cyrtopodium punctatum</i> (E)		E	S1
<i>Dalbergia brownii</i>		E	
<i>Dalea carthagenensis</i> var. <i>floridana</i>		E	S1
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Drypetes lateriflora</i>		T	

<i>Encyclia boothiana</i> var. <i>erythronioides</i>	E	S1
<i>Encyclia cochleata</i> (E)	E	S2
<i>Encyclia tampensis</i>	C	
<i>Epidendrum nocturnum</i> (E)	E	S2
<i>Epidendrum rigidum</i> (E)	E	
<i>Galactia pinetorum</i>		S2
<i>Hippomane mancinella</i>	E	S2
<i>Ilex krugiana</i>	T	S3
<i>Ipomoea tenuissima</i>	E	S1S2
<i>Jacquemontia curtisii</i>	T	S2
<i>Koanophyllon villosum</i>	E	S2
<i>Lantana depressa</i> var. <i>depressa</i>	E	S3
<i>Linum carteri</i> var. <i>carteri</i> (R)	E	S1
<i>Melanthera parvifolia</i>	T	
<i>Nephrolepis biserrata</i>	T	
<i>Ophioglossum palmatum</i> (E)	E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Passiflora pallens</i> (E)	E	S2
<i>Pavonia paludicola</i> (E)	E	
<i>Peperomia obtusifolia</i>	E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Pithecellobium keyense</i>	T	
<i>Polygala smallii</i> (H)	E	S1
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchospora floridensis</i>		S2
<i>Scleria lithosperma</i>	E	
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Thelypteris augescens</i>	T	
<i>Thelypteris patens</i>	E	
<i>Thelypteris reptans</i>	E	S1
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	

<i>Tragia saxicola</i>	T	S2
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i> (R)	E	S1
<i>Tripsacum floridanum</i>	T	S2
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbbeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colubrina asiatica*, *Dioscorea alata*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Paederia cruddasiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, *Tectaria incisa*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Antigonon leptopus*, *Epipremnum pinnatum*, *Ficus altissima*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Delnor-Wiggins Pass State Park

Location: Collier County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 166 acres (Jue et al., 2001).

Existing plant data: Christman (1988) prepared a preliminary list of vascular plants. Johnson & Muller (1993b) produced an abbreviated plant list. Florida Park Service District 4 (1994g) prepared a preliminary list of vascular plants. G.N. Avery made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants reported for the site: Aboriginal pricklyapples (*Harrisia aboriginum*) and west coast dune sunflower (*Helianthus debilis* subsp. *vestitus*).

Preliminary recommendations:

- Survey for *Harrisia aboriginum* and *Helianthus debilis* subsp. *vestitus*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Lechea cernua</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Lantana camara*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Rhynchelytrum repens*, and *Tribulus cistoides*.

Delray Oaks Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 24.5 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1996c) prepared a preliminary list of vascular plants. Gann & Bradley have made field observations and collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	State	FNAI
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>		E	S2
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Lygodium microphyllum*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Psidium cattleianum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, *Tradescantia fluminensis*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Melinis minutiflora*, *Passiflora foetida*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Dolphin Center STD: Scrub Oak Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 10.15 acres (Jue et al., 2001).

Comments: Includes Dolphin Center Addition in Jue et al. (2001).

Existing plant data: Gaby & Gaby, Inc. (1991) prepared a preliminary list of vascular plants. There is also an anonymous (1993a) plant list. Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Preliminary recommendations:

- Map and monitor *Tillandsia fasciculata* var. *densispica*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Conradina grandiflora</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Pteris bahamensis</i>		T	S3
<i>Spermacoce terminalis</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Schefflera actinophylla*, *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Melinis minutiflora*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Solanum torvum*, *Urena lobata*.

Don Pedro Island State Park

Location: Charlotte County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 228.89 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) prepared an abbreviated plant list. The Florida Park Service District 4 (1993a, 1995) prepared preliminary lists of vascular plants. Gann has made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Don Pedro Island State Park: Tall jointweed (*Polygonella gracilis*).

Other critically imperiled plants present at the site: West coast dune sunflower (*Helianthus debilis* subsp. *vestitus*).

Preliminary recommendations:

- Voucher *Helianthus debilis* subsp. *vestitus* and *Polygonella gracilis*.
- Map *Helianthus debilis* subsp. *vestitus* and *Polygonella gracilis* at least every three years.
- Monitor *Helianthus debilis* subsp. *vestitus* and *Polygonella gracilis* at least every year.

Additional data:

Listed Plants:

Scaevola plumieri
Zamia integrifolia

US	FL	FNAI
	T	
	C	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Lantana camara*, *Panicum repens*, *Scaevola sericea*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*.

Doris Davis Forman Wilderness Preserve

Location: Broward County.

Manager: City of Parkland.

Size: 19.3 acres (Jue et al., 2001).

Existing plant data: Broward County Parks & University of Florida (1996a, 1998c) prepared preliminary lists of vascular plants. P.L. Howell has collected herbarium specimens.

Extirpated plants collected in the vicinity of the site: Star-scale polypody (*Pleopeltis astrolepis*).

Critically imperiled plants collected in the vicinity of the site: Celestial lily (*Nemastylis floridana*).

Preliminary recommendations:

- Map and monitor state-listed endangered plants.
- Consider introductions of *Nemastylis floridana* and *Pleopeltis astrolepis*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Phoenix reclinata*, *Ricinus communis*, and *Urena lobata*.

**Dove Creek Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 226.70 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary plant list. Bradley & Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants present at the site: Swartz's snoutbean (*Rhynchosia swartzii*) and pearlberry (*Vallesia antillana*).

Extirpated plants collected in the vicinity of the site: Slimbristle sandbur (*Cenchrus brownii*).

Historical plants collected in the vicinity of the site: Widespread polypody (*Pecluma dispersa*).

Critically imperiled plants collected in the vicinity of the site: Big sandbur (*Cenchrus myosuroides*), tropical sprangletop (*Leptochloa virgata*), plume polypody (*Pecluma plumula*), and mahogany mistletoe (*Phoradendron rubrum*).

Critically imperiled plants reported for the vicinity of the site: Lignumvitae (*Guajacum sanctum*).

Preliminary recommendations:

- Voucher *Rhynchosia swartzii*.
- Map *Rhynchosia swartzii* and *Vallesia antillana* at least every three years.
- Monitor *Rhynchosia swartzii* and *Vallesia antillana* at least every year.
- Consider introductions of *Cenchrus brownii*, *Cenchrus myosuroides*, *Guajacum sanctum*, *Pecluma dispersa*, and *Phoradendron rubrum*.

Additional data:

Listed Plants:	US	State	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Colubrina elliptica</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Exostema caribaeum</i>		E	S2
<i>Gossypium hirsutum</i>		E	S3
<i>Harrisia simpsonii</i>		E	S2
<i>Hypelate trifoliata</i>		E	S1
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Passiflora multiflora</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Rhynchosia swartzii</i>		E	

<i>Schaefferia frutescens</i>	E	S2
<i>Swietenia mahagoni</i>	T	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia flexuosa</i>	T	S3
<i>Vallesia antillana</i>	E	S1

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Lantana camara*, *Manilkara zapota*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Callisia fragrans*, *Epipremnum pinnatum*, *Leucaena leucocephala*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

Dry Tortugas National Park

Location: Monroe County Keys.

Manager: United States National Park Service.

Size: 64,701.22 acres (Jue et al., 2001).

Existing plant data: Numerous plant lists have been produced for this park beginning with C.F. Millspaugh in 1907. Reimus & Robertson (1997) prepared an annotated list of vascular plants. W.G. Atwater, L.L. Loope, W.B. Robertson, Jr., and others have collected herbarium specimens.

Extirpated plants collected at the site: Yucatan sage (*Salvia micrantha*).

Critically imperiled plants protected only at Dry Tortugas National Park: Big sandbur (*Cenchrus myosuroides*).

Other critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map *Cenchrus myosuroides* at least every three years.
- Monitor *Cenchrus myosuroides* at least every year.
- Consider augmentation of *Cenchrus myosuroides*.
- Consider reintroduction of *Salvia micrantha*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Argusia gnaphalodes</i>		E	S3
<i>Chamaesyce pergamena</i>		T	
<i>Opuntia stricta</i>		T	
<i>Salvia micrantha</i> (E)			SX
<i>Scaevola plumieri</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Eugenia uniflora*, *Psidium guajava*, *Ruellia tweediana*, *Scaevola sericea*, *Schinus terebinthifolius*, *Solanum tampicense*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Murraya paniculata*, *Ochrosia elliptica*, *Pteris vittata*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Tribulus cistoides*.

Dupuis Reserve

Location: Martin and Palm Beach counties.

Manager: South Florida Water Management District

Size: 21,875 acres (Jue et al., 2001).

Existing plant data: Woodbury (no date) prepared a preliminary list of vascular plants. The authors and D. Black have made field observations. H.H. Hume, R.O. Woodbury, and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants reported for the site: Helmet skullcap (*Scutellaria integrifolia*) and Carter's pinelandcress (*Warea carteri*).

Critically imperiled plants present at the site: Celestial lily (*Nemastylis floridana*).

Critically imperiled plants reported for the site: Jack-in-the-pulpit (*Arisaema triphyllum*), bluethread (*Burmannia biflora*), water

horn fern (*Ceratopteris pteridoides*), woolly witchgrass (*Dichantherium scabriusculum*), viviparous spikerush (*Eleocharis vivipara*), shaggy hedgehyssop (*Gratiola pilosa*), Engler's bogbuttons (*Lachnocaulon engleri*), Small's bogbuttons (*Lachnocaulon minus*), Piedmont primrosewillow (*Ludwigia arcuata*), marsh seedbox (*Ludwigia palustris*), hairy primrosewillow (*Ludwigia pilosa*), Savannah primrosewillow (*Ludwigia virgata*), Florida loosestrife (*Lythrum flagellare*), grassleaf Barbara's buttons (*Marshallia tenuifolia*), warty panicum (*Panicum verrucosum*), Savannah panicum (*Phanopyrum gymnocarpon*), yellow butterwort (*Pinguicula lutea*), rose pogonia (*Pogonia ophioglossoides*), shortbristle beaksedge (*Rhynchospora breviseta*), fewflower beaksedge (*Rhynchospora rariflora*), southern river sage (*Salvia riparia*), Florida feathershank (*Schoenocaulon dubium*), greenvein lady's-tresses (*Spiranthes praecox*), southern bladderwort (*Utricularia juncea*), southern lady's-tresses (*Spiranthes torta*), netted chain fern (*Woodwardia areolata*), and tall yelloweyedgrass (*Xyris platylepis*).

Comments: Many taxa reported by Woodbury (no date) have not been verified by others. Because Dupuis Reserve has been so degraded by grazing, exotic pest plant invasions, roller chopping, and other activities, many species observed by Woodbury may simply no longer be extant.

Preliminary recommendations:

- Voucher *Nemastylis floridana*.
- Survey for *Arisaema triphyllum*, *Burmannia biflora*, *Ceratopteris pteridoides*, *Dichantherium scabriusculum*, *Eleocharis vivipara*, *Gratiola pilosa*, *Lachnocaulon engleri*, *Lachnocaulon minus*, *Ludwigia arcuata*, *Ludwigia palustris*, *Ludwigia pilosa*, *Ludwigia virgata*, *Marshallia tenuifolia*, *Panicum verrucosum*, *Phanopyrum gymnocarpon*, *Pinguicula lutea*, *Pogonia ophioglossoides*, *Rhynchospora breviseta*, *Rhynchospora rariflora*, *Salvia riparia*, *Schoenocaulon dubium*, *Scutellaria integrifolia*, *Spiranthes praecox*, *Spiranthes torta*, *Utricularia juncea*, *Warea carteri*, *Woodwardia areolata*, and *Xyris platylepis*.
- Map *Nemastylis floridana* at least every three years.
- Monitor *Nemastylis floridana* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lechea divaricata</i>		E	S2
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Lythrum flagellare</i>		E	S2
<i>Nemastylis floridana</i>		E	S2
<i>Nephrolepis biserrata</i>		T	
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Pinguicula lutea</i> (R)		T	
<i>Pogonia ophioglossoides</i>		T	
<i>Pteroglossaspis ecristata</i>		T	S2
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>		T	
<i>Spiranthes longilabris</i>		T	
<i>Spiranthes torta</i> (R)		E	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Vernonia blodgettii</i>		S3	G3
<i>Zamia integrifolia</i>		C	
<i>Zephyranthes simpsonii</i>		T	SH

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Casuarina glauca*, *Colocasia esculenta*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Imperata cylindrica*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Melia azedarach*, *Nephrolepis cordifolia*,

Nephrolepis multiflora, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium cattleianum*, *Psidium guajava*, *Ruellia tweediana*, *Schinus terebinthifolius*, *Solanum viarum*, *Syzygium cumini*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Antigonon leptopus*, *Dalbergia sissoo*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Limnophila sessiliflora*, *Melinis minutiflora*, *Murraya paniculata*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Solanum diphylllum*, *Solanum torvum*, *Syzygium jambos*, *Terminalia catappa*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Eachus Pineland

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 17.24 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3

<i>Melanthera parvifolia</i>	T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Poinsettia pinetorum</i>	E	S2
<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchospora floridensis</i>		S2
<i>Sachsia polycephala</i>	T	S2
<i>Spermacoce terminalis</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Melinis minutiflora*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Syzygium jambos*, *Terminalia catappa*, and *Urena lobata*.

Enchanted Forest Park

Location: Miami-Dade County.

Manager: City of North Miami.

Size: 22 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Woodmansee has made field observations and has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants. The

Critically imperiled plants present at the site: Hairy maiden fern (*Thelypteris hispida* var. *versicolor*).

Critically imperiled plants collected in the vicinity of the site: Black calabash (*Amphitecna latifolia*).

Comments: The critically imperiled *Amphitecna latifolia* is cultivated at the site within its historical range. The state-listed royal palm (*Roystonea regia*) is cultivated and naturalized at the site outside of historical range. A number of other state-listed species are cultivated at the site outside of their historical ranges: *Acoelorrhaphe wrightii*, *Byrsonima lucida*, *Calypttranthes pallens*, *Canella winterana*, *Cordia globosa*, *Eugenia confusa*, *Jacquinia keyensis*, *Peperomia obtusifolia*, *Tetrazygia bicolor*. The state-listed and critically imperiled lignumvitae (*Guajacum sanctum*) is also cultivated at the site outside of its historical range.

Preliminary recommendations:

- Include in future editions of Florida Conservation Lands.
- Map *Thelypteris hispidula* var. *versicolor* at least every three years.
- Monitor *Thelypteris hispidula* var. *versicolor* at least every year.
- Consider a formal introduction of *Amphitecna latifolia*.
- Remove *Roystonea regia* and other state-listed species cultivated outside of their historical ranges.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Osmunda regalis</i> var. <i>spectabilis</i> (C)		C	
<i>Pithecellobium keyense</i> (C)		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Zamia integrifolia</i> (C)		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Cestrum diurnum*, *Colocasia esculenta*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Asystasia gangetica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Murraya paniculata*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*,

Sansevieria hyacinthoides, *Solanum diphyllum*, *Syzygium jambos*, *Urena lobata*, and *Wedelia trilobata*.

Estero Bay State Buffer Preserve

Location: Lee County.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 8,440 acres (Jue et al., 2001).

Existing plant data: Vanasse & Daylor (2001) prepared preliminary lists of vascular plants for portions of the site.

Critically imperiled plants present at the site: Turkey oak (*Quercus laevis*).

Critically imperiled plants reported for the site: Pretty false pawpaw (*Deeringothamnus pulchellus*) and saltmarsh bulrush (*Scirpus robustus*).

Historical plants collected in the vicinity of the site: Lusterspike indigobush (*Amorpha herbacea* var. *herbacea*), pinewoods bluestem (*Andropogon arctatus*), Florida milkweed (*Asclepias feayi*), velvetleaf milkweed (*Asclepias tomentosa*), and matted waterstarwort (*Callitriche peploides*).

Critically imperiled plants collected in the vicinity of the site: Tenlobe false foxglove (*Agalinis obtusifolia*), shortleaf skeleton grass (*Gymnopogon brevifolius*), rose pogonia (*Pogonia ophioglossoides*), Baldwin's beaksedge (*Rhynchospora baldwinii*), Fernald's beaksedge (*Rhynchospora fernaldii*), Florida scrub skullcap (*Scutellaria arenicola*), and greenvein lady's-tresses (*Spiranthes praecox*).

Preliminary recommendations:

- Complete floristic inventory and prepare preliminary list of vascular plants.
- Voucher *Quercus laevis*.

- Survey for *Agalinis obtusifolia*, *Amorpha herbacea* var. *herbacea*, *Andropogon arctatus*, *Asclepias feayi*, *Asclepias tomentosa*, *Callitriche peploides*, *Deeringothamnus pulchellus*, *Gymnopogon brevifolius*, *Pogonia ophioglossoides*, *Rhynchospora baldwinii*, *Rhynchospora fernaldii*, *Scirpus robustus*, *Scutellaria arenicola*, and *Spiranthes praecox*.
- Contingent upon results of surveys, consider introductions of *Amorpha herbacea* var. *herbacea* and *Asclepias tomentosa*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acoelorrhaphe wrightii</i> (C)			T
<i>Calopogon multiflorus</i>		E	S2S3
<i>Encyclia tampensis</i>		C	
<i>Maytenus phyllanthoides</i>		T	
<i>Myrcianthes fragrans</i>		T	
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Melaleuca quinquenervia*, *Psidium guajava*, *Rhodomirtus tomentosa*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*.

**Everglades and Francis S. Taylor
Wildlife Management Area**

Location: Broward, Miami-Dade, and Palm Beach counties.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 671,831 acres (Jue et al., 2001).

Comments: This site contains 93,400 acres of private inholdings (Jue et al., 2001).

Existing plant data: Bradley et al. (1997b) prepared a preliminary list of vascular plants in the Water Conservation Area 2 portion of the site. The authors and K. Rutchy have made field observations. O. Lakela, R.L. Mears, Bradley & Woodmansee, and M.R. Anderson have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants protected only at Everglades and Francis S. Taylor Wildlife Management Area: Hoopvine (*Trichostigma octandrum*).

Critically imperiled plants collected in the vicinity of the site: Wright's waternymph (*Najas wrightiana*) and bog smartweed (*Polygonum setaceum*).

Comments: The Everglades restoration may have an effect on hoopvine and other rare plants at the site.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- In Water Conservation Area 2A, survey for *Najas wrightiana*.
- In Water Conservation Area 3A, survey for *Polygonum setaceum*
- Map *Trichostigma octandrum* at least every three years.
- Monitor *Trichostigma octandrum* at least every year.
- Conduct research to determine the long-term effects of the Everglades restoration on *Trichostigma octandrum*.
- Conduct research to determine the effects of the Everglades restoration on rare plants in the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Phyla stoechadifolia</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Tournefortia hirsutissima</i>		E	
<i>Trichostigma octandrum</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colocasia esculenta*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Panicum repens*, *Pistia stratiotes*, *Psidium guajava*, *Pueraria montana* var. *lobata*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Antigonon leptopus*, *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Tribulus cistoides*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Everglades National Park

Location: Collier, Miami-Dade, and Monroe counties.

Manager: National Park Service.

Size: 1,507,850 acres (Jue et al., 2001).

Existing plant data: Avery & Loope (1980b) prepared a preliminary list of vascular plants for the park, which has been amended numerous times (e.g. Reimus 1996, 1999). Several lists also exist for specific localities inside of the park (e.g. Long Pine Key), habitats (e.g. coastal hammocks), and plant groups (e.g. trees and shrubs). G.N. Avery, R.L. Hammer, C. McCartney, R. & J. Seavey, R. Reimus, the authors, and many others have made field observations. S.M. Tracy, J.K. Small, F.C. Craighead, Avery, the Seaveys, A.H. Herndon, and others have collected herbarium specimens. Everglades National Park has its own herbarium, but this herbarium is unregistered and has limited accessibility.

Extirpated plants collected at the site: Poponax (*Acacia tortuosa*), spider orchid (*Brassia caudata*), fragrant pricklyapples (*Harrisia fragrans*), bunch cutgrass (*Leersia monandra*), longgland orchid (*Macradenia lutescens*), Coot Bay dancinglady orchid (*Oncidium carthagenense*), and clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*).

Historical plants collected at the site: Ebony spleenwort (*Asplenium platyneuron*), Simpson's cup grass (*Eriochloa*

michauxii var. *simpsonii*), tropical govenia (*Govenia utriculata*), Mrs. Britton's shadow witch (*Ponthieva brittoniae*), and Mrs. Lott's vanilla (*Vanilla dilloniana*).

Critically imperiled plants protected only at Everglades National Park: Southern lip fern (*Cheilanthes microphylla*), twospike crab grass (*Digitaria pauciflora*), purplehead sneezeweed (*Helenium flexuosum*), white fenrose (*Kosteletzkya depressa*), Florida dancinglady orchid (*Oncidium ensatum*), mule-ear orchid (*Oncidium undulatum*), plume polypody (*Pecluma plumula*), mistletoe cactus (*Rhipsalis baccifera*), Costa Rican lady's-tresses (*Spiranthes costaricensis*), and hidden dropseed (*Sporobolus compositus* var. *clandestinus*).

Other critically imperiled plants present at the site: Fragrant maidenhair (*Adiantum melanoleucum*), Wright's pineland fern (*Anemia wrightii*), Carter's orchid (*Basiphyllaea corallicola*), pineland strongback (*Bouyeria cassinifolia*), lobed croton (*Croton lobatus*), sand ticktrefoil (*Desmodium lineatum*), longclaw orchid (*Eltroplectris calcarata*), Beyrich's hooded orchid (*Galeandra beyrichii*), holly vine fern (*Lomariopsis kunzeana*), roadside leafbract (*Malachra urens*), swampbush (*Pavonia paludicola*), low peperomia (*Peperomia humilis*), saltmarsh bulrush (*Scirpus robustus*), Everglades bully (*Sideroxylon reclinatum* subsp. *austrofloridense*), southern lady's-tresses (*Spiranthes torta*), lattice-vein fern (*Thelypteris reticulata*), and toothed lattice-vein fern (*Thelypteris serrata*).

Critically imperiled plants formerly present at the site: Big sandbur (*Cenchrus myosuroides*), water horn fern (*Ceratopteris pteridoides*), Florida Keys thoroughwort (*Chromolaena frustrata*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), Mexican sprangletop (*Leptochloa uninervia*), bog smartweed (*Polygonum setaceum*), southern river sage (*Salvia riparia*), and Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Critically imperiled plants reported for the site: Goatsfoot (*Passiflora sexflora*) and ray fern (*Schizaea pennula*).

Comments: Frank C. Craighead attempted to introduce several species of ferns and orchids to Everglades National Park, including the critically imperiled Biscayne spleenwort (*Asplenium xbiscaynianum*), hidden orchid (*Maxillaria crassifolia*), and flor de llanten (*Pleurothallis gelida*). Although the records are less clear, it appears also that he attempted to introduce stiff star-hair fern (*Thelypteris sclerophylla*) and Kraus' bristle fern (*Trichomanes krausii*). As far as we know, none of these species ever became established in the park, although a cultivated plant of Biscayne

spleenwort apparently persists. According to Luer (1972), the state-listed small prescott orchid (*Prescotia oligantha*) was also translocated to Everglades National Park from Hattie Bauer Hammock, where the last known plants were slated for destruction for a housing development. This introduction was apparently successful (see *Prescotia oligantha* species account in Chapter 4). More recently, the critically imperiled critically imperiled crenulate leadplant (*Amorpha herbacea* var. *crenulata*) has been cultivated in the park outside of its historical range, and the critically imperiled bitterbush (*Picramnia pentandra*) and state-listed redberry stopper (*Eugenia confusa*) have escaped from cultivation in the park.

The Everglades restoration may have a significant effect on rare plants in the park.

Preliminary recommendations:

- Survey for *Passiflora sexflora*.
- Conduct research to determine the effects of the Everglades restoration on rare plants in the park.

In the East Everglades area:

- Survey for *Asplenium platyneuron* and *Leptochloa uninervia*.
- Map and monitor *Anemia wrightii*.
- Contingent upon results of surveys, consider reintroduction of *Asplenium platyneuron*.

On Ferguson's Mound:

- Continue surveys for *Acacia tortuosa*.
- Contingent upon results of surveys, consider reintroduction of *Acacia tortuosa* to Ferguson's Mound.

In the Flamingo/Cape Sable area:

- Survey for *Chromolaena frustrata*, *Eriochloa michauxii* var. *simpsonii*, *Salvia riparia*, and *Vanilla dilloniana*.
- Contingent upon examination of Benson specimens, survey for *Harrisia fragrans*.
- Map and monitor *Kosteletzkya depressa*, *Malachra urens*, *Oncidium undulatum*, *Peperomia humilis*, *Rhipsalis baccifera*, and *Scirpus robustus*.

On islands in Florida Bay:

- Survey for *Cenchrus myosuroides*.

In the Long Pine Key/Paradise Key area:

- Continue surveys for *Ponthieva brittoniae*.

- Survey for *Prescotia oligantha* and *Tillandsia fasciculata* var. *clavispica*.
- Survey for *Croton lobatus* following fires or other disturbances.
- Map and monitor *Adiantum melanoleucum*, *Anemia wrightii*, *Basiphyllaea corallicola*, *Bourreria cassinifolia*, *Desmodium lineatum*, *Digitaria pauciflora*, *Eltroplectris calcarata*, *Galeandra beyrichii*, *Helenium flexuosum*, *Lomariopsis kunzeana*, *Oncidium ensatum*, *Pecluma plumula*, *Sideroxylon reclinatum* subsp. *austrofloridense*, *Spiranthes costaricensis*, *Spiranthes torta*, *Sporobolus compositus* var. *clandestinus*, *Thelypteris reticulata*, and *Thelypteris serrata*.
- Monitor Paul Martin Brown's station of what could be *Govenia utriculata*.
- Consider augmentation of *Adiantum melanoleucum*.
- Consider reintroduction of *Brassia caudata*, *Macradenia lutescens*, and *Oncidium undulatum*.
- Remove cultivated and naturalized plants of *Eugenia confusa* and *Picramnia pentandra*.
- Remove cultivated plants of *Amorpha herbacea* var. *crenulata* and *Asplenium xbiscaynianum*.

Along the Rogers River:

- Survey for *Ionopsis utricularioides*.

In Shark River Slough area:

- Survey for *Ceratopteris pteridoides* and *Polygonum setaceum*.

Along the eastern edge of Shark River Slough:

- Survey for *Asplenium platyneuron*.
- Along the eastern margins of Shark River Slough, map and monitor *Pecluma plumula*.
- Contingent upon results of surveys, consider reintroduction of *Asplenium platyneuron*.

In Taylor Slough:

- Survey for *Polygonum setaceum*.

In the Ten Thousand Islands area:

- Map and monitor *Pavonia paludicola*.

On Turner River Mound:

- Map and monitor *Cheilanthes microphylla*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acoelorrhaphe wrightii</i>		T	

<i>Acrostichum aureum</i>	T	S3
<i>Adiantum melanoleucum</i>	E	S1
<i>Adiantum tenerum</i>	E	S3
<i>Aeschynomene pratensis</i> var. <i>pratensis</i>	E	S2
<i>Aletris bracteata</i>	E	S2
<i>Alvaradoa amorphoides</i>	E	S1
<i>Anemia wrightii</i>	E	S1
<i>Angadenia berteroi</i>	T	
<i>Argusia gnaphalodes</i>	E	S3
<i>Argythamnia blodgettii</i>	E	S2
<i>Basiphyllaea corallicola</i>	E	S1
<i>Bletia purpurea</i>	T	
<i>Bouyeria cassinifolia</i>	E	S1
<i>Bouyeria succulenta</i>	E	
<i>Brassia caudata</i> (E)	E	SX
<i>Byrsonima lucida</i>	T	S3
<i>Calyptanthes pallens</i>	T	
<i>Calyptanthes zuzygium</i>	E	S2
<i>Canella winterana</i>	E	S2
<i>Catopsis berteroniana</i>	E	S1S2
<i>Catopsis floribunda</i>	E	S1
<i>Celosia nitida</i>	E	
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>	E	S1
<i>Chamaesyce garberi</i>	T	S1
<i>Chamaesyce pergamena</i>	T	
<i>Chamaesyce porteriana</i>	E	S2
<i>Chaptalia albicans</i>	T	
<i>Cheilanthes microphylla</i>	E	S3
<i>Chromolaena frustrata</i> (H)	E	S1
<i>Chrysophyllum oliviforme</i>	T	
<i>Coccothrinax argentata</i>	T	S3
<i>Colubrina arborescens</i>	E	
<i>Colubrina cubensis</i> var. <i>floridana</i>	E	S1
<i>Colubrina elliptica</i>	E	
<i>Cordia globosa</i>	E	
<i>Crossopetalum ilicifolium</i>	T	S2
<i>Crossopetalum rhacoma</i>	T	S3
<i>Ctenitis sloanei</i>	E	S2
<i>Cynanchum blodgettii</i>	T	
<i>Cyrtopodium punctatum</i>	E	S1
<i>Dalbergia brownii</i>	E	
<i>Dalea carthagenensis</i> var. <i>floridana</i> (E)	E	S1
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>	T	

<i>Digitaria pauciflora</i>	E	S1
<i>Drypetes diversifolia</i>	E	S2
<i>Drypetes lateriflora</i>	T	
<i>Eltroplectris calcarata</i>	E	S1
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>		S2
<i>Encyclia boothiana</i> var. <i>erythronioides</i>	E	S1
<i>Encyclia cochleata</i>	E	S2
<i>Encyclia tampensis</i>	C	
<i>Epidendrum anceps</i> (E)	E	
<i>Epidendrum floridense</i>	E	
<i>Epidendrum nocturnum</i>	E	S2
<i>Epidendrum rigidum</i>	E	
<i>Eriochloa michauxii</i> var. <i>simpsonii</i> (E)		S1
<i>Erithalis fruticosa</i>	T	
<i>Evolvulus convolvuloides</i>	E	
<i>Exostema caribaeum</i>	E	S2
<i>Galeandra beyrichii</i>	E	S1
<i>Glandularia maritima</i>	E	S3
<i>Gossypium hirsutum</i>	E	S3
<i>Govenia utriculata</i> (H)	E	
<i>Guzmania monostachia</i>	E	S1S2
<i>Harrisia fragrans</i> (H)	E	S1
<i>Harrisia simpsonii</i>	E	S2
<i>Hibiscus poeppigii</i>	E	
<i>Hippomane mancinella</i>	E	S2
<i>Hypelate trifoliata</i>	E	S1
<i>Ilex krugiana</i>	T	S3
<i>Ionopsis utricularioides</i> (H)	E	S1
<i>Ipomoea microdactyla</i>	E	S1S2
<i>Ipomoea tenuissima</i>	E	S1S2
<i>Jacquemontia curtisii</i>	T	S2
<i>Jacquemontia pentanthos</i>	E	S2
<i>Jacquinia keyensis</i>	T	S3
<i>Koanophyllon villosum</i>	E	S2
<i>Kosteletzkya depressa</i>	E	
<i>Lantana depressa</i> var. <i>depressa</i>	E	S3
<i>Lantana depressa</i> var. <i>sanibelensis</i>	E	S1
<i>Leiphaimos parasitica</i>	E	S2
<i>Linum carteri</i> var. <i>smallii</i>	E	S2
<i>Lomariopsis kunzeana</i>	E	S1
<i>Macradenia lutescens</i> (E)	E	SX
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i> (E)	T	S3
<i>Maytenus phyllanthoides</i>	T	

<i>Melanthera parvifolia</i>	T	
<i>Microgramma heterophylla</i>	E	S2
<i>Myrcianthes fragrans</i>	T	
<i>Nephrolepis biserrata</i>	T	
<i>Ocimum campechianum</i>	E	
<i>Odontosoria clavata</i>	E	S2
<i>Okenia hypogaea</i> (E)	E	S2
<i>Oncidium ensatum</i>	E	S1
<i>Oncidium undulatum</i>	E	S1
<i>Ophioglossum palmatum</i> (E)	E	S2
<i>Opuntia stricta</i>	T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Paspalidium chapmanii</i>	E	
<i>Passiflora multiflora</i>	E	S1
<i>Passiflora pallens</i>	E	S2
<i>Pavonia paludicola</i>	E	
<i>Pecluma plumula</i>	E	S2
<i>Peperomia humilis</i>	E	S2
<i>Peperomia obtusifolia</i>	E	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Pithecellobium keyense</i>	T	
<i>Poinsettia pinetorum</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Ponthieva brittoniae</i> (H)	E	S1
<i>Prunus myrtifolia</i>	T	S2
<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Reynosia septentrionalis</i> (E)	T	
<i>Rhipsalis baccifera</i>	E	S1
<i>Rhynchosia parvifolia</i>	T	
<i>Rhynchospora floridensis</i>		S2
<i>Roystonea regia</i>	E	S2
<i>Sachsia polycephala</i>	T	S2
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>	T	
<i>Scaevola plumieri</i>	T	
<i>Schaefferia frutescens</i>	E	S2
<i>Schizaea pennula</i> (E)	E	S1
<i>Scleria lithosperma</i>	E	
<i>Scutellaria havanensis</i>	E	S2
<i>Selaginella armata</i> var. <i>eatonii</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	

<i>Spermacoce terminalis</i>	T	
<i>Spiranthes costaricensis</i>	E	S1
<i>Spiranthes laciniata</i>	T	
<i>Spiranthes torta</i>	E	S1
<i>Stylosanthes calcicola</i>	E	S2
<i>Swietenia mahagoni</i>	T	S3
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris augescens</i>	T	
<i>Thelypteris reptans</i>	E	S1
<i>Thelypteris reticulata</i> (H)	E	
<i>Thelypteris serrata</i>	E	S1
<i>Thrinax morrisii</i> (E)	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>clavispica</i> (H)	E	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Trema lamarckianum</i>	E	S2
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i> (E)	E	S1
<i>Tripsacum floridanum</i>	T	S2
<i>Vallesia antillana</i>	E	S1
<i>Vanilla barbellata</i>	E	S2
<i>Vanilla dilloniana</i> (H)	E	
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Colocasia esculenta*, *Colubrina asiatica*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Hydrilla verticillata*, *Jasminum fluminense*, *Lantana camara*, *Lygodium microphyllum*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Ruellia tweediana*, *Scaevola sericea*, *Schefflera actinophylla*,

Schinus terebinthifolius, *Syngonium podophyllum*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Antigonon leptopus*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Jasminum sambac*, *Leucaena leucocephala*, *Melinis minutiflora*, *Murraya paniculata*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Terminalia catappa*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Fakahatchee Strand Preserve State Park

Location: Collier County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 70,375.88 acres (Jue et al., 2001).

Existing plant data: Austin et al. (1979) prepared a preliminary list of vascular plants. Austin et al. (1990) published a plant list in Florida Scientist. G.N. Avery, R.L. Hammer, M. Owen, the authors, and many others have made field observations. Many botanists, including A.A. Eaton, W.H. Buswell, L.J. Brass, G.N. Avery, and others have collected herbarium specimens.

Extirpated plants collected at the site: Rattail orchid (*Bulbophyllum pachyrachis*), Acuña's star orchid (*Epidendrum blancheanum*), and winged peperomia (*Peperomia alata*).

Historical plants collected at the site: Florida quillwort (*Isoetes flaccida*), tiny orchid (*Lepanthopsis melanantha*), purple tiger orchid (*Maxillaria parviflora*), and cypress peperomia (*Peperomia glabella*).

Critically imperiled plants protected only at Fakahatchee Strand Preserve State Park: Eared spleenwort (*Asplenium erosum*), leafless bentspur orchid (*Campylocentrum pachyrrhizum*), narrow strap fern (*Campyloneurum angustifolium*), nodding strap airplant (*Catopsis nutans*), dwarf butterfly orchid (*Encyclia pygmaea*), Big Cypress star orchid (*Epidendrum strobiliferum*), hanging clubmoss (*Huperzia dichotoma*), tropical sprangletop (*Leptochloa virgata*), pantropical widelip orchid

(*Liparis nervosa*), unidentified Peperomia (*Peperomia* species A), Savannah panicum (*Phanopyrum gymnocarpon*), flor de llanten (*Pleurothallis gelida*), Florida watercress (*Rorippa floridana*), stately maiden fern (*Thelypteris grandis*), and leafy vanilla (*Vanilla phaeantha*).

Other critically imperiled plants present at the site: Tailed strap fern (*Campyloneurum costatum*), giant sedge (*Carex gigantea*), brown-hair comb fern (*Ctenitis submarginalis*), hammock false rein orchid (*Habenaria distans*), delicate violet orchid (*Ionopsis utricularioides*), hidden orchid (*Maxillaria crassifolia*), low peperomia (*Peperomia humilis*), smallflower mock buckthorn (*Sageretia minutiflora*), hairy maiden fern (*Thelypteris hispidula* var. *versicolor*), lattice-vein fern (*Thelypteris reticulata*), fuzzywuzzy airplant (*Tillandsia pruinosa*), highbush blueberry (*Vaccinium corymbosum*), and Florida mudmidget (*Wolffiella gladiata*).

Critically imperiled plants formerly present at the site: Teal love grass (*Eragrostis hypnoides*).

Extirpated plants collected in the vicinity of the site: Florida roseling (*Callisia cordifolia*) and cypressknee helmet orchid (*Cranichis muscosa*).

Historical plants collected in the vicinity of the site: Southern wood fern (*Dryopteris ludoviciana*) and Florida purple bladderwort (*Utricularia amethystina*).

Critically imperiled plants collected in the vicinity of the site: Fakahatchee bluethead (*Burmannia flava*) and oak mistletoe (*Phoradendron leucarpum*).

Critically imperiled plants reported for the vicinity of the site: Lattice-vein fern (*Thelypteris reticulata*).

Preliminary recommendations:

- Voucher and identify *Peperomia* species A.
- Voucher *Sageretia minutiflora* and *Wolffiella gladiata*.
- Continue ongoing surveys for *Bulbophyllum pachyrachis*, *Campylocentrum pachyrrhizum*, *Campyloneurum angustifolium*, *Campyloneurum costatum*, *Encyclia pygmaea*, *Epidendrum strobiliferum*, *Lepanthopsis melanantha*, *Maxillaria parviflora*, *Pleurothallis gelida*, and *Tillandsia pruinosa*
- Survey for *Burmannia flava*, *Dryopteris ludoviciana*, *Eragrostis hypnoides*, *Isoetes flaccida*, *Peperomia glabella*, and *Phoradendron leucarpum*.
- Map all critically imperiled plants at least every three years.

- Monitor all critically imperiled plants at least every year.
- Consider augmentations of *Campyloneurum angustifolium*, *Encyclia pygmaea*, *Habenaria distans*, *Huperzia dichotoma*, and *Pleurothallis gelida*.
- Consider reintroductions of *Bulbophyllum pachyrachis*, *Epidendrum blancheanum*, and *Peperomia alata*.
- Contingent upon results of surveys, consider reintroductions of *Burmannia flava*, *Isoetes flaccida*, and *Peperomia glabella*.
- If no plants of *Lepanthopsis melanantha* are found by 2010, consider for reintroduction.
- Consider introductions of *Callisia cordifolia*, *Cranichis muscosa*, and *Utricularia amethystina*.
- Protect all of the rare epiphytic orchids, bromeliads, and peperomias in the park from poaching.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acoelorrhaphe wrightii</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Asplenium erosum</i>		E	S2
<i>Asplenium serratum</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Bulbophyllum pachyrachis</i> (E)		E	SX
<i>Burmannia flava</i> (E)		E	S1
<i>Campylocentrum pachyrrhizum</i>		E	S1
<i>Campyloneurum angustifolium</i>		E	S1
<i>Campyloneurum costatum</i>		E	S2
<i>Catopsis berteroniana</i>		E	S1S2
<i>Catopsis floribunda</i>		E	S1
<i>Catopsis nutans</i>		E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Ctenitis sloanei</i>		E	S2
<i>Ctenitis submarginalis</i>		E	
<i>Cyrtopodium punctatum</i>		E	S1
<i>Drypetes lateriflora</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia pygmaea</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Epidendrum anceps</i>		E	
<i>Epidendrum blancheanum</i> (E)		E	SH

<i>Epidendrum floridense</i>	E	
<i>Epidendrum nocturnum</i>	E	S2
<i>Epidendrum rigidum</i>	E	
<i>Epidendrum strobiliferum</i>	E	S1
<i>Guzmania monostachia</i>	E	S1S2
<i>Habenaria distans</i>	E	
<i>Habenaria nivea</i>	T	
<i>Harrisella filiformis</i>	T	
<i>Huperzia dichotoma</i>	E	S1
<i>Ionopsis utricularioides</i>	E	S1
<i>Lepanthopsis melanantha</i> (H)	E	SH
<i>Liparis nervosa</i>	E	
<i>Maxillaria crassifolia</i>	E	S1
<i>Maxillaria parviflora</i> (H)	E	
<i>Melanthera parvifolia</i>	T	
<i>Myrcianthes fragrans</i>	T	
<i>Nephrolepis biserrata</i>	T	
<i>Oncidium ensatum</i> (E)	E	S1
<i>Ophioglossum palmatum</i>	E	S2
<i>Osmunda cinnamomea</i>	C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Passiflora pallens</i>	E	S2
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>	E	S2
<i>Peperomia glabella</i> (H)	E	
<i>Peperomia humilis</i>	E	S2
<i>Peperomia obtusifolia</i>	E	S2
<i>Pleurothallis gelida</i>	E	S2
<i>Polyradicion lindenii</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Roystonea regia</i>	E	S2
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>	T	
<i>Sacoila lanceolata</i> var. <i>paludicola</i>	T	S1
<i>Spiranthes laciniata</i>	T	
<i>Spiranthes longilabris</i>	T	
<i>Thelypteris augescens</i>	T	
<i>Thelypteris grandis</i>	E	
<i>Thelypteris reticulata</i>	E	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia pruinosa</i>	E	S1
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	

<i>Vanilla phaeantha</i>	E	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Casuarina glauca*, *Eichhornia crassipes*, *Eugenia uniflora*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Pennisetum purpureum*, *Pistia stratiotes*, *Ruellia tweediana*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotic: *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Fern Forest Nature Center

Location: Broward County.

Manager: Broward County.

Size: 254 acres (Jue et al., 2001).

Existing plant data: There are two anonymous undated plant lists (no date.j; no date.k). Austin et al. (1979) published a list of pteridophytes for the site in American Fern Journal. G.N. Avery, Bradley, D. Scofield, and A. Cressler have made field observations. Avery, C.E. Nauman, G. Iverson, and P.L. Howell have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants protected only at Fern Forest Nature Center: Cutleaf spleenwort (*Asplenium abscissum*) and Brown-hair comb fern (*Ctenitis submarginalis*).

Critically imperiled plants formerly present at the site: Southern river sage (*Salvia riparia*).

Preliminary recommendations:

- Survey for *Salvia riparia*.
- Map *Asplenium abscissum* and *Ctenitis submarginalis* at least every three years.
- Monitor *Asplenium abscissum* and *Ctenitis submarginalis* at least every year.

- Consider augmentation of *Asplenium abscissum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asplenium dentatum</i>		E	S1S2
<i>Asplenium serratum</i>		E	S1
<i>Catopsis floribunda</i>		E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Ctenitis sloanei</i>		E	S2
<i>Ctenitis submarginalis</i>		E	
<i>Drypetes lateriflora</i>		T	
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Myrcianthes fragrans</i>		T	
<i>Nephrolepis biserrata</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>		E	S2
<i>Peperomia obtusifolia</i>		E	S2
<i>Tectaria heracleifolia</i>		T	
<i>Thelypteris augescens</i>		T	
<i>Thelypteris reptans</i>		E	S1
<i>Tillandsia balbisia</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbbeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colocasia esculenta*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Hydrilla verticillata*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, *Tectaria incisa*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Urena lobata*, and *Wedelia trilobata*.

Fisheating Creek Wildlife Management Area

Location: Glades County.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 18,272 acres (Jue et al., 2001).

Existing plant data: L.J. Brass and J. Popenoe collected herbarium specimens.

Historical plants collected at the site: Pineland lobelia (*Lobelia homophylla*).

Critically imperiled plants present at the site: Highbush blueberry (*Vaccinium corymbosum*).

Historical plants collected in the vicinity of the site: Florida milkweed (*Asclepias feayi*), hairyfruit chervil (*Chaerophyllum tainturieri*), rusty staggerbush (*Lyonia ferruginea*), and crowpoison (*Zigadenus densus*).

Critically imperiled plants collected in the vicinity of the site: Pinebarren aster (*Aster reticulatus*), Dixie aster (*Aster tortifolius*), bigflower pawpaw (*Asimina obovata*), rushfoil (*Croton michauxii*), shaggy hedgehyssop (*Gratiola pilosa*), shade mudflower (*Micranthemum umbrosum*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), goldenclub (*Orontium aquaticum*), yellow butterwort (*Pinguicula lutea*), racemed milkwort (*Polygala polygama*), Fernald's beaksedge (*Rhynchospora fernaldii*), fairy beaksedge (*Rhynchospora pusilla*), fewflower beaksedge (*Rhynchospora rariflora*), sand blackberry (*Rubus cuneifolius*), quillwort arrowhead (*Sagittaria isoetiformis*), netted chain fern (*Woodwardia areolata*), and tall yelloweyedgrass (*Xyris platylepis*).

Critically imperiled plants observed in the vicinity of the site: Trumpet creeper (*Campsis radicans*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

- Survey for *Asclepias feayi*, *Asimina obovata*, *Aster reticulatus*, *Aster tortifolius*, *Campsis radicans*, *Chaerophyllum tainturieri*, *Croton michauxii*, *Gratiola pilosa*, *Isoetes flaccida*, *Lobelia homophylla*, *Lyonia ferruginea*, *Micranthemum umbrosum*, *Nyssa sylvatica* var. *biflora*, *Orontium aquaticum*, *Pinguicula lutea*, *Polygala polygama*, *Rhynchospora fernaldii*, *Rhynchospora pusilla*, *Rhynchospora rariflora*, *Rubus cuneifolius*, *Sagittaria isoetiformis*, *Woodwardia areolata*, *Xyris platylepis*, and *Zigadenus densus*.
- Map *Vaccinium corymbosum* at least every three years.
- Monitor *Vaccinium corymbosum* at least every year.

Florida Atlantic University Ecological Site

Location: Palm Beach County.

Manager: Florida Atlantic University.

Size: 91.6 acres (Jue et al., 2001).

Existing plant data: Austin (1990) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Lechea cernua</i>		T	S3
<i>Lechea divaricata</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Lantana camara*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Tribulus cistoides*, and *Urena lobata*.

Florida City Pineland

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 23.54 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1986a) plant list. G.N. Avery, Gann, and J. Maguire have made field observations. Avery collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Extirpated plants collected at the site: Bahama manjack (*Cordia bahamensis*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Consider reintroduction of *Cordia bahamensis*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aletris bracteata</i>		E	S2
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Cynanchum blodgettii</i>		T	
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3

<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2

FLEPPC Category I Exotics: *Lantana camara*.

FLEPPC Category II Exotics: *Pteris vittata*.

Florida Panther National Wildlife Refuge

Location: Collier County.

Manager: United States Fish and Wildlife Service.

Size: 26,529.04 acres (Jue et al., 2001).

Existing plant data: None.

Historical plants collected in the vicinity of the site: Florida milkweed (*Asclepias feayi*), scaldweed (*Cuscuta gronovii*), and Florida purple bladderwort (*Utricularia amethystina*).

Critically imperiled plants collected in the vicinity of the site: Fakahatchee bluethread (*Burmannia flava*), giant sedge (*Carex gigantea*), Florida dancinglady orchid (*Oncidium ensatum*), goldenclub (*Orontium aquaticum*).

Critically imperiled plants reported for the vicinity of the site: Lattice-vein fern (*Thelypteris reticulata*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- In the Fakahatchee Strand, survey for *Oncidium ensatum* and *Thelypteris reticulata*.
- In the Okaloacoochee Slough, survey for *Asclepias feayi*, *Carex gigantea*, *Cuscuta gronovii*, and *Orontium aquaticum*.
- Six miles west of Miles City, survey for *Burmannia flava*.
- Consider introduction of *Utricularia amethystina*.
- Contingent upon results of surveys, consider introduction of *Cuscuta gronovii*.

**Fort Lauderdale Executive Airport
Gopher Tortoise Preserve**

Location: Broward County.

Manager: Fort Lauderdale Executive Airport.

Size: 16.5 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Buckley & Hendrickson (1983a) prepared a preliminary list of vascular plants. The authors have made field observations. Bradley & Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants reported for the site: Tall jointweed (*Polygonella gracilis*).

Critically imperiled plants collected in the vicinity of the site: Dixie aster (*Aster tortifolius*), Chapman's skeleton grass (*Gymnopogon chapmanianus*), and tall jointweed (*Polygonella gracilis*).

Preliminary recommendations:

- Include in future editions of Florida Conservation Lands.
- Survey for *Polygonella gracilis*.
- Consider introductions of *Aster tortifolius* and *Gymnopogon chapmanianus*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Polygala smallii</i>	E	E	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens* and *Urena lobata*.

**Fred C. Babcock-Cecil M. Webb
Wildlife Management Area**

Location: Charlotte County.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 82,046 acres (Jue et al., 2001).

Comments: Includes Yucca Pens Unit of Jue et al. (2001).

Existing plant data: Gann & Bradley have made field observations. J.K. Small, S.L. Orzell & E.L. Bridges, and Gann & Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants protected only at Fred C. Babcock-Cecil M. Webb Wildlife Management Area: Pretty false pawpaw (*Deeringothamnus pulchellus*), Florida pineland spurge (*Euphorbia inundata*), Florida loosestrife (*Lythrum flagellare*), Browne's savory (*Micromeria brownei* var. *pilosiuscula*), and fewflower nutrush (*Scleria ciliata* var. *pauciflora*).

Other critically imperiled plants present at the site: Tenlobe false foxglove (*Agalinis obtusifolia*), water horn fern (*Ceratopteris pteridoides*), lesser creeping rush (*Juncus repens*), Piedmont primrosewillow (*Ludwigia arcuata*), shortbristle beaksedge (*Rhynchospora breviseta*), and sand blackberry (*Rubus cuneifolius*).

Extirpated plants collected in the vicinity of the site: Largeflower milkweed (*Asclepias connivens*).

Historical plants collected in the vicinity of the site: Pinewoods bluestem (*Andropogon arctatus*).

Critically imperiled plants collected in the vicinity of the site: Forked rush (*Juncus dichotomus*), Florida beargrass (*Nolina atopocarpa*), Baldwin's beaksedge (*Rhynchospora baldwinii*), and early blue violet (*Viola palmata*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Agalinis obtusifolia*, *Euphorbia inundata*, *Micromeria brownei* var. *pilosiuscula*, and *Rubus cuneifolius*.
- Survey for *Andropogon arctatus*, *Juncus dichotomus*, *Nolina atopocarpa*, *Rhynchospora baldwinii*, and *Viola palmata*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider introduction of *Asclepias connivens*.
- Continue projects to acquire additional land for the park.

Additional data:**Listed Plants:**

	US	FL	FNAI
<i>Deeringothamnus pulchellus</i>	E	E	S1
<i>Lilium catesbaei</i>		T	
<i>Lythrum flagellare</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Saccola lanceolata</i> var. <i>lanceolata</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina glauca*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Psidium cattleianum*, *Psidium guajava*, *Rhodomyrtus tomentosa*, *Ruellia tweediana*, *Sapium sebiferum*, *Schinus terebinthifolius*, *Solanum viarum*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Casuarina cunninghamiana*, *Dalbergia sissoo*, *Pteris vittata*, *Rhynchelytrum repens*, *Sesbania punicea*, and *Urena lobata*.

Frenchman's Forest Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.
Size: 157 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1996a) prepared a preliminary plant list, which was amended by Palm Beach County Department of Environmental Resources Management et al. (1996). Gann & Bradley have made field observations and collected herbarium specimens.

Critically imperiled plants present at the site: Rushfoil (*Croton michauxii*).

Critically imperiled plants reported for the site: Racemed milkwort (*Polygala polygama*) and sand blackberry (*Rubus cuneifolius*).

Preliminary recommendations:

- Initiate surveys for *Polygala polygama* and *Rubus cuneifolius*.
- Map *Croton michauxii* at least every three years.
- Monitor *Croton michauxii* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Encyclia tampensis</i>		C	
<i>Ophioglossum palmatum</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Melia azedarach*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Psidium guajava*,

Schefflera actinophylla, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Solanum viarum*, *Syngonium podophyllum*, *Syzygium cumini*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Asystasia gangetica*, *Callisia fragrans*, *Dalbergia sissoo*, *Epipremnum pinnatum*, *Murraya paniculata*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Terminalia catappa*, *Terminalia muelleri*, *Tribulus cistoides*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Frog Pond/L-31 N Transition Lands

Location: Miami-Dade County.

Manager: South Florida Water Management District.

Size: 9,386 acres (Jue et al., 2001).

Existing plant data: Barry (1995) and Bradley et al. (1997b) have prepared preliminary lists of vascular plants. Ferriter (1996) prepared a list of vascular plants for hammocks on the site. The authors, A. Ferriter, M. Barry, and K.L. Erwin have made field observations. G.N. Avery and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Frog Pond/L-31 N Transition Lands: Mexican sprangletop (*Leptochloa uninervia*).

Other critically imperiled plants present at the site: Wright's pineland fern (*Anemia wrightii*) and lattice-vein fern (*Thelypteris reticulata*).

Preliminary recommendations:

- Voucher *Thelypteris reticulata*.
- Map *Anemia wrightii*, *Leptochloa uninervia*, and *Thelypteris reticulata* at least every three years
- Monitor *Anemia wrightii*, *Leptochloa uninervia*, and *Thelypteris reticulata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Aletris bracteata</i>		E	S2
<i>Anemia wrightii</i>		E	S1
<i>Angadenia berteroi</i>		T	
<i>Bletia purpurea</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Encyclia tampensis</i>		C	
<i>Ilex krugiana</i>		T	S3
<i>Jacquemontia curtisii</i>		T	S2
<i>Jacquemontia pentanthos</i>		E	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Ocimum campechianum</i>		E	
<i>Odontosoria clavata</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Phyla stoechadifolia</i>		E	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Selaginella armata</i> var. <i>eatonii</i>		E	S2
<i>Solanum verbascifolium</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris reticulata</i>		E	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Trema lamarckianum</i>		E	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Colocasia esculenta*, *Imperata cylindrica*, *Lantana camara*, *Melia azedarach*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*,

Pennisetum purpureum, *Psidium guajava*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Leucaena leucocephala*, *Merremia tuberosa*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, and *Urena lobata*.

Fuchs Hammock Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 39.83 acres (Jue et al., 2001).

Comments: Includes Fuchs Hammock Addition of Jue et al. (2001). Fuchs Hammock was historically known as Sykes Hammock.

Existing plant data: Hammer (1988) prepared a preliminary list of vascular plants, which was amended by Fairchild Tropical Garden (1991a). Bradley (1993) prepared a preliminary list of vascular plants for the Fuchs Hammock Addition portion of the site. G.N. Avery, R.L. Hammer, Bradley, and others have made field observations. Many botanists including J.K. Small, F.C. Craighead, P.B. Tomlinson, and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants: Hachueta (*Pelexia adnata*).

Critically imperiled plants present at the site: Modest spleenwort (*Asplenium verecundum*), lobed croton (*Croton lobatus*), goatsfoot (*Passiflora sexflora*), stiff star-hair fern (*Thelypteris sclerophylla*), Kraus' bristle fern (*Trichomanes krausii*), and Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Critically imperiled plants observed at the site: Beyrich's hooded orchid (*Galeandra beyrichii*).

Historical plants collected in the vicinity of the site: Cardinal airplant (*Tillandsia fasciculata* var. *fasciculata*).

Critically imperiled plants collected in the vicinity of the site: Cutleaf spleenwort (*Asplenium abscissum*).

Preliminary recommendations:

- Survey for *Tillandsia fasciculata* var. *fasciculata*.
- Survey for *Galeandra beyrichii* and *Pelexia adnata* on an annual basis during their flowering seasons.
- Survey for *Croton lobatus* following fires or other disturbances.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider augmentation of *Thelypteris sclerophylla*.
- Consider introduction of *Asplenium abscissum*.
- Contingent upon results of surveys, consider reintroduction of *Tillandsia fasciculata* var. *fasciculata*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Alvaradoa amorphoides</i>		E	S1
<i>Argythamnia blodgettii</i>		E	S2
<i>Asplenium verecundum</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Catopsis berteroniana</i>		E	S1S2
<i>Catopsis floribunda</i>		E	S1
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina arborescens</i> (E)		E	
<i>Colubrina cubensis</i> var. <i>floridana</i>		E	S1
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Eltroplectris calcarata</i>		E	S1
<i>Encyclia boothiana</i> var. <i>erythronioides</i> (E)		E	S1
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum anceps</i>		E	
<i>Epidendrum floridense</i> (E)		E	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Galeandra beyrichii</i>		E	S1

<i>Guzmania monostachia</i>	E	S1S2
<i>Ilex krugiana</i>	T	S3
<i>Koanophyllon villosum</i>	E	S2
<i>Lantana depressa</i> var. <i>depressa</i> (E)	E	S3
<i>Leiphaimos parasitica</i>	E	S2
<i>Passiflora pallens</i>	E	S2
<i>Passiflora sexflora</i>	E	S2
<i>Pelexia adnata</i> (E)	E	
<i>Peperomia obtusifolia</i>	E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchosia parvifolia</i>	T	
<i>Scutellaria havanensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris sclerophylla</i>	E	S1
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Trichomanes krausii</i>	E	S1
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i>	E	S1
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Hydrilla verticillata*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Epipremnum pinnatum*, *Koelreuteria elegans* subsp. *formosana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, and *Rhynchelytrum repens*.

**Gasparilla Island Conservation
and Improvement Association Tract A**

Location: Lee County.

Manager: Gasparilla Island Conservation and Improvement Association Tract A.

Size: 35 acres.

Comments: Not in Jue et al. (2001).

Existing plant data: Gann has made field observations, but additional inventory work is needed.

Critically imperiled plants present at the site: Aboriginal pricklyapples (*Harrisia aboriginum*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map *Harrisia aboriginum* at least every three years.
- Monitor *Harrisia aboriginum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Harrisia aboriginum</i>		E	S2
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia* and *Schinus terebinthifolius*.

Gasparilla Island State Park

Location: Lee County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 127.24 acres (Jue et al., 2001).

Existing plant data: The Florida Park Service District 4 (1994c) prepared a preliminary list of vascular plants. Gann has made field observations. S. Braem and A. Peters have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Black nightshade (*Solanum chenopodioides*).

Critically imperiled plants reported for the site: Aboriginal pricklyapples (*Harrisia aboriginum*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Survey for *Harrisia aboriginum*.
- Map *Solanum chenopodioides* at least every three years.
- Monitor *Solanum chenopodioides* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquinia keyensis</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Scaevola sericea*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Ricinus communis*, and *Tribulus cistoides*.

Gold Coast Railroad Museum

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 60.31 acres; 3 acres of pine rockland (Jue et al., 2001).

Existing plant data: Bradley & Woodmansee have made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce pergamena</i>		T	
<i>Coccothrinax argentea</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Ardisia elliptica*, *Casuarina equisetifolia*, *Ficus microcarpa*, *Lantana camara*, *Neyraudia reynaudiana*, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Oeceoclades maculata*, *Pteris vittata*, *Ricinus communis*, and *Wedelia trilobata*.

Gomez

Location: Martin County.

Manager: Martin County.

Size: 60.5 acres (Jue et al., 2001).

Existing plant data: J.B. Miller (1992) prepared a preliminary list of vascular plants. Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Lantana camara*, *Ligustrum lucidum*, *Lygodium microphyllum*, *Psidium cattleianum*, *Psidium guajava*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Urena lobata*, and *Wedelia trilobata*.

Gopher Tortoise Preserve

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 7 acres (Jue et al., 2001).

Existing plant data: Austin (1997) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Dalbergia sissoo*, *Ficus altissima*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Goulds Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 35.76 acres (Jue et al., 2001).

Comments: Includes Goulds Pineland Addition.

Existing plant data: Bradley has collected herbarium specimens.

Critically imperiled plants present at the site: Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*), sand ticktrefoil (*Desmodium lineatum*), and Curtiss' nutrush (*Scleria ciliata* var. *curtissii*).

Extirpated plants collected in the vicinity of the site: Flor de pasmo (*Bletia patula*).

Critically imperiled plants collected in the vicinity of the site: Purplehead sneezeweed (*Helenium flexuosum*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Helenium flexuosum*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i>			
subsp. <i>adhaerens</i>	E	E	S1
<i>Cynanchum blodgettii</i>		T	
<i>Jacquemontia curtisii</i>		T	S2
<i>Melanthera parvifolia</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Tripsacum floridanum</i>		T	S2

FLEPPC Category II Exotics: *Flacourtia indica* and *Passiflora foetida*.

Great White Heron National Wildlife Refuge

Location: Monroe County Keys.

Manager: United States Fish and Wildlife Service.

Size: 192,584.28 acres (Jue et al., 2001).

Comments: A portion of the boundary of Great White Heron National Wildlife Refuge overlaps with National Key Deer Refuge.

We have attributed vascular plant data within this overlap area to National Key Deer Refuge.

Existing plant data: Weiner (1980, as amended) and Kruer (1992) prepared preliminary plant lists of hammocks within the refuge. Gann & Bradley have made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: American toadwood (*Cupania glabra*).

Critically imperiled plants formerly present at the site: Yellow nicker (*Caesalpinia major*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Survey for *Caesalpinia major* on Barracuda Key.
- Map *Cupania glabra* at least every three years.
- Monitor *Cupania glabra* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Canella winterana</i>		E	S2
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cupania glabra</i>		E	S1
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Gossypium hirsutum</i>		E	S3
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	

<i>Psidium longipes</i>	T	S2
<i>Reynosa septentrionalis</i>	T	
<i>Savia bahamensis</i>	E	S2
<i>Smilax havanensis</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Manilkara zapota*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Callisia fragrans*, and *Sansevieria hyacinthoides*.

Greynolds Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 240.75 acres; 76 acres of natural area (Jue et al., 2001).

Existing plant data: Fairchild Tropical Garden (1991f) prepared a preliminary plants list, which was amended by Hammer (1995a). G.N. Avery and Bradley have made field observations. J. Popenoe and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Calyptrothrix pallens</i>		T	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	

<i>Melanthera parvifolia</i>	T	
<i>Myrcianthes fragrans</i>	T	
<i>Passiflora pallens</i>	E	S2
<i>Pithecellobium keyense</i>	T	
<i>Pteris bahamensis</i>	T	S3
<i>Thelypteris augescens</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Pennisetum purpureum*, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Dalbergia sissoo*, *Epipremnum pinnatum*, *Ficus altissima*, *Hibiscus tiliaceus*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Terminalia muelleri*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Halpatiokee Regional Park

Location: Martin County.

Manager: Martin County.

Size: 121 acres.

Comments: Includes South Fork Addition of Jue et al. (2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Forked rush (*Juncus dichotomus*), Piedmont primrosewillow (*Ludwigia arcuata*), shade mudflower (*Micranthemum umbrosum*), giant ironweed (*Vernonia gigantea*), and netted chain fern (*Woodwardia areolata*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Voucher *Ludwigia arcuata* and *Micranthemum umbrosum*.
- Complete floristic inventory and amend preliminary list of vascular plants.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Encyclia tampensis</i>		C	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Psidium cattleianum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Harden Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.
Size: 12.35 acres (Jue et al., 2001).

Existing plant data: Hammer & Ricisak (1996) prepared a preliminary list of vascular plants. R.L. Hammer and Bradley have made field observations. Bradley and Alan Cressler have collected herbarium specimens.

Critically imperiled plants present at the site: Fragrant maidenhair (*Adiantum melanoleucum*) and stiff star-hair fern (*Thelypteris sclerophylla*).

Preliminary recommendations:

- Voucher *Thelypteris sclerophylla*.
- Map *Adiantum melanoleucum* and *Thelypteris sclerophylla* at least every three years.
- Monitor *Adiantum melanoleucum* and *Thelypteris sclerophylla* at least every year.
- Consider augmentations of *Adiantum melanoleucum* and *Thelypteris sclerophylla*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum melanoleucum</i>		E	S1
<i>Adiantum tenerum</i>		E	S3
<i>Encyclia tampensis</i>		C	
<i>Melanthera parvifolia</i>		T	
<i>Tectaria heracleifolia</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris reptans</i>		E	S1
<i>Thelypteris sclerophylla</i>		E	S1
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Cestrum diurnum*, *Jasminum dichotomum*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*,

Psidium guajava, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Flacourtia indica*, *Leucaena leucocephala*, *Melinis minutiflora*, *Oeceoclades maculata*, *Pteris vittata*, and *Ricinus communis*.

Hattie Bauer Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 13.97 acres (Jue et al., 2001).

Existing plant data: R.L. Hammer (1992b) prepared a preliminary list of vascular plants. G.N. Avery and Gann have made field observations. A.A. Eaton, J.K. Small, J. Popenoe and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Extirpated plants collected at Hattie Bauer Hammock: Cypressknee helmet orchid (*Cranichis muscosa*), spoonleaf peperomia (*Peperomia magnoliifolia*), small prescott orchid (*Prescotia oligantha*), hairy halberd fern (*Tectaria coriandrifolia*), Ames' halberd fern (*Tectaria xamesiana*), and lined bristle fern (*Trichomanes lineolatum*).

Historical plants collected at Hattie Bauer Hammock: Florida quillwort (*Isoetes flaccida*).

Critically imperiled plants present at the site: Goatsfoot (*Passiflora sexflora*).

Critically imperiled plants formerly present at Hattie Bauer Hammock: Tailed strap fern (*Campyloneurum costatum*), Florida dancinglady orchid (*Oncidium ensatum*), Kraus' bristle fern (*Trichomanes krausii*), and Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Critically imperiled plants reported for Hattie Bauer Hammock: Holly vine fern (*Lomariopsis kunzeana*).

Critically imperiled plants collected in the vicinity of the site: Cutleaf spleenwort (*Asplenium abscissum*).

Comments: Historically, this was one of the most diverse and important hammocks on the southern part of the Miami Rock Ridge. A portion of Hattie Bauer Hammock was destroyed for a

housing development several decades ago, and the majority of the remainder was developed as The Orchid Jungle, a local tourist attraction. It is difficult to determine which extirpated species were lost to development, and which may have been extirpated due to collecting, exotic pest plant invasions, a lowered fresh water table, or other factors. Some species that have been extirpated at the site (e.g. *Isoetes flaccida*) can no longer be supported due to the lower regional fresh water table. The state-listed royal palm (*Roystonea regia*) has naturalized at the site outside of its historical range.

Preliminary recommendations:

- Map *Passiflora sexflora* at least every three years.
- Monitor *Passiflora sexflora* at least every year.
- Consider reintroductions of *Campyloneurum costatum*, *Cranichis muscosa*, *Lomariopsis kunzeana*, *Oncidium ensatum*, *Peperomia magnoliifolia*, *Prescotia oligantha*, *Tectaria coriandrifolia*, *Tectaria xamesiana*, *Trichomanes krausii*, *Trichomanes lineolatum*, and *Trichomanes punctatum* subsp. *floridanum*.
- Consider introduction of *Asplenium abscissum*.
- Remove *Roystonea regia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Alvaradoa amorphoides</i>		E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina cubensis</i> var. <i>floridana</i>		E	S1
<i>Ctenitis sloanei</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Ilex krugiana</i>		T	S3
<i>Koanophyllon villosum</i>		E	S2
<i>Leiphaimos parasitica</i>		E	S2
<i>Microgramma heterophylla</i>		E	S2
<i>Nephrolepis biserrata</i>		T	
<i>Passiflora sexflora</i>		E	S2

<i>Peperomia obtusifolia</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris reptans</i>	E	S1
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Bischofia javanica*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tectaria incisa*.

FLEPPC Category II Exotics: *Alstonia macrophylla*, *Epipremnum pinnatum*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Sansevieria hyacinthoides*, and *Wedelia trilobata*.

**Hickey Creek Mitigation Park
Wildlife and Environmental Area**

Location: Lee County.
Manager: Florida Fish and Wildlife Conservation Commission.
Size: 936 acres (Jue et al., 2001).

Existing plant data: Florida Game and Fresh Water Fish Commission & Lee County (1994) prepared a preliminary list of vascular plants. Gann, R. Clark, and R. Irving made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Sparkleberry (*Vaccinium arboreum*).

Critically imperiled plants collected in the vicinity of the site: Early blue violet (*Viola palmata*).

Preliminary recommendations:

- Voucher *Vaccinium arboreum*.
- Survey for *Viola palmata*.
- Map *Vaccinium arboreum* at least every three years.
- Monitor *Vaccinium arboreum* at least every year.

Additional data:

Listed Plants:

Myrcianthes fragrans
Tillandsia utriculata

US	FL	FNAI
	T	
	E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Colocasia esculenta*, *Hydrilla verticillata*, *Melaleuca quinquenervia*, *Panicum repens*, *Pistia stratiotes*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens* and *Urena lobata*.

Highland Oaks Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 39.92 acres (Jue et al., 2001); about 10.9 acres are “natural” or restoration areas.

Existing plant data: Woodmansee has made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants: US FL FNAI
Tillandsia fasciculata var. *densispica* E

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Lantana camara*, *Melaleuca quinquenervia*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Ricinus communis*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Hillsboro Pineland Natural Area

Location: Broward County.
Manager: Broward County.
Size: 44 acres (Jue et al., 2001).

Existing plant data: McMahon (no date) prepared a preliminary list of vascular plants. The authors have made field observations. P.L. Howell and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants: US FL FNAI
Bletia purpurea T

<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>		S2
<i>Encyclia tampensis</i>	C	
<i>Jacquemontia curtisii</i>	T	S2
<i>Melanthera parvifolia</i>	T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia utriculata</i>	E	
<i>Vernonia blodgettii</i>		S3

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Melaleuca quinquenervia*, *Melia azedarach*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Pistia stratiotes*, *Psidium cattleianum*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Ficus altissima*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Solanum diphyllum*, *Solanum torvum*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Hobe Sound National Wildlife Refuge

Location: Martin County.

Manager: United States Fish and Wildlife Service.

Size: 980.15 acres (Jue et al., 2001).

Comments: This site is divided into two disjunct areas, part of which is on the northern portion of Jupiter Island, and part of which is on the mainland.

Existing plant data: There are two anonymous plant lists (1986b, 1992). Bradley et al. (1999) prepared a preliminary list of vascular plants for the xeric portions of the site. The authors have made field observations. Bradley, Woodmansee, R.E. Roberts, and S.

Marcus have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Critically imperiled plants collected in the vicinity of the site:
White spikerush (*Eleocharis albida*).

Preliminary recommendations:

- Survey for *Eleocharis albida*.
- Contingent upon results of surveys, consider introduction of *Eleocharis albida* on the Jupiter Island portion of the refuge.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argusia gnaphalodes</i>		E	S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Chrysophyllum oliviforme</i>		T	
<i>Conradina grandiflora</i>		T	S3
<i>Drypetes lateriflora</i>		T	
<i>Glandularia maritima</i>		E	S3
<i>Lechea cernua</i>		T	S3
<i>Okenia hypogaea</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Casuarina glauca*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Dioscorea alata*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Psidium cattleianum*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Ficus altissima*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Hobe Sound Sandhill

Location: Martin County.

Manager: The Nature Conservancy.

Size: 55.79 acres (Jue et al., 2001).

Comments: Although this site is called "Hobe Sound Sandhill," there is no sandhill community present on the site, which is dominated by scrub.

Existing plant data: Bradley et al. (1999) prepared a preliminary list of vascular plants. The authors have made field observations. The authors have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered species.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Panicum repens*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Holey Land Wildlife Management Area

Location: Broward and Palm Beach counties.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 35,350 acres (Jue et al., 2001).

Existing plant data: Peerin et al. (1983) prepared an abbreviated plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:

Osmunda regalis var. *spectabilis*

US

FL

FNAI

C

FLEPPC Category II Exotics: *Alternanthera philoxeroides*.

Hollywood North Beach Regional Park

Location: Broward County.

Manager: Broward County.

Size: 76.9 acres (Jue et al., 2001).

Comments: While FNAI designates this site as a conservation area, it is primarily used for recreation and beach access.

Existing plant data: MacAdam (1988) and Johnson & Muller (1993a) prepared abbreviated plant lists. Gann & Bradley have made field observations. P.L. Howell has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Curtiss'
hoarypea (*Tephrosia angustissima* var. *curtissii*).

Critically imperiled plants reported for the site: Florida
shrubverbena (*Lantana depressa* var. *floridana*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Survey for *Lantana depressa* var. *floridana*.
- Map *Tephrosia angustissima* var. *curtissii* at least every three years.
- Monitor *Tephrosia angustissima* var. *curtissii* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Coccothrinax argentata</i>		T	S3
<i>Cyperus pedunculatus</i>		E	
<i>Lantana depressa</i> var. <i>floridana</i>			S2
<i>Okenia hypogaea</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Tephrosia angustissima</i> var. <i>curtissii</i>		E	S1
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, and *Schinus terebinthifolius*.

Homestead Bayfront Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 97 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations. Bradley, F.C. Craighead, and D.S. Correll have collected herbarium specimens. The IRC website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Bletia purpurea</i>		T	
<i>Linum arenicola</i>		E	S1S2
<i>Linum carteri</i> var. <i>smallii</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Solanum verbascifolium</i>		T	
<i>Trema lamarckianum</i>		E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Ficus microcarpa*, *Melaleuca quinquenervia*, *Panicum repens*, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Ricinus communis*, *Tribulus cistoides*, and *Wedelia trilobata*.

House of Refuge Park

Location: Martin County.

Manager: Martin County.

Size: 10.46 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) prepared an abbreviated plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Hugh Taylor Birch State Park

Location: Broward County.

Manager: Florida Department of Environmental Protection,
Division of Recreation and Parks.

Size: 175.24 acres.

Existing plant data: Buckley & Hendrickson (1983b) prepared a preliminary list of vascular plants. Johnson & Muller (1993a) produced an abbreviated plant list. USFWS (1996) reported observations of *Jacquemontia reclinata*. The Florida Park Service District 5 (1999a) prepared a list of plants. G.N. Avery, Gann and J.A. Duquesnel have made field observations. Gann and O. Lakela have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*) and Biscayne pricklyash (*Zanthoxylum coriaceum*).

Preliminary recommendations:

- Continue mapping *Jacquemontia reclinata* at least every three years.
- Map *Zanthoxylum coriaceum* at least every three years.
- Monitor *Jacquemontia reclinata* and *Zanthoxylum coriaceum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Myrcianthes fragrans</i>		T	
<i>Okenia hypogaea</i>		E	S2

<i>Pithecellobium keyense</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Zamia integrifolia</i>	C	
<i>Zanthoxylum coriaceum</i>	E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Melia azedarach*, *Mimosa pigra*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Psidium cattleianum*, *Psidium guajava*, *Ruellia tweediana*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Antigonon leptopus*, *Asystasia gangetica*, *Callisia fragrans*, *Cryptostegia madagascariensis*, *Cyperus involucreatus*, *Epipremnum pinnatum*, *Ficus altissima*, *Hibiscus tiliaceus*, *Koeleruteria elegans* subsp. *formosana*, *Leucaena leucocephala*, *Murraya paniculata*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Syzygium jambos*, *Terminalia catappa*, *Terminalia muelleri*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Indian Key Historic State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 110.49 acres (Jue et al., 2001).

Comments: Excludes the Attwood Addition, which is included in this site by Jue et al. (2001).

Existing plant data: Roberts (1973) prepared a preliminary list of vascular plants. Additional plant lists were prepared by Dade County Native Plant Workshop (1986) and Florida Park Service District 5 (1999b). G.N. Avery, Gann, and J.A. Duquesnel have made field observations. A.H. Curtiss, J.H. Simpson, and J.K. Small collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants formerly present at the site: Big sandbur (*Cenchrus myosuroides*).

Preliminary recommendations:

- Consider reintroduction of *Cenchrus myosuroides*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Ageratum littorale</i>		E	S2
<i>Argusia gnaphalodes</i>		E	S3
<i>Cordia globosa</i> (E)		E	
<i>Jacquemontia pentanthos</i>		E	S2
<i>Opuntia stricta</i>		T	

FLEPPC Category I Exotics: *Albizia lebbek*, *Melia azedarach*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*.

Ingram Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County Parks and Recreation.

Size: 10.4 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Herndon (1994) reported *Brickellia mosieri* for the site. G.N. Avery and Bradley have made field observations. A.H. Herndon collected a specimen of *Chamaesyce deltoidea* ssp. *adhaerens*.

Critically imperiled plants known at the site: Pineland strongback (*Bouyeria cassinifolia*), Coker's beach creeper (*Ernodea cokeri*), and Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*).

Comments: The state-listed mahogany (*Swietenia mahagoni*) has naturalized at the site outside of its historical range.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Survey for *Chamaesyce deltoidea* subsp. *adhaerens*.
- Voucher *Bouyeria cassinifolia* and *Ernodea cokeri*.
- Map *Bouyeria cassinifolia* and *Ernodea cokeri* at least every three years.
- Monitor *Bouyeria cassinifolia* and *Ernodea cokeri* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Bouyeria cassinifolia</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>adhaerens</i> (H)	E	E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ernodea cokeri</i>		E	S1
<i>Ilex krugiana</i>		T	S3
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Jasminum dichotomum*, *Lantana camara*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Flacourtia indica*, *Leucaena leucocephala*, *Merremia tuberosa*, *Pteris vittata*, *Rhynchelytrum repens*, and *Ricinus communis*.

Institute for Regional Conservation Preserve

Location: Miami-Dade County.

Manager: Institute for Regional Conservation.

Size: 2.4 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: The authors have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*) and Coker's beach creeper (*Ernodea cokeri*).

Critically imperiled plants collected in the vicinity of the site: Sand ticktrefoil (*Desmodium lineatum*), purplehead sneezeweed (*Helenium flexuosum*), and Curtiss' nutrush (*Scleria ciliata* var. *curtissii*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Chamaesyce deltoidea* subsp. *adhaerens* and *Ernodea cokeri*.

- Survey for *Desmodium lineatum*, *Helenium flexuosum*, and *Scleria ciliata* var. *curtissii*.
- Map *Chamaesyce deltoidea* subsp. *adhaerens* and *Ernodea cokeri* at least every three years.
- Monitor *Chamaesyce deltoidea* subsp. *adhaerens* and *Ernodea cokeri* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i>			
subsp. <i>adhaerens</i>	E	E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Ernodea cokeri</i>		E	S1
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Linum arenicola</i>		E	S1S2
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Melinis minutiflora*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

Ives Estate Park

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 92.46 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1993b) plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Pteris bahamensis</i>		T	S3
<i>Zamia integrifolia</i> (C)		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Bischofia javanica*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Sansevieria hyacinthoides*, and *Urena lobata*.

J.N. "Ding" Darling National Wildlife Refuge

Location: Lee County.
Manager: United States Fish and Wildlife Service.
Size: 6,315.53 acres (Jue et al., 2001).

Existing plant data: Wunderlin et al. (1980) prepared a preliminary list of vascular plants that were vouchered. Gann made field observations. Several botanists including R.P. Wunderlin, B.F. Hansen, W.C. Brumbach, and D.S. Correll & H.B. Correll have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at J.N. “Ding” Darling National Wildlife Refuge: Spiked crested coralroot (*Hexalectris spicata*).

Other critically imperiled plants present at the site: Spiny hackberry (*Celtis pallida*) and aboriginal pricklyapples (*Harrisia aboriginum*).

Critically imperiled plants formerly present at the site: Iguana hackberry (*Celtis iguanaea*).

Historical plants collected in the vicinity of the site: American bulrush (*Scirpus americanus*).

Critically imperiled plants collected in the vicinity of the site: White spikerush (*Eleocharis albida*).

Preliminary recommendations:

- Survey for *Celtis iguanaea*, *Eleocharis albida*, and *Scirpus americanus*.
- Continue mapping *Harrisia aboriginum* on Buck Key.
- Map *Celtis pallida* and *Hexalectris spicata* at least every three years.
- Monitor *Celtis pallida*, *Harrisia aboriginum*, and *Hexalectris spicata* at least every year.
- Contingent upon results of surveys, consider reintroduction of *Celtis iguanaea*.
- Contingent upon results of surveys, consider introduction of *Eleocharis albida*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Celosia nitida</i>		E	
<i>Celtis iguanaea</i> (H)		E	SH
<i>Celtis pallida</i>		E	S1
<i>Encyclia tampensis</i>		C	

<i>Hexalectris spicata</i>	E	
<i>Jacquinia keyensis</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia stricta</i>	T	
<i>Pithecellobium keyense</i>	T	
<i>Scaevola plumieri</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Dioscorea alata*, *Lantana camara*, *Manilkara zapota*, *Melia azedarach*, *Psidium guajava*, *Scaevola sericea*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Cryptostegia madagascariensis*, *Jasminum sambac*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Ricinus communis*, and *Sansevieria hyacinthoides*.

J.W. Corbett Wildlife Management Area

Location: Palm Beach County.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 60,228 acres (Jue et al., 2001).

Existing plant data: Austin (1984) and Cox (1988) prepared preliminary plant lists of hammocks within the site. The authors have made field observations. W.G. Atwater, D.F. Austin, D. Black & S. Black, C.E. Nauman, and the authors have collected herbarium specimens. The IRC website (Gann et al., 2001) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Small's bogbutton (*Lachnocaulon minus*), celestial lily (*Nemastylis floridana*), warty panicum (*Panicum verrucosum*), rose pogonia (*Pogonia ophioglossoides*), Harper's beaksedge (*Rhynchospora harperi*), Curtiss' nutrush (*Scleria ciliata* var. *curtissii*), twistedleaf

goldenrod (*Solidago tortifolia*), and greenvein lady's-tresses (*Spiranthes praecox*).

Critically imperiled plants formerly present at the site: Warty sedge (*Carex verrucosa*).

Critically imperiled plants reported for the site: Sparkleberry (*Vaccinium arboreum*).

Preliminary recommendations:

- Voucher *Lachnocaulon minus*, *Nemastylis floridana*, *Panicum verrucosum*, *Pogonia ophioglossoides*, *Solidago tortifolia*, and *Spiranthes praecox*.
- Survey for *Carex verrucosa* and *Vaccinium arboreum*
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	State	FNAI
<i>Bletia purpurea</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Nemastylis floridana</i>		E	S2
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Spiranthes laciniata</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Imperata cylindrica*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Jimmy Graham Boat Ramp

Location: Martin County.

Manager: Martin County.

Size: 6.8 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: S. Vardaman and J. Burney have made field observations of *Vanilla inodora*.

Critically imperiled plants present at the site: Fuchs' vanilla (*Vanilla inodora*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Make photographic voucher of *Vanilla inodora*.
- Map *Vanilla inodora* at least every year.
- Monitor *Vanilla inodora* every month.
- Consider augmentation of *Vanilla inodora*.
- Protect *Vanilla inodora* from poaching.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Vanilla inodora</i>		E	S1

John D. MacArthur Beach State Park

Location: Palm Beach County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 437.57 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.f) plant list. Richardson (1977), Duever et al. (1981), and Iverson (1982) have

prepared preliminary lists of vascular plants. Johnson & Muller (1993a) prepared an abbreviated plant list. Richardson (1984) reports the discovery of *Amphitecna latifolia*. Gann, T.T. Gann, and J.A. Duquesnel have made field observations. Gann and R.E. Roberts have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Black calabash (*Amphitecna latifolia*).

Preliminary recommendations:

- Map *Amphitecna latifolia* at least every three years.
- Monitor *Amphitecna latifolia* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argusia gnaphalodes</i>		E	S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Melanthera parvifolia</i>		T	
<i>Okenia hypogaea</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Manilkara zapota*, *Melia azedarach*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Psidium guajava*, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

John Pennekamp Coral Reef State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 63,094.28 acres (Jue et al., 2001).

Existing plant data: Avery (1971), Hammer (1992d), and others prepared preliminary lists of vascular plants. Weiner (1980, as amended) prepared plant lists for hammocks in the park. Avery, the authors, and J.A. Duquesnel have made field observations. Avery, Gann, Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at John Pennekamp Coral Reef State Park: Bahama tree cactus (*Pilosocereus bahamensis*).

Other critically imperiled plants present at the site: Florida Keys indigo (*Indigofera mucronata* var. *keyensis*), Swartz's snoutbean (*Rhynchosia swartzii*), and pearlberry (*Vallesia antillana*).

Critically imperiled plants formerly present at the site: Yellow nicker (*Caesalpinia major*) and red stopper (*Eugenia rhombea*), and Lignumvitae (*Guajacum sanctum*).

Historical plants collected in the vicinity of site: Windmill grass (*Chloris elata*), bunch cut grass (*Leersia monandra*), and widespread polypody (*Pecluma dispersa*).

Critically imperiled plants collected in the vicinity of the site: Plume polypody (*Pecluma plumula*).

Comments: The critically imperiled semaphore cactus (*Opuntia corallicola*) is cultivated in the park within its historical range. The state-listed *Myrcianthes fragrans* is cultivated in the park outside of its historical range.

Preliminary recommendations:

On Key Largo:

- Voucher *Indigofera mucronata* var. *keyensis* and *Rhynchosia swartzii*.
- Continue surveys for *Caesalpinia major*.

- Map outline of *Pilosocereus bahamensis* annually.
 - Monitor *Pilosocereus bahamensis* every quarter.
 - Map other critically imperiled plants at least every three years.
 - Monitor other critically imperiled plants at least annually.
 - Consider introductions of *Chloris elata*, *Leersia monandra*, *Pecluma dispersa*, and *Pecluma plumula*.
 - Remove cultivated plants of *Myrcianthes fragrans*.
- On Palo Alto Key:
- Survey for *Eugenia rhombea* and *Guajacum sanctum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Bourreria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Caesalpinia major</i> (H)		E	
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Celosia nitida</i> (H)		E	
<i>Chrysophyllum oliviforme</i>		T	
<i>Colubrina elliptica</i>		E	
<i>Cynanchum blodgettii</i>		T	
<i>Dalbergia brownii</i>		E	
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia boothiana</i> var. <i>erythronioides</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Eugenia rhombea</i> (H)		E	S1
<i>Exostema caribaeum</i>		E	S2
<i>Gossypium hirsutum</i>		E	S3
<i>Guajacum sanctum</i> (H)		E	S2
<i>Harrisia simpsonii</i>		E	S2
<i>Hibiscus poeppigii</i>		E	
<i>Hippomane mancinella</i>		E	S2
<i>Hypelate trifoliata</i>		E	S1
<i>Indigofera mucronata</i> var. <i>keyensis</i>		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3

<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia corallicola</i> (C)	E	S1
<i>Opuntia stricta</i>	T	
<i>Passiflora multiflora</i>	E	S1
<i>Pilosocereus bahamensis</i>	E	S1
<i>Pithecellobium keyense</i>	T	
<i>Reynosia septentrionalis</i>	T	
<i>Rhynchosia swartzii</i>	E	S1
<i>Scaevola plumieri</i>	T	
<i>Schaefferia frutescens</i>	E	S2
<i>Scleria lithosperma</i>	E	
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Swietenia mahagoni</i>	T	S3
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Trema lamarckianum</i>	E	S2
<i>Vallesia antillana</i>	E	S1

FLEPPC Category I Exotics: *Albizia lebeck*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Antigonon leptopus*, *Callisia fragrans*, *Ficus altissima*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Jasminum sambac*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Tribulus cistoides*, and *Wedelia trilobata*.

John U. Lloyd Beach State Park

Location: Broward County.

Manager: Florida Department of Environmental Protection,
Division of Recreation and Parks.

Size: 310.77 acres (Jue et al., 2001).

Existing plant data: Buckley & Hendrickson (1985), and the Florida Park Service District 5 (1999c) prepared preliminary lists of vascular plants. Johnson & Muller (1993a) prepared an abbreviated plant list. Gann and J.A. Duquesnel have made field observations. Gann and A. Buckley have collected herbarium specimens. The IRC Website (Gann et al., 2001) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	State	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Argusia gnaphalodes</i>		E	S3
<i>Okenia hypogaea</i>		E	S2
<i>Pithecellobium keyense</i>		T	
<i>Pteris bahamensis</i>		T	S3
<i>Scaevola plumieri</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Jasminum fluminense*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus*

terebinthifolius, *Syngonium podophyllum*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Terminalia catappa*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Jonathan Dickinson State Park

Location: Martin County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 17,314.27 acres.

Comments: Includes Atlantic Ridge and South Fork St. Lucie River of Jue et al. (2001).

Existing plant data: Popenoe (1981) prepared a preliminary list of vascular plants. There is an undated plant list prepared by Florida Park Service District 5, which was probably an amended version of Popenoe's list. Anderson (1997) prepared a preliminary list of vascular plants for the wetland portions of the site. R.E. Roberts and others are preparing an updated list of vascular plants. Roberts, the authors, and others have made field observations. J. Popenoe, W.L. McCart, R.O. Woodbury, E.L. Bridges, Bradley, Woodmansee, and many others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants collected at the site: Flatwoods plum (*Prunus umbellata*).

Historical plants reported for site: American bulrush (*Scirpus americanus*).

Critically imperiled plants protected only at Jonathan Dickinson State Park: Trinius threeawn (*Aristida purpurascens* var. *virgata*), Florida joint-tail grass (*Coelorachis tuberculosa*), shaggy hedgehyssop (*Gratiola pilosa*), Carolina holly (*Ilex ambigua*), marsh seedbox (*Ludwigia palustris*), partridgeberry (*Mitchella repens*), Florida false sunflower (*Phoebanthus*

grandiflorus), turkey oak (*Quercus laevis*), scurf hoarypea (*Tephrosia chrysophylla*), sprawling hoarypea (*Tephrosia hispida*), and toothed lattice-vein fern (*Thelypteris serrata*).

Other critically imperiled plants present at the site: Seminole false foxglove (*Agalinis filifolia*), tenlobe false foxglove (*Agalinis obtusifolia*), jack-in-the-pulpit (*Arisaema triphyllum*), fourpetal pawpaw (*Asimina tetramera*), pinebarren aster (*Aster reticulatus*), twining screwstem (*Bartonia paniculata*), yellow screwstem (*Bartonia virginica*), bluethread (*Burmannia biflora*), water horn fern (*Ceratopteris pteridoides*), viviparous spikerush (*Eleocharis vivipara*), shortleaf skeleton grass (*Gymnopogon brevifolius*), forked rush (*Juncus dichotomus*), lesser creeping rush (*Juncus repens*), Engler's bogbutton (*Lachnocaulon engleri*), Small's bogbutton (*Lachnocaulon minus*), hairy primrosewillow (*Ludwigia pilosa*), slender club-moss (*Lycopodiella caroliniana*), grassleaf Barbara's buttons (*Marshallia tenuifolia*), shade mudflower (*Micranthemum umbrosum*), warty panicum (*Panicum verrucosum*), low peperomia (*Peperomia humilis*), yellow butterwort (*Pinguicula lutea*), rose pogonia (*Pogonia ophioglossoides*), shortbristle beaksedge (*Rhynchospora breviseta*), Harper's beaksedge (*Rhynchospora harperi*), fewflower beaksedge (*Rhynchospora rariflora*), Wright's beaksedge (*Rhynchospora wrightiana*), quillwort arrowhead (*Sagittaria isoetiformis*), Florida feathershank (*Schoenocaulon dubium*), twistedleaf goldenrod (*Solidago tortifolia*), variegated orchid (*Tolumnia bahamensis*), tall redbot (*Tridens flavus* var. *flavus*), southern bladderwort (*Utricularia juncea*), giant ironweed (*Vernonia gigantea*), primroseleaf violet (*Viola primulifolia*), fringed yelloweyedgrass (*Xyris fimbriata*), and tall yelloweyedgrass (*Xyris platylepis*).

Critically imperiled plants formerly present at the site: American elm (*Ulmus americana*).

Critically imperiled plants collected in the vicinity of the site: Goldenclub (*Orontium aquaticum*).

Preliminary recommendations:

- Voucher *Agalinis filifolia*, *Agalinis obtusifolia*, *Arisaema triphyllum*, *Ceratopteris pteridoides*, *Lachnocaulon engleri*, *Rhynchospora breviseta*, *Rhynchospora rariflora*, *Tridens flavus* var. *flavus*, *Vernonia gigantea*, and *Viola primulifolia*.
- Survey for *Orontium aquaticum*, *Prunus umbellata*, *Scirpus americanus*, and *Ulmus americana*.
- Map all critically imperiled plants at least every three years.

- Monitor all critically imperiled plants at least every year.
- Continue projects to acquire additional land for the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Asclepias curtissii</i>		E	S3
<i>Asimina tetramera</i>	E	E	S1
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Chrysophyllum oliviforme</i>		T	
<i>Coelorachis tuberculosa</i>		T	S3
<i>Conradina grandiflora</i>		T	S3
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum rigidum</i>		E	
<i>Habenaria nivea</i>		T	
<i>Lechea cernua</i>		T	S3
<i>Lechea divaricata</i>		E	S2
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Myrcianthes fragrans</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Peperomia humilis</i>		E	S2
<i>Pinguicula caerulea</i>		T	
<i>Pinguicula lutea</i>		T	
<i>Pogonia ophioglossoides</i>		T	
<i>Polygala smallii</i>	E	E	S1
<i>Pteroglossaspis ecristata</i>		T	S2
<i>Spiranthes laciniata</i>		T	
<i>Thelypteris serrata</i>		E	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Tolumnia bahamensis</i>		E	S1
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Casuarina equisetifolia*, *Casuarina glauca*, *Colocasia esculenta*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Melia azedarach*, *Mimosa pigra*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium cattleianum*, *Psidium guajava*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Callisia fragrans*, *Epipremnum pinnatum*, *Ficus altissima*, *Leucaena leucocephala*, *Limnophila sessiliflora*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Syzygium jambos*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Juno Dunes Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 562.59 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1995a, 1997) prepared preliminary lists of vascular plants. The authors have made field observations. The authors, Richard Moyroud, and others collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Juno Dunes Natural Area: Atlantic pigeonwings (*Clitoria mariana*).

Other critically imperiled plants present at the site: Fourpetal pawpaw (*Asimina tetramera*), rushfoil (*Croton michauxii*), tall dodder (*Cuscuta exaltata*), viviparous spikerush (*Eleocharis vivipara*), Florida shrubverbena (*Lantana depressa* var. *floridana*), and racemed milkwort (*Polygala polygama*).

Critically imperiled plants reported for the site: Yankeeweed (*Eupatorium compositifolium*).

Preliminary recommendations:

- Voucher *Lantana depressa* var. *floridana*, and *Polygala polygama*.
- Survey for *Eupatorium compositifolium*.
- Map *Cuscuta exaltata* whenever plants are present.
- Map other critically imperiled plants at least every three years.
- Monitor *Cuscuta exaltata* stations on a quarterly basis.
- Monitor other critically imperiled plants at least every year.
- Extirpate *Lantana camara* from the site and destroy hybrids with *L. depressa* var. *floridana*.

Additional data:**Listed Plants:**

	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Asimina tetramera</i>	E	E	S1
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Lantana depressa</i> var. <i>floridana</i>			S2
<i>Lechea cernua</i>		T	S3
<i>Linum carteri</i> var. <i>smallii</i>		E	S2
<i>Lycopodiella cernua</i>		C	
<i>Okenia hypogaea</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pithecellobium keyense</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*,

Thespesia populnea, *Tradescantia fluminensis*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Antigonon leptopus*, *Cyperus involucratus*, *Dalbergia sissoo*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Passiflora foetida*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Terminalia catappa*, *Terminalia muelleri*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Jupiter Inlet Lot 13

Location: Palm Beach County.

Manager: Town of Jupiter & the United States Bureau of Land Management.

Size: 26.35 acres; approximately 10 acres of scrub.

Comments: Included in Jupiter Inlet by Jue et al. (2001).

Existing plant data: Farnsworth (1993c) and U.S. Department of the Interior, Bureau of Land Management (1996) prepared preliminary lists of vascular plants for the Jupiter Inlet Tract, which included what are now Jupiter Inlet Lot 13 and Jupiter Inlet Natural Area. S. Farnsworth has made field observations.

Critically imperiled plants reported for the vicinity of the site: Tall dodder (*Cuscuta exaltata*) and Florida shrubverbena (*Lantana depressa* var. *floridana*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Cuscuta exaltata* and *Lantana depressa* var. *floridana*.

Jupiter Inlet Natural Area

Location: Palm Beach County.

Manager: Palm Beach County & the United States Bureau of Land Management.

Size: 54.33 acres.

Comments: Included in Jupiter Inlet by Jue et al. (2001).

Existing plant data: Farnsworth (1993c) and U.S. Department of the Interior, Bureau of Land Management (1996) prepared preliminary lists of vascular plants for the Jupiter Inlet Tract, which included what are now Jupiter Inlet Lot 13 and Jupiter Inlet Natural Area. S. Farnsworth has made field observations.

Critically imperiled plants present at the site: Fourpetal pawpaw (*Asimina tetramera*).

Critically imperiled plants reported for the vicinity of the site: Tall dodder (*Cuscuta exaltata*) and Florida shrubverbena (*Lantana depressa* var. *floridana*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Cuscuta exaltata* and *Lantana depressa* var. *floridana*.
- Map *Asimina tetramera* at least every three years.
- Monitor *Asimina tetramera* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asimina tetramera</i>	E	E	S1

Jupiter Ridge Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 268.6 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1994b) and Ecohorizons, Inc. & Palm Beach County Environmental Resource Management (1996a) prepared preliminary lists of vascular plants. The authors have made field observations and collected herbarium specimens.

Critically imperiled plants present at the site: Fourpetal pawpaw (*Asimina tetramera*), tall dodder (*Cuscuta exaltata*), viviparous spikerush (*Eleocharis vivipara*), racemed milkwort (*Polygala polygama*), and variegated orchid (*Tolumnia bahamensis*).

Preliminary recommendations:

- Voucher *Asimina tetramera*, *Cuscuta exaltata*, *Eleocharis vivipara*, and *Polygala polygama*.
- Map *Cuscuta exaltata* whenever plants are present.
- Map other critically imperiled plants at least every three years.
- Monitor *Cuscuta exaltata* stations on a quarterly basis.
- Monitor other critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Asimina tetramera</i>	E	E	S1
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Lechea cernua</i>		T	S3
<i>Lechea divaricata</i>		E	S2
<i>Lycopodiella cernua</i>		C	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Polygala smallii</i>	E	E	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tolumnia bahamensis</i>		E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Panicum repens*, *Pennisetum purpureum*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Dalbergia sissoo*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Kendall Indian Hammocks Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 105 acres; 43 acres of prairie hammock (Jue et al., 2001).

Existing plant data: Bradley, Gann, and T.T. Gann have made field observations. Bradley has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Critically imperiled plants collected in the vicinity of the site:

Black calabash (*Amphitecna latifolia*) and mistletoe cactus (*Rhipsalis baccifera*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Consider introductions of *Amphitecna latifolia* and *Rhipsalis baccifera*.

Additional data:

Listed Plants:

	US	FL	FNAI
<i>Cordia globosa</i>		E	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum dichotomum*, *Lantana camara*, *Melia azedarach*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Pennisetum purpureum*,

Psidium guajava, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Asystasia gangetica*, *Ficus altissima*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Terminalia catappa*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Kendalwood

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 1.5 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants,.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Myrcianthes fragrans</i> (C)		T	
<i>Pteris bahamensis</i>		T	S3
<i>Thelypteris augescens</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Cestrum diurnum*, *Jasminum fluminense*, *Nephrolepis multiflora*, *Pennisetum purpureum*,

Schefflera actinophylla, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Callisia fragrans*, *Epipremnum pinnatum*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Terminalia catappa*, and *Wedelia trilobata*.

**Key Largo Ansama Parcel,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 0.91 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2001) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants known at the site: Swartz's snoutbean (*Rhynchosia swartzii*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Voucher *Rhynchosia swartzii*.
- Map *Rhynchosia swartzii* at least every three years.
- Monitor *Rhynchosia swartzii* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Canella winterana</i>		E	S2
<i>Chrysophyllum oliviforme</i>		T	
<i>Passiflora multiflora</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Rhynchosia swartzii</i>		E	S1
<i>Swietenia mahagoni</i>		T	S3

FLEPPC Category I Exotics: *Manilkara zapota* and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

**Key Largo Brown Parcel,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.
Manager: Florida Fish and Wildlife Conservation Commission.
Size: 5.84 acres.
Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2001) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations and have collected herbarium specimens.

Critically imperiled plants known at the site: None.

- Preliminary recommendations:**
- Include site in future editions of Florida Conservation Lands.
 - Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Bouyeria succulenta</i>		E	
<i>Canella winterana</i>		E	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Harrisia simpsonii</i>		E	S2
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Passiflora multiflora</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Tillandsia flexuosa</i>		T	S3

Tillandsia utriculata

E

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Leucaena leucocephala* and *Rhynchelytrum repens*.

Key West National Wildlife Refuge

Location: Monroe County Keys.

Manager: United States Fish and Wildlife Service.

Size: 208,308.17 acres (Jue et al., 2001).

Existing plant data: Millspaugh (1907), Davis (1942), Phillips (1959), and others have prepared preliminary lists of vascular plants. Gann, and Bradley have made field observations. J.L. Blodgett, J.H. Davis, Jr., Gann & Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Yellowwood (*Zanthoxylum flavum*).

Critically imperiled plants formerly present at the site: Florida Keys thoroughwort (*Chromolaena frustrata*).

Preliminary recommendations:

- Continue mapping *Zanthoxylum flavum* at least every three years.
- Monitor *Zanthoxylum flavum* at least every year.

Additional data:

Listed Plants:

	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argusia gnaphalodes</i>		E	S3
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chromolaena frustrata</i> (E)		E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina arborescens</i>		E	
<i>Encyclia tampensis</i>		C	

<i>Erithalis fruticosa</i>	T	
<i>Gossypium hirsutum</i>	E	S3
<i>Gyminda latifolia</i>	E	S2
<i>Jacquinia keyensis</i>	T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia stricta</i>	T	
<i>Paspalidium chapmanii</i>	E	
<i>Pithecellobium keyense</i>	T	
<i>Reynosia septentrionalis</i>	T	
<i>Scaevola plumieri</i>	T	
<i>Scleria lithosperma</i>	E	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia flexuosa</i>	T	S3
<i>Zanthoxylum flavum</i>	E	S1

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Scaevola sericea*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Phoenix reclinata*, and *Sansevieria hyacinthoides*.

Kiplinger

Location: Martin County.

Manager: Martin County.

Size: 121 acres (Jue et al., 2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Jack-in-the-pulpit (*Arisaema triphyllum*), pinebarren aster (*Aster reticulatus*), and quillwort arrowhead (*Sagittaria isoetiformis*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Arisaema triphyllum*.
- Map and monitor *Arisaema triphyllum*, *Aster reticulatus*, and *Sagittaria isoetiformis*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Conradina grandiflora</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisia</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Lygodium microphyllum*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Psidium cattleianum*, *Psidium guajava*, *Schinus terebinthifolius*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Kitchen Key

Location: Charlotte County.

Manager: Charlotte County.

Size: 27.06 acres.

Comments: Not in Jue et al. (2001).

Existing plant data: Gann has made field observations.

Critically imperiled plants present at the site: Aboriginal pricklyapples (*Harrisia aboriginum*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map *Harrisia aboriginum* at least every three years.
- Monitor *Harrisia aboriginum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Harrisia aboriginum</i>		E	S2
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Klopp Tract, Lignumvitae Key Botanical State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 23 acres.

Comments: Included in Lignumvitae Key Botanical State Park by Jue et al. (2001), but this site is located on Lower Matecumbe Key and is disjunct from Lignumvitae Key. A substantial portion of this site is slated for development as an access site for Lignumvitae Key.

Existing plant data: Gann, J.A. Duquesnel, and Bradley have made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Yucatan flymallow (*Cienfuegosia yucatanensis*), lignumvitae (*Guajacum sanctum*), and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*).

Critically imperiled plants collected in the vicinity of the site:
Florida Keys thoroughwort (*Chromolaena frustrata*) and American
dodder (*Cuscuta americana*).

Preliminary recommendations:

- Voucher *Cienfuegosia yucatanensis* and *Indigofera mucronata* var. *keyensis*.
- Voucher *Guajacum sanctum* when plant becomes reproductive.
- Map *Cienfuegosia yucatanensis*, *Guajacum sanctum*, and *Indigofera mucronata* var. *keyensis* at least every three years.
- Monitor *Cienfuegosia yucatanensis*, *Guajacum sanctum*, and *Indigofera mucronata* var. *keyensis* at least every year.
- Consider augmentation of *Guajacum sanctum*.
- Consider introductions of *Chromolaena frustrata* and *Cuscuta americana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Chamaesyce garberi</i>	T	E	S1
<i>Cienfuegosia yucatanensis</i>		E	S1
<i>Cordia globosa</i>		E	
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Evolvulus convolvuloides</i>		E	
<i>Gossypium hirsutum</i>		E	S3
<i>Guajacum sanctum</i>		E	S2
<i>Hibiscus poeppigii</i>		E	
<i>Indigofera mucronata</i> var. <i>keyensis</i>		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Reynosa septentrionalis</i>		T	
<i>Schaefferia frutescens</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Swietenia mahagoni</i>		T	S3

Thrinax radiata

E S2

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Lantana camara*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Ricinus communis*, and *Sansevieria hyacinthoides*.

Koreshan State Historic Site

Location: Lee County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 193.14 acres (Jue et al., 2001).

Existing plant data: The Florida Park Service District 4 (1994d) prepared a preliminary list of vascular plants. G.N. Avery, Gann, R. Hattaway, and S. Braem have made field observations. O. Lakela, W.L. McCart, and S. Cole have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants reported for the site: Lusterspike indigobush (*Amorpha herbacea* var. *herbacea*).

Critically imperiled plants present at the site: Southern river sage (*Salvia riparia*).

Critically imperiled plants formerly present at the site: Carolina holly (*Ilex ambigua*) and racemed milkwort (*Polygala polygama*).

Critically imperiled plants reported for the site: Trumpet creeper (*Campsis radicans*) and swamp tupelo (*Nyssa sylvatica* var. *biflora*).

Historical plants collected in the vicinity of the site: Lusterspike indigobush (*Amorpha herbacea* var. *herbacea*).

Preliminary recommendations:

- Voucher *Salvia lyrata*.
- Continue surveys for *Amorpha herbacea* var. *herbacea*, *Ilex ambigua*, and *Polygala polygama*.

- Survey for *Asclepias feayi*, *Campsis radicans*, and *Nyssa sylvatica* var. *biflora*.
- Map *Salvia riparia* at least every three years.
- Monitor *Salvia riparia* at least every year.
- Contingent upon results of surveys, consider introduction of *Amorpha herbacea* var. *herbacea*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Myrcianthes fragrans</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Sacola lanceolata</i> var. <i>lanceolata</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Imperata cylindrica*, *Jasminum dichotomum*, *Lantana camara*, *Melaleuca quinquenervia*, *Melia azedarach*, *Pennisetum purpureum*, *Psidium cattleianum*, *Psidium guajava*, *Pueraria montana* var. *lobata*, *Rhodomyrtus tomentosa*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Ficus altissima*, *Hibiscus tiliaceus*, *Melinis minutiflora*, *Phoenix reclinata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Urena lobata*, and *Wedelia trilobata*.

La Belle Nature Park

Location: Hendry County.

Manager: City of La Belle.

Size: Unknown.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Trumpet creeper (*Campsis radicans*).

Extirpated plants collected in the vicinity of the site: Southern grape fern (*Botrychium biternatum*).

Historical plants collected in the vicinity of the site: Sweetgum (*Liquidambar styraciflua*).

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Complete floristic inventory and amend preliminary inventory of vascular plants.
- Voucher *Campsis radicans*.
- Survey for *Liquidambar styraciflua*.
- Map *Campsis radicans* at least every three years.
- Monitor *Campsis radicans* at least every year.
- Consider introduction of *Botrychium biternatum*.
- Contingent upon results of surveys, consider introduction of *Liquidambar styraciflua*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Asparagus densiflorus*, *Colocasia esculenta*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Nephrolepis cordifolia*, *Psidium guajava*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Oeceoclades maculata*, *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

**Lake San Pedro Hammocks, Florida Keys
Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 77.2 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary plant list. Bradley & Woodmansee have made field observations have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Critically imperiled plant observed in the vicinity of the site:
Yellow nicker (*Caesalpinia major*).

Preliminary recommendations:

- Consider introduction of *Caesalpinia major*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Canella winterana</i>		E	S2
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Gossypium hirsutum</i>		E	S3
<i>Harrisia simpsonii</i>		E	S2
<i>Hippomane mancinella</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Passiflora multiflora</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

Tillandsia flexuosa
Tillandsia utriculata

T S3
E

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Oeceoclades maculata*, and *Sansevieria hyacinthoides*.

Larry and Penny Thompson Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 270 acres; 229 acres of natural area (Jue et al., 2001).

Comments: The park is located within the Richmond Pine Rocklands, the largest remaining tract of pine rocklands in Miami-Dade County outside of Everglades National Park.

Existing plant data: Avery (1978a) and Fairchild Tropical Garden (1991j) have prepared preliminary lists of vascular plants. The authors have made field observations. G.N. Avery, A.H. Herndon, Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Larry and Penny Thompson Park: Bearded skeleton grass (*Gymnopogon ambiguus*).

Other critically imperiled plants present at the site: Pineland strongback (*Bouyeria cassinifolia*), sand ticktrefoil (*Desmodium lineatum*), Coker's beach creeper (*Ernodea cokeri*), Curtiss' nutrush (*Scleria ciliata* var. *curtissii*), and viperina (*Zornia bracteata*).

Preliminary recommendations:

- Voucher *Bouyeria cassinifolia*, *Desmodium lineatum*, and *Zornia bracteata*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aletris bracteata</i>		E	S2
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bletia purpurea</i>		T	
<i>Bourreria cassinifolia</i>		E	S1
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chamaesyce porteriana</i>		E	S2
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Ernodea cokeri</i>		E	S1
<i>Galactia pinetorum</i>			S2
<i>Ilex krugiana</i> (E)		T	S3
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Ocimum campechianum</i>		E	
<i>Odontosoria clavata</i>		E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Psychotria ligustrifolia</i>		E	S1
<i>Pteris bahamensis</i>		T	S3
<i>Pteroglossaspis ecristata</i>		T	S2
<i>Rhynchosia parvifolia</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	

<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Spiranthes torta</i> (H)	E	S1
<i>Tetrazygia bicolor</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Trema lamarckianum</i>	E	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Ficus microcarpa*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Paederia cruddasiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Melinis minutiflora*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Lemon Bay Aquatic Preserve

Location: Charlotte and Sarasota counties.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 7,667 acres (Jue et al., 2001).

Comments: This conservation area is located in both Charlotte and Sarasota County counties. Although Sarasota County lies outside of South Florida as defined in this manual, for management purposes the additional data below are for the entire conservation area.

Existing plant data: The Florida Bureau of Submerged Lands and Preserves, Division of State Lands (1992) mentioned some plant species in a management plan.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Chrysophyllum oliviforme</i>		T	

Leopold Scrub

Location: Martin County.

Manager: Martin County.

Size: 21.45 acres (Jue et al., 2001).

Comments: This site was previously known as Biele Tract.

Existing plant data: Gann & Bradley (1996) prepared a preliminary list of vascular plants. Bradley et al. (1999) prepared a preliminary list of vascular plants for the xeric portions of the site. The authors have made field observations and collected herbarium specimens.

Critically imperiled plants known at the site: None.

Comments: This site contains the federally endangered lichen *Cladonia perforata*.

Preliminary recommendations:

- Map and monitor *Cladonia perforata*.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Lechea cernua</i>		T	S3
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	

Tillandsia fasciculata var. *densispica*

E

FLEPPC Category I Exotics: *Abrus precatorius*, *Bischofia javanica*, *Cupaniopsis anacardioides*, *Lantana camara*, *Lygodium microphyllum*, *Panicum repens*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Lignumvitae Key Botanical State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 10,479.9 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.h) plant list and an anonymous (1983) plant list. Hammer (1995b), and the Florida Park Service District 5 (1997b) have prepared preliminary lists of vascular plants. Kruer (1992) prepared a preliminary list of vascular plants for the rockland hammock portions of the site. G.N. Avery, Gann, and J.A. Duquesnel have made field observations. Many botanists including J.L. Blodgett, A.H. Curtiss, J.K. Small, F.C. Craighead, J. Popenoe, and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Florida Keys thoroughwort (*Chromolaena frustrata*), red stopper (*Eugenia rhombea*), and lignumvitae (*Guajacum sanctum*).

Critically imperiled plants formerly present at the site: Yucatan flymallow (*Cienfuegosia yucatanensis*) and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*).

Preliminary recommendations:

- Voucher *Eugenia rhombea*.
- Map *Chromolaena frustrata*, *Eugenia rhombea*, and *Guajacum sanctum* at least every three years.
- Monitor *Chromolaena frustrata*, *Eugenia rhombea*, and *Guajacum sanctum* at least every year.

- Consider reintroduction of *Cienfuegosia yucatanensis* and *Indigofera mucronata* var. *keyensis*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Canella winterana</i>		E	S2
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chromolaena frustrata</i>		E	S1
<i>Cienfuegosia yucatanensis</i> (E)		E	S1
<i>Cordia globosa</i>		E	
<i>Dalbergia brownii</i>		E	
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia cochleata</i> (R)		E	S2
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia rhombea</i>		E	S1
<i>Evolvulus convolvuloides</i>		E	
<i>Gossypium hirsutum</i>		E	S3
<i>Guajacum sanctum</i>		E	S2
<i>Hibiscus poeppigii</i>		E	
<i>Indigofera mucronata</i> var. <i>keyensis</i> (E)		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Passiflora multiflora</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Reynosa septentrionalis</i>		T	
<i>Schaefferia frutescens</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Cestrum diurnum*, *Eugenia uniflora*, *Lantana camara*, *Manilkara zapota*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Agave sisalana*, *Hibiscus tiliaceus*, *Murraya paniculata*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Ricinus communis*, and *Sansevieria hyacinthoides*.

Little Hamaca Park

Location: Monroe County Keys.

Manager: City of Key West.

Size: 5 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Avery (1983c), Williams (1986), Gann-Matzen (1992), and Kruer (1992) have prepared preliminary lists of vascular plants. Bradley has made field observations. Bradley and T.A. Williams have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Little Hamaca Park: Key West threawn (*Aristida floridana*) and rough strongback (*Bouyeria radula*).

Extirpated plants collected in the vicinity of the site: Bunch cutgrass (*Leersia monandra*) and lovegrass tridens (*Tridens eragrostoides*).

Historical plants collected in the vicinity of the site: Clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*).

Critically imperiled plants collected in the vicinity of the site: Yucatan flymallow (*Cienfuegosia yucatanensis*), pepperbush (*Croton humilis*), Florida flatsedge (*Cyperus floridanus*), limestone flatsedge (*Cyperus fuliginosus*), bearded flatsedge (*Cyperus squarrosus*), red stopper (*Eugenia rhombea*), and lignumvitae (*Guajacum sanctum*).

Comments: The critically imperiled red stopper (*Eugenia rhombea*) has been cultivated at the park as part of a hammock restoration project. The state-listed *Myrcianthes fragrans* has been planted at the site outside of historical range.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Map *Aristida floridana* and *Bouyeria radula* at least every three years.
- Monitor *Aristida floridana* and *Bouyeria radula* at least every year.
- Consider augmentations of *Aristida floridana* and *Bouyeria radula*.
- Consider a formal introduction program for *Eugenia rhombea*.
- Consider introduction of *Cienfuegosia yucatanensis*, *Croton humilis*, *Cyperus floridanus*, *Cyperus fuliginosus*, *Cyperus squarrosus*, *Guajacum sanctum*, *Leersia monandra*, *Tillandsia fasciculata* var. *clavispica*, and *Tridens eragrostoides*.
- Remove *Myrcianthes fragrans*.

Additional data:**Listed Plants:**

	US	FL	FNAI
<i>Ageratum littorale</i>		E	S2
<i>Bouyeria radula</i>		E	S1
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce porteriana</i>		E	S2
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Erithalis fruticosa</i>		T	
<i>Eugenia rhombea</i> (C)		E	S1
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Melaleuca quinquenervia*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Flacourtia indica* and *Leucaena leucocephala*.

**Little Knockemdown Key Franklin and Zuchero Parcels,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 15.17 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2001) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations and have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Chamaesyce porteriana</i>		E	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Erithalis fruticosa</i>		T	
<i>Gymnida latifolia</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui subsp. emarginata</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Reynosia septentrionalis</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Savia bahamensis</i>		E	S2

<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Manilkara zapota*.

**Little Knockemdown Key Parcels 1844, 1845 and 1867,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 14.28 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Bradley & Woodmansee (2001) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2

<i>Reynosia septentrionalis</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Tillandsia flexuosa</i>	T	S3

FLEPPC Category II Exotics: *Agave sisalana* and *Oeceoclades maculata*.

**Little Torch Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 7.44 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations.

Critically imperiled plants known at the site: No natural populations.

Comments: A project to introduce *Opuntia corallicola* has been initiated.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.
- Continue with efforts to introduce *Opuntia corallicola*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bourreria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthus pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Colubrina arborescens</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	

<i>Gyminda latifolia</i>	E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Pithecellobium keyense</i>	T	
<i>Psidium longipes</i>	T	S2
<i>Reynosa septentrionalis</i>	T	
<i>Savia bahamensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis multiflora*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Oeceoclades maculata*, and *Sansevieria hyacinthoides*.

Loggerhead Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 17.26 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) prepared an abbreviated plant list. USFWS (1996) reported observations of *Jacquemontia reclinata*.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Continue mapping *Jacquemontia reclinata* at least every three years.
- Monitor *Jacquemontia reclinata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Okenia hypogaea</i>		E	S2
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Long Key/Flamingo Road Natural Area

Location: Broward County.
Manager: Broward County.
Size: 155 acres (Jue et al., 2001).

Existing plant data: Hendrickson, Buckley, & Broward Native Plant Society (no date) and Broward County Parks & University of Florida (1998e), have prepared preliminary lists of vascular plants. M. McMahon made field observations. A. Buckley and P.L. Howell have collected herbarium specimens.

Critically imperiled plants reported for the site: Southern river sage (*Salvia riparia*).

- Preliminary recommendations:**
- Initiate surveys for *Salvia riparia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Myrcianthes fragrans</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Bauhinia variegata*,

Bischofia javanica, *Casuarina equisetifolia*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Macfadyena unguis-cati*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Paederia foetida*, *Panicum repens*, *Pennisetum purpureum*, *Pistia stratiotes*, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Koelreuteria elegans* subsp. *formosana*, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Ricinus communis*, *Solanum diphyllum*, *Urena lobata*, and *Wedelia trilobata*.

Long Key State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 911.19 acres (Jue et al., 2001).

Existing plant data: Hammer (1985, 1995c), Ross & Ruiz (1996), and the Florida Park Service District 5 (1999d) have prepared preliminary lists of vascular plant. G.N. Avery, Gann, J.A. Duquesnel, and Bradley have made field observations. A.H. Curtiss, J.K. Small, Avery, Bradley, and others have collected herbarium specimens.

Critically imperiled plants present at the site: Florida Keys thoroughwort (*Chromolaena frustrata*), Yucatan flymallow (*Cienfuegosia yucatanensis*), limestone flatsedge (*Cyperus fulgineus*), lignumvitae (*Guajacum sanctum*), Florida Keys indigo (*Indigofera mucronata* var. *keyensis*), and jumping cactus (*Opuntia triacanthos*).

Critically imperiled plants formerly know at the site: Sargent's cherry palm (*Pseudophoenix sargentii*).

Critically imperiled plants collected in the vicinity of the site: Tall windmill grass (*Chloris elata*).

Comments: A project to reintroduce the critically imperiled Sargent's cherry palm has been initiated at the park. Cinnecord (*Acacia choriophylla*), which has been extirpated within its natural range in South Florida, has been planted out at the site outside of its natural range.

Preliminary recommendations:

- Voucher *Guajacum sanctum* and *Opuntia triacanthos*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Continue reintroduction of *Pseudophoenix sargentii*.
- Consider introduction of *Chloris elata*.
- Remove plants of *Acacia choriophylla*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Ageratum littorale</i>		E	S2
<i>Argusia gnaphalodes</i>		E	S3
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chromolaena frustrata</i>		E	S1
<i>Cienfuegosia yucatanensis</i>		E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Cordia globosa</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cyperus fuliginosus</i>		E	S1
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Evolvulus convolvuloides</i>		E	
<i>Gossypium hirsutum</i>		E	S3
<i>Guajacum sanctum</i>		E	S2
<i>Hibiscus poeppigii</i>		E	
<i>Indigofera mucronata</i> var. <i>keyensis</i>		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	

<i>Opuntia stricta</i>		T	
<i>Opuntia triacanthos</i>		E	S1
<i>Paspalidium chapmanii</i>		E	
<i>Pilosocereus robinii</i>	E	E	S1
<i>Pithecellobium keyense</i>		T	
<i>Pseudophoenix sargentii</i> (E)		E	S1
<i>Reynosa septentrionalis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Schaefferia frutescens</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Sansevieria hyacinthoides*, and *Tribulus cistoides*.

Loveland Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 15.06 acres (Jue et al., 2001).

Existing plant data: Woodmansee has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Ilex krugiana</i>		T	S3
<i>Nephrolepis biserrata</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Ardisia elliptica*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis multiflora*, *Pennisetum purpureum*, *Psidium guajava*, *Schinus terebinthifolius*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Leucaena leucocephala* and *Oeceoclades maculata*.

Lovers Key State Park

Location: Lee County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 1,616.13 acres (Jue et al., 2001).

Existing plant data: The Florida Park Service District 4 (1994e) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations: None.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Lantana camara*, *Melaleuca quinquenervia*, and *Schinus terebinthifolius*.

Loxahatchee River Natural Area

Location: Palm Beach County.
Manager: Palm Beach County.
Size: 367.08 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1995b) prepared a preliminary list of vascular plants, which was amended by Palm Beach County Environmental Resources Management (2001). S. Farnsworth has made field observations.

Critically imperiled plants present at the site: Grassleaf Barbara's buttons (*Marshallia tenuifolia*).

Preliminary recommendations:

- Voucher *Marshallia tenuifolia*.
- Map *Marshallia tenuifolia* at least every three years.
- Monitor *Marshallia tenuifolia* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Bletia purpurea</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Spiranthes laciniata</i>		T	
<i>Spiranthes longilabris</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Mimosa pigra*, *Nephrolepis multiflora*, *Psidium cattleianum*, *Rhodomyrtus tomentosa*, *Schinus terebinthifolius*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Rhynchelytrum repens*, and *Urena lobata*.

**Loxahatchee River-Lake Worth Creek
Aquatic Preserve**

Location: Martin & Palm Beach counties.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 9,000 acres (Jue et al., 2001).

Existing plant data: The Florida Department of Natural Resources, Division of Recreation and Parks, Bureau of Environmental Land Management (1984) prepared a preliminary list of vascular plants.

Critically imperiled plants collected in the vicinity of the site:
Saltmarsh bulrush (*Scirpus robustus*).

Preliminary recommendations:

- Survey for *Scirpus robustus*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Colocasia esculenta*, *Dioscorea bulbifera*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Urena lobata*.

Loxahatchee Slough Natural Area

Location: Palm Beach County.
Manager: Palm Beach County.
Size: 10,838.45 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1994c) prepared a preliminary list of vascular plants. S.L. Orzell & E.L. Bridges have collected herbarium specimens.

Critically imperiled plants present at the site: Slender club-moss (*Lycopodiella caroliniana*), celestial lily (*Nemastylis floridana*), rose pogonia (*Pogonia ophioglossoides*), fewflower beakrush (*Rhynchospora rariflora*), greenvein lady's-tresses (*Spiranthes praecox*), and southern bladderwort (*Utricularia juncea*).

Critically imperiled plants reported for the site: Yankeeweed (*Eupatorium compositifolium*), Piedmont primrosewillow (*Ludwigia arcuata*), sand blackberry (*Rubus cuneifolius*), and sprawling hoarypea (*Tephrosia hispidula*).

Preliminary recommendations:

- Voucher *Lycopodiella caroliniana*, *Nemastylis floridana*, *Pogonia ophioglossoides*, *Rhynchospora rariflora*, and *Utricularia juncea*.
- Survey for *Eupatorium compositifolium*, *Ludwigia arcuata*, *Rubus cuneifolius*, and *Tephrosia hispidula*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	

<i>Habenaria nivea</i>	T	
<i>Lilium catesbaei</i>	T	
<i>Lycopodiella cernua</i>	C	
<i>Nemastylis floridana</i>	E	S2
<i>Nephrolepis biserrata</i>	T	
<i>Ophioglossum palmatum</i>	E	S2
<i>Osmunda cinnamomea</i>	C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>	C	
<i>Pecluma ptilodon</i> var. <i>caespitosa</i>	E	S2
<i>Pinguicula caerulea</i>	T	
<i>Pogonia ophioglossoides</i>	T	
<i>Sacoila lanceolata</i> var. <i>paludicola</i>	T	S1
<i>Spiranthes laciniata</i>	T	
<i>Spiranthes longilabris</i>	T	
<i>Thelypteris augescens</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium guajava*, *Schinus terebinthifolius*, and *Syzygium cumini*.

FLEPPC Category II Exotics: *Pteris vittata*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Lucille Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 20.76 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Ilex krugiana</i>		T	S3
<i>Pteris bahamensis</i>		T	S3
<i>Selaginella armata</i> var. <i>eatonii</i>		E	S2
<i>Solanum verbascifolium</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris augescens</i>		T	
<i>Trema lamarckianum</i>		E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Lantana camara*, *Neyraudia reynaudiana*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Leucaena leucocephala* and *Pteris vittata*.

Ludlam Pineland Tract

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 10.22 acres (Jue et al., 2001).

Comments: This site is immediately adjacent to the Ludlam Florida Power and Light Easement (see Appendix 9).

Existing plant data: There is an anonymous (1993c) plant list. G.N. Avery, Bradley, and Woodmansee have made field observations. Avery and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants formerly present at the site: Pinebarren ticktrefoil (*Desmodium strictum*).

Critically imperiled plants collected in the vicinity of the site:
Coral hoarypea (*Tephrosia angustissima* var. *corallicola*) and scurf hoarypea (*Tephrosia chrysophylla*).

Critically imperiled plants observed in the vicinity of the site:
Florida prairieclover (*Dalea carthagenensis* var. *floridana*).

Preliminary recommendations:

- Survey for *Dalea carthagenensis* var. *floridana* and *Desmodium strictum*.
- Consider introductions of *Tephrosia angustissima* var. *corallicola* and *Tephrosia chrysophylla*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E	E	E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Polygala smallii</i>	E	E	S1
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Nephrolepis multiflora*, *Neyraudia*

reynaudiana, *Pennisetum purpureum*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Pteris vittata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, and *Wedelia trilobata*.

Manatee Park

Location: Lee County.

Manager: Lee County.

Size: 16 acres (Jue et al., 2001).

Existing plant data: R. Workman collected a herbarium specimen of *Malachra urens*.

Critically imperiled plants present at the site: Roadside leafbract (*Malachra urens*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map *Malachra urens* at least every three years.
- Monitor *Malachra urens* at least every year.

Mangrove Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 848 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Argusia gnaphalodes</i>		E	S3
<i>Pteris bahamensis</i>		T	S3
<i>Solanum verbascifolium</i>		T	
<i>Trema lamarckianum</i>		E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Cestrum diurnum*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Scaevola sericea*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Phoenix reclinata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Terminalia catappa*, and *Wedelia trilobata*.

Matanzas Pass Preserve

Location: Lee County.

Manager: Lee County.

Size: 56 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.o) plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquinia keyensis</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Lantana camara*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Ricinus communis*, and *Sesbania punicea*.

Matheson Hammock Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 629 acres; 352 acres of natural area (Jue et al., 2001).

Existing plant data: Buswell (no date), Avery (1981a), McMahon (no date), Fairchild Tropical Garden (1990d) and others have prepared preliminary lists of vascular plants. G.N. Avery, R.L. Hammer, the authors, and others have made field observations. W.M. Buswell, G.N. Avery, J. Popenoe, Bradley, Woodmansee, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Extirpated plants collected at the site: Balsam torchwood (*Amyris balsamifera*) and pareira brava (*Cissampelos pareira*).

Critically imperiled plants present at the site: Crenulate leadplant (*Amorpha herbacea* var. *crenulata*) and holly vine fern (*Lomariopsis kunzeana*).

Comments: Fairchild Tropical Garden mapped and recorded other data on crenulate leadplant (*Amorpha herbacea* var. *crenulata*) at this site in 2000 (Fisher, 2000).

Preliminary recommendations:

- Continue mapping of *Amorpha herbacea* var. *crenulata* at least every three years.
- Map *Lomariopsis kunzeana* at least every three years.
- Continue monitoring *Amorpha herbacea* var. *crenulata* at least every year.
- Monitor *Lomariopsis kunzeana*.
- Consider augmentation of *Amorpha herbacea* var. *crenulata*.

- Consider reintroductions of *Amyris balsamifera* and *Cissampelos pareira*.
- Consider restoration of pine rockland habitat for *Amorpha herbacea* var. *crenulata*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Amorpha herbacea</i> var. <i>crenulata</i>	E	E	S1
<i>Amyris balsamifera</i> (E)			SX
<i>Asplenium dentatum</i>		E	S1S2
<i>Asplenium serratum</i>		E	S1
<i>Calyptanthes pallens</i>		T	
<i>Cheilanthes microphylla</i> (E)		E	S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Cissampelos pareira</i> (E)		E	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ctenitis sloanei</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Lomariopsis kunzeana</i>		E	S1
<i>Myrcianthes fragrans</i> (C)		T	
<i>Nephrolepis biserrata</i>		T	
<i>Picramnia pentandra</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Prunus myrtifolia</i>		T	S2
<i>Psychotria ligustrifolia</i>		E	S1
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchosia parvifolia</i>		T	
<i>Scleria lithosperma</i>		E	
<i>Smilax havanensis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris augescens</i>		T	
<i>Thelypteris reptans</i>		E	S1
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

<i>Tillandsia variabilis</i>	T	
<i>Tournefortia hirsutissima</i>	E	
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i> (E)	E	S1
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cestrum diurnum*, *Colubrina asiatica*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Imperata cylindrica*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Ligustrum lucidum*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Paederia cruddasiana*, *Panicum repens*, *Pennisetum purpureum*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Adenantha pavonina*, *Agave sisalana*, *Alstonia macrophylla*, *Antigonon leptopus*, *Asystasia gangetica*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Ficus altissima*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Murraya paniculata*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum torvum*, *Syzygium jambos*, *Terminalia catappa*, *Terminalia muelleri*, *Urena lobata*, and *Wedelia trilobata*.

Meissner Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 10.32 acres (Jue et al., 2001).

Existing plant data: Miami-Dade County Department of Environmental Resource Management (1981) prepared a preliminary list of vascular plants. G.N. Avery, C. McCartney, and Bradley have made field observations. M.W. Diddell, J. Popenoe, and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants collected at the site: Lined bristle fern (*Trichomanes lineolatum*).

Critically imperiled plants present at the site: Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*) and Kraus' bristle fern (*Trichomanes krausii*).

Critically imperiled plants formerly known from the site: Modest spleenwort (*Asplenium verecundum*).

Historical plants collected in the vicinity of the site: Cardinal airplant (*Tillandsia fasciculata* var. *fasciculata*).

Critically imperiled plants collected in the vicinity of the site: Cutleaf spleenwort (*Asplenium abscissum*).

Comments: The state-listed redberry stopper (*Eugenia confusa*) has escaped from cultivation at the site.

Preliminary recommendations:

- Survey for *Tillandsia fasciculata* var. *fasciculata*.
- Map *Trichomanes punctatum* subsp. *floridanum* and *Trichomanes krausii* at least every three years.
- Monitor *Trichomanes punctatum* subsp. *floridanum* and *Trichomanes krausii* at least every year.
- Consider reintroduction of *Trichomanes lineolatum*.
- Consider introduction of *Asplenium abscissum*.
- Contingent upon results of surveys, consider introduction of *Tillandsia fasciculata* var. *fasciculata*.
- Remove *Eugenia confusa* from the site.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Asplenium verecundum</i> (R)		E	S1
<i>Calyptanthus pallens</i>		T	
<i>Catopsis floribunda</i>		E	S1
<i>Coccothrinax argentea</i>		T	S3
<i>Colubrina cubensis</i> var. <i>floridana</i>		E	S1
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum nocturnum</i>		E	S2
<i>Epidendrum rigidum</i>		E	
<i>Guzmania monostachia</i>		E	S1S2
<i>Ilex krugiana</i>	T	S3	G4
<i>Koanophyllon villosum</i>		E	S2

<i>Leiphaimos parasitica</i>	E	S2
<i>Peperomia obtusifolia</i>	E	S2
<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Tectaria fimbriata</i>	E	S2
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris reptans</i>	E	S1
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia variabilis</i>	T	
<i>Trichomanes krausii</i>	E	S1
<i>Trichomanes lineolatum</i> (E)	E	
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i>	E	S1
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Bischofia javanica*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, and *Rhynchelytrum repens*.

Miami Metrozoo

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 740 acres; includes 195 acres of pine rockland (Jue et al., 2001).

Comment: The site is part of the Richmond Pine Rocklands, the largest tract of pine rocklands in Miami-Dade County outside of Everglades National Park. It is called Metrozoo in Jue et al. (2001).

Existing plant data: Fairchild Tropical Garden (1991g) prepared a preliminary list of vascular plants. The authors have made field observations. C. Lippincott and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Viperina (*Zornia bracteata*).

Critically imperiled plants reported for the site: Florida ticktrefoil (*Desmodium floridanum*).

Preliminary recommendations:

- Voucher *Zornia bracteata*.
- Survey for *Desmodium floridanum*.
- Map *Zornia bracteata* at least every three years.
- Monitor *Zornia bracteata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i>	E	E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Crossopetalum rhacoma</i> (H)		T	S3
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Odontosoria clavata</i>		E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Polygala smallii</i>	E	E	S1
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Selaginella armata</i> var. <i>eatonii</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i> (H)		T	
<i>Smilax havanensis</i>		T	
<i>Solanum verbascifolium</i> (H)		T	
<i>Spermacoce terminalis</i>		T	
<i>Tectaria fimbriata</i> (H)		E	S2
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris augescens</i> (H)	T		
<i>Tragia saxicola</i>		T	S2

<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Casuarina equisetifolia*, *Casuarina glauca*, *Lantana camara*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Paederia cruddasiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Dalbergia sissoo*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Urena lobata*, and *Wedelia trilobata*.

**Middle Torch Hammocks
Anderson, Lipchak, 3112 Parcels,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 256.43 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley and Woodmansee have collected herbarium specimens.

Critically imperiled plants present at the site: Smooth devilsclaws (*Pisonia rotundata*).

Preliminary recommendations:

- Voucher *Pisonia rotundata*.
- Map *Pisonia rotundata* at least every three years.
- Monitor *Pisonia rotundata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Dodonaea elaeagnoides</i>		E	S1
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Gyminda latifolia</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Pisonia rotundata</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Reynosia septentrionalis</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Savia bahamensis</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Thrinax morrisii</i>		E	S3
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Manilkara zapota*, and *Schinus terebinthifolius*.

**Middle Torch Hammocks Parcel 3063,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 28.48 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley and Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bourreria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Gyminda latifolia</i>		E	S2
<i>Leiphaimos parasitica</i>		E	S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Reynosia septentrionalis</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Savia bahamensis</i>		E	S2
<i>Thrinax morrisii</i>		E	S3
<i>Tillandsia balbisiiana</i>		T	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Vanilla barbellata</i>		E	S2

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Military Trail Natural Area

Location: Broward County.

Manager: Broward County.

Size: 19.92 acres(Jue et al., 2001).

Existing plant data: There are two anonymous (1990, 1995f) plant lists. Broward County Parks & University of Florida (1998f) prepared a preliminary list of vascular plants. Bradley & Gann (1995) surveyed the site for *Polygala smallii*. Gann & Bradley and P.L. Howell have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Conradina grandiflora</i>		T	S3
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Ricinus communis*, *Solanum diphyllum*, *Urena lobata*, and *Wedelia trilobata*.

Milton E. Thompson Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 618 acres; includes 615 acres of natural area (Jue et al., 2001).

Existing plant data: R.L. Hammer, Gann, Bradley and S. Vardaman have made field observations. T.R. Alexander collected herbarium specimens. The IRC Website (Gann et al.,

2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chaptalia albicans</i> ¹		T	
<i>Phyla stoechadifolia</i>		E	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Ficus microcarpa*, *Lantana camara*, *Panicum repens*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Pteris vittata*, and *Wedelia trilobata*.

Mound Key Archaeological State Park

Location: Lee County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 168.86 acres (Jue et al., 2001).

Existing plant data: Avery (1974), Cooper (1978), and the Florida Park Service District 4 (1994f) prepared preliminary lists of vascular plants. G.N. Avery, Gann, R. Hattaway, and S. Braem have made field observations. O. Lakela, F.C. Craighead, Avery, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

¹ This may have been introduced to the site with road fill.

Critically imperiled plants protected only at Mound Key Archaeological State Park: Iguana hackberry (*Celtis iguanaea*). **Other critically imperiled plants present at the site:** Spiny hackberry (*Celtis pallida*), Sanibel Island love grass (*Eragrostis tracyi*), and southern river sage (*Salvia riparia*).

Preliminary recommendations:

- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider augmentation of *Celtis iguanaea*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Celosia nitida</i>		E	
<i>Celtis iguanaea</i>		E	SH
<i>Celtis pallida</i>		E	S1
<i>Encyclia tampensis</i>		C	
<i>Eragrostis tracyi</i>		E	SH
<i>Gossypium hirsutum</i>		E	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Bauhinia variegata*, *Eugenia uniflora*, *Lantana camara*, *Melia azedarach*, *Psidium guajava*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Cryptostegia madagascariensis*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Ricinus communis*, and *Sansevieria hyacinthoides*.

Muscara

Location: Martin County.

Manager: Martin County.

Size: 13 acres (Jue et al., 2001).

Existing plant data: Woodmansee and S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Ficus microcarpa*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Senna pendula* var. *glabrata*.

FLEPPC Category II Exotics: *Wedelia trilobata*.

National Key Deer Refuge

Location: Monroe County Keys.

Manager: United States Fish and Wildlife Service.

Size: 8,649.34 acres (Jue et al., 2001).

Comments: A portion of the boundary of National Key Deer Refuge overlaps with Great White Heron National Wildlife Refuge. We have attributed vascular plant data within this overlap area to National Key Deer Refuge.

Existing plant data: Dickson et al. (1953), Austin et al. (1980a), Hammer (1992c), and others have prepared preliminary lists of vascular plants. G.N. Avery, T.A. Williams, Gann, Bradley have

made field observations. A multitude of botanists including J.L. Blodgett, J.K. Small, Avery, D.S. Correll & H.B. Correll, Gann, Bradley, Avery, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Historical plants collected at the site: Prickly hornwort (*Ceratophyllum muricatum* subsp. *australe*).

Critically imperiled plants protected only at National Key Deer Refuge:² Fewflower holdback (*Caesalpinia pauciflora*), bearded flatsedge (*Cyperus squarrosus*), Grisebach's dwarf morningglory (*Evolvulus grisebachii*), and bullsuckers (*Opuntia cubensis*).

Other critically imperiled plants present at the site: Tenlobe false foxglove (*Agalinis obtusifolia*), Carter's orchid (*Basiphyllaea corallicola*), pineland strongback (*Bourreria cassinifolia*), fewflower holdback (*Caesalpinia pauciflora*), smallflower lilythorn (*Catesbaea parviflora*), Florida Keys sandmat (*Chamaesyce deltoidea* subsp. *serpyllum*), American toadwood (*Cupania glabra*), limestone flatsedge (*Cyperus fuliginus*), jumping cactus (*Opuntia triacanthos*), smooth devilsclaws (*Pisonia rotundata*), and pride-of-Big Pine (*Strumpfia maritima*).

Critically imperiled plants formerly present at the site: Pepperbush (*Croton humilis*) and semaphore cactus (*Opuntia corallicola*).

Critically imperiled plants collected in the vicinity of the site: Coker's beach creeper (*Ernodea cokeri*) and red stopper (*Eugenia rhombea*).

Comments: A project to reintroduce *Opuntia corallicola* to Big Pine Key and introduce *O. corallicola* to No Name Key and Upper Sugarloaf Key has been initiated.

Preliminary recommendations:

- Efforts to acquire private lands adjacent to the National Key Deer Refuge should be supported.

On Big Pine Key:

- Survey for *Ceratophyllum muricatum* subsp. *australe*, *Ernodea cokeri*, and *Eugenia rhombea*.

² Some plants may be present on adjacent non-conservation lands.

- Map and monitor *Agalinis obtusifolia*, *Basiphyllaea corallicola*, *Bouyeria cassinifolia*, *Caesalpinia pauciflora*, *Catesbaea parviflora*, *Cyperus squarrosus*, *Cupania glabra*, *Cyperus fuliginosus*, *Opuntia cubensis*, *Opuntia triacanthos*, *Pisonia rotundata*, and *Strumpfia maritima*.
- Continue efforts to reintroduce *Opuntia corallicola*.
- Consider reintroduction of *Croton humilis* to Cactus Hammock.
- Contingent upon results of surveys, consider reintroduction of *Ceratophyllum muricatum* subsp. *australe* to the vicinity of Watson Hammock.

On Cudjoe Key:

- Survey for *Caesalpinia pauciflora*.
- Map and monitor *Pisonia rotundata*.

On No Name Key:

- Map and monitor *Pisonia rotundata*.
- Continue efforts to introduce *Opuntia corallicola*.

On Sugarloaf Key:

- Map and monitor *Pisonia rotundata*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Ageratum littorale</i>		E	S2
<i>Aletris bracteata</i>		E	S2
<i>Angadenia berteroi</i>		T	
<i>Argusia gnaphalodes</i>		E	S3
<i>Argythamnia blodgettii</i>		E	S2
<i>Basiphyllaea corallicola</i>		E	S1
<i>Bletia purpurea</i>		T	
<i>Bouyeria cassinifolia</i>		E	S1
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Caesalpinia pauciflora</i>		E	S1
<i>Calyptanthus pallens</i>		T	
<i>Canella winterana</i>		E	S2
<i>Catesbaea parviflora</i>		E	S1
<i>Chamaecrista lineata</i> var. <i>keyensis</i>		E	S2
<i>Chamaesyce deltoidea</i> subsp. <i>serpyllum</i>		E	S1
<i>Chamaesyce garberi</i>	T	E	S1
<i>Chamaesyce pergamena</i>		T	

<i>Chamaesyce porteriana</i>	E	S2	
<i>Chaptalia albicans</i>	T		
<i>Chrysophyllum oliviforme</i>	T		
<i>Coccothrinax argentea</i>	T	S3	
<i>Colubrina arborescens</i>	E		
<i>Cordia globosa</i>	E		
<i>Crossopetalum ilicifolium</i>	T	S2	
<i>Crossopetalum rhacoma</i>	T	S3	
<i>Cupania glabra</i>	E	S1	
<i>Cynanchum blodgettii</i>	T		
<i>Cyperus fuliginosus</i>	E	S1	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>	T		
<i>Dodonaea elaeagnoides</i>	E	S1	
<i>Drypetes diversifolia</i>	E	S2	
<i>Drypetes lateriflora</i>	T		
<i>Encyclia tampensis</i>	C		
<i>Erithalis fruticosa</i>	T		
<i>Ernodea cokeri</i>	E	S1	
<i>Evolvulus convolvuloides</i>	E		
<i>Evolvulus grisebachii</i>	E	S1	
<i>Exostema caribaeum</i>	E	S2	
<i>Gossypium hirsutum</i>	E	S3	
<i>Gyminda latifolia</i>	E	S2	
<i>Harrisia simpsonii</i>	E	S2	
<i>Hibiscus poeppigii</i>	E		
<i>Hippomane mancinella</i>	E	S2	
<i>Hypelate trifoliata</i>	E	S1	
<i>Jacquemontia pentanthos</i>	E	S2	
<i>Jacquinia keyensis</i>	T	S3	
<i>Linum arenicola</i>	E	S1S2	
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3	
<i>Maytenus phyllanthoides</i>	T		
<i>Melanthera parvifolia</i>	T		
<i>Ocimum campechianum</i>	E		
<i>Odontosoria clavata</i>	E	S2	
<i>Opuntia stricta</i>	T		
<i>Opuntia triacanthos</i>	E	S1	
<i>Paspalidium chapmanii</i>	E		
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2	
<i>Pilosocereus robinii</i>	E	E	S1
<i>Pisonia rotundata</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Poinsettia pinetorum</i>		E	S2

<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Reynosia septentrionalis</i>	T	
<i>Rhynchosia parvifolia</i>	T	
<i>Rhynchospora floridensis</i>		S2
<i>Sachsia polycephala</i>	T	S2
<i>Savia bahamensis</i>	E	S2
<i>Scleria lithosperma</i>	E	
<i>Scutellaria havanensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Spiranthes torta</i>	E	S1
<i>Strumpfia maritima</i>	E	S1
<i>Stylosanthes calcicola</i>	E	S2
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisi</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vallesia antillana</i>	E	S1
<i>Vanilla barbellata</i>	E	S2
<i>Vernonia blodgettii</i>		S3

FLEPPC Category I Exotics: *Albizia lebeck*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Lantana camara*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Melia azedarach*, *Psidium guajava*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Tribulus cistoides*.

Navy Wells Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 353.17 acres (Jue et al., 2001).

Comment: This site is called Navy Wells Park in Jue et al. (2001).

Existing plant data: Loope et al. (1979) prepared a preliminary list of vascular plants, which was revised by Avery (1982), Hammer (1989b), and Fairchild Tropical Garden (1990e, 1991h). G.N. Avery, A.H. Herndon, and the authors have made field observations. Avery, Herndon, Bradley, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Sand ticktrefoil (*Desmodium lineatum*).

Preliminary recommendations:

- Map *Desmodium lineatum* at least every three years.
- Monitor *Desmodium lineatum* at least every year.

Additional data:

Listed Plants:	S	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chamaesyce porteri</i>		E	S2
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Galactia smallii</i>	E	E	S1
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3

<i>Melanthera parvifolia</i>	T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Poinsettia pinetorum</i>	E	S2
<i>Psidium longipes</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Rhynchosia parvifolia</i>	T	
<i>Rhynchospora floridensis</i>		S2
<i>Sachsia polycephala</i>	T	S2
<i>Scutellaria havanensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Smilax havanensis</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tragia saxicola</i>	T	S
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Melinis minutiflora*, *Murraya paniculata*, *Pteris vittata*, and *Rhynchelytrum repens*.

Navy Wells Pineland #23

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 18.61 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1993d) plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Byrsonima lucida</i>		T	S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Ilex krugiana</i>			S3
<i>Melanthera parvifolia</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Prunus myrtifolia</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Tetrazygia bicolor</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Trema lamarckianum</i>		E	S2

FLEPPC Category I Exotics: *Ardisia elliptica*.

FLEPPC Category II Exotics: *Oeceoclades maculata*.

Ned Glenn Nature Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 11 acres (Jue et al., 2001).

Existing plant data: There are two anonymous undated plant lists (no date.b; no date.s). Bradley et al. (1997a) prepared a preliminary list of vascular plants. G.N. Avery and Bradley have made field observations. Bradley has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Pineland strongback (*Bourreria cassinifolia*).

Critically imperiled plants reported for the site: Florida ticktrefoil (*Desmodium floridanum*).

Preliminary recommendations:

- Survey for *Desmodium floridanum*.
- Map *Bourreria cassinifolia* at least every three years.
- Monitor *Bourreria cassinifolia* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bourreria cassinifolia</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i>	E	E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Crossopetalum rhacoma</i>		T	S3
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Lechea divaricata</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchosia parvifolia</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Tripsacum floridanum</i>		T	S2
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Bauhinia variegata*,

Dioscorea bulbifera, *Lantana camara*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Dalbergia sissoo*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Nicodemus Slough

Location: Glades County.

Manager: South Florida Water Management District.

Size: 2,219 acres; (Jue et al., 2001).

Existing plant data: Bradley et al. (1997b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants protected only at Nicodemus Slough: Bog smartweed (*Polygonum setaceum*).

Other critically imperiled plants: Bigseed alfalfa dodder (*Cuscuta indecora*).

Preliminary recommendations:

- Map *Polygonum setaceum* at least every three years.
- Monitor *Polygonum setaceum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Hydrilla verticillata*, *Hymenachne amplexicaulis*, *Melaleuca quinquenervia*, *Panicum repens*, *Pistia stratiotes*, *Schinus terebinthifolius*, *Solanum viarum*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Cyperus prolifer*, *Pteris vittata*, and *Urena lobata*.

Nixon Smiley Pineland Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 120 acres (Jue et al., 2001).

Comments: Includes Tamiami #8 (Nixon Smiley Addition) Pineland of Jue et al. (2001).

Existing plant data: Avery (1978b), Loope et al. (1979), and Fairchild Tropical Garden (1990f, 1991i) prepared preliminary lists of vascular plants. G.N. Avery, Bradley, and Woodmansee have made field observations. Avery, Bradley, and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Nixon Smiley Pineland Preserve: Yankeeweed (*Eupatorium compositifolium*).

Other critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map *Eupatorium compositifolium* at least every three years.
- Monitor *Eupatorium compositifolium* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Encyclia tampensis</i>		C	
<i>Glandularia maritima</i>		E	S3
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2

<i>Lantana depressa</i> var. <i>depressa</i>	E	S3
<i>Melanthera parvifolia</i>	T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Poinsettia pinetorum</i>	E	S2
<i>Pteris bahamensis</i>	T	S3
<i>Pteroglossaspis ecristata</i>	T	S2
<i>Rhynchospora floridensis</i>		S2
<i>Spermacoce terminalis</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Ficus microcarpa*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, and *Schinus terebinthifolius*.

Oak Grove Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 21.71 acres; contains 8 acres of natural area (Jue et al., 2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: None.

Preliminary recommendations: None.

Additional data:

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Asparagus densiflorus*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Nephrolepis multiflora*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Ficus altissima*, *Syzygium jambos*, and *Wedelia trilobata*.

Ocean Ridge Hammock Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 12.5 acres (Jue et al., 2001).

Comments: This site contains Boynton Hammock.

Existing plant data: Austin & Weise (1973) published a preliminary list of vascular plants for Boynton Hammock in Quarterly Journal of Florida Academy of Sciences, which was amended by Richardson (1977) in Florida Scientist. Johnson & Muller (1993a) prepared an abbreviated plant list. Gann has made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Argusia gnaphalodes</i>		E	S3
<i>Cyperus pedunculatus</i>		E	
<i>Drypetes lateriflora</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Pennisetum purpureum*, *Scaevola sericea*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Ptychosperma elegans*, *Sansevieria hyacinthoides*, and *Tribulus cistoides*.

Okaloacoochee Slough State Forest

Location: Collier and Hendry counties.

Manager: Florida Department of Agriculture and Consumer Services, Division of Forestry.

Size: 32,039.24 acres (Jue et al., 2001).

Existing plant data: Several herbarium specimens were collected in the Okaloacoochee Slough by John Kunkel Small in 1917, but these cannot be attributed definitely to this site. The Okaloacoochee Slough also runs through Okaloacoochee Slough Wildlife Management Area, Big Cypress National Preserve, the Florida Panther National Wildlife Refuge, and private property.

Historical plants collected in the vicinity of the site: Florida milkweed (*Asclepias feayi*) and scaldweed (*Cuscuta gronovii*).

Critically imperiled plants collected in the vicinity of the site: Giant sedge (*Carex gigantea*) and goldenclub (*Orontium aquaticum*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Initiate surveys for *Asclepias feayi*, *Cuscuta gronovii*, *Carex gigantea*, and *Orontium aquaticum*.
- Contingent upon results of surveys, consider introduction of *Cuscuta gronovii*.

Okaloacoochee Slough Wildlife Management Area

Location: Hendry County.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 2,923.45 acres (Jue et al., 2001).

Existing plant data: Several herbarium specimens were collected in the Okaloacoochee Slough by John Kunkel Small in 1917, but these cannot be attributed definitely to this site. The Okaloacoochee Slough also runs through Okaloacoochee Slough State Forest, Big Cypress National Preserve, the Florida Panther National Wildlife Refuge, and private property.

Historical plants collected in the vicinity of the site: Florida milkweed (*Asclepias feayi*) and scaldweed (*Cuscuta gronovii*).

Critically imperiled plants collected in the vicinity of the site: Giant sedge (*Carex gigantea*) and goldenclub (*Orontium aquaticum*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Initiate surveys for *Asclepias feayi*, *Carex gigantea*, *Cuscuta gronovii*, and *Orontium aquaticum*.
- Contingent upon results of surveys, consider introduction of *Cuscuta gronovii*

Okeehlee Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 900 acres; 88.5 acres of natural area (Jue et al., 2001).

Existing plant data: Fousek & Street (1991) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor *Tillandsia fasciculata* var. *densispica*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	

Thelypteris augescens T
Tillandsia fasciculata var. *densispica* E

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Casuarina equisetifolia*, *Lantana camara*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Pteris vittata*, *Urena lobata*, and *Wedelia trilobata*.

Oleta River State Park

Location: Miami-Dade County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 1,032.84 acres (Jue et al., 2001).

Existing plant data: Gann, T.T. Gann, and J.A. Duquesnel have made field observations. Gann & Gann have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Comments: Two critically imperiled species (*Amphitecna latifolia* and *Zanthoxylum coriaceum*) are cultivated at the site within their historical ranges. While there may be potential habitat for *A. latifolia* at the site, there is no suitable habitat for *Z. coriaceum*. Several state-listed plants are cultivated at the site outside of their historical ranges: *Cordia globosa*, *Savia bahamensis*, *Schaefferia frutescens*, *Swietenia mahagoni*, *Thrinax radiata*, and *Tripsacum floridanum*.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Determine if suitable habitat for *Amphitecna latifolia* is present at the site.

- Remove state-listed species cultivated outside of their historical ranges.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Argusia gnaphalodes</i>		E	S3
<i>Chrysophyllum oliviforme</i> (C)		T	
<i>Erithalis fruticosa</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Zanthoxylum coriaceum</i> (C)		E	S1

FLEPPC Category I Exotics: *Bischofia javanica*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Ficus microcarpa*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Panicum repens*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Ochrosia elliptica*, *Oeceoclades maculata*, *Pteris vittata*, *Ricinus communis*, *Terminalia catappa*, *Tribulus cistoides*, and *Wedelia trilobata*.

Pal-Mar

Location: Martin and Palm Beach counties.

Manager: South Florida Water Management District

Size: 10,307 acres (Jue et al., 2001).

Comments: Also known as West Jupiter Wetlands.

Existing plant data: Bradley et al. (1997b) prepared a preliminary list of vascular plants. The authors have made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Pal-Mar: Woolly witchgrass (*Dichantherium scabriusculum*), Savannah

primrosewillow (*Ludwigia virgata*), and Baldwin's beaksedge (*Rhynchosia baldwinii*).

Other critically imperiled plants present at the site: Twining screwstem (*Bartonia paniculata*), yellow screwstem (*Bartonia virginica*), bluethread (*Burmannia biflora*), hairy primrosewillow (*Ludwigia pilosa*), grassleaf Barbara's buttons (*Marshallia tenuifolia*), celestial lily (*Nemastylis floridana*), warty panicum (*Panicum verrucosum*), rose pogonia (*Pogonia ophioglossoides*), shortbristle beaksedge (*Rhynchospora breviseta*), Harper's beaksedge (*Rhynchospora harperi*), fewflower beaksedge (*Rhynchospora rariflora*), and Wright's beaksedge (*Rhynchospora wrightiana*).

Critically imperiled plants reported for the site: Shaggy hedgehyssop (*Gratiola pilosa*).

Critically imperiled plants collected in the vicinity of the site: Early blue violet (*Viola palmata*).

Preliminary recommendations:

- Survey for *Gratiola pilosa* and *Viola palmata*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Continue projects to acquire additional land for the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Nemastylis floridana</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pogonia ophioglossoides</i>		T	
<i>Spiranthes laciniata</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Casuarina glauca*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca*

quinquenervia, *Nephrolepis cordifolia*, *Panicum repens*, *Pennisetum purpureum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Pteris vittata*, *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Pal-Mar Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 7,343.05 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1993a) prepared a preliminary list of vascular plants.

Comments: Substantial area has been added since the first floristic inventory was completed, and many new species may now be protected at the site. Additional floristic inventory work is needed.

Critically imperiled plants present at the site: Rose pogonia (*Pogonia ophioglossoides*) and greenvein lady's-tresses (*Spiranthes praecox*).

Critically imperiled plants collected in the vicinity of the site: Twining screwstem (*Bartonia paniculata*), yellow screwstem (*Bartonia virginica*), bluethread (*Burmannia biflora*), woolly witchgrass (*Dichantherium scabriusculum*), hairy primrosewillow (*Ludwigia pilosa*), Savannah primrosewillow (*Ludwigia virgata*), grassleaf Barbara's buttons (*Marshallia tenuifolia*), celestial lily (*Nemastylis floridana*), warty panicum (*Panicum verrucosum*), Baldwin's beaksedge (*Rhynchospora baldwinii*), shortbristle beaksedge (*Rhynchospora breviseta*), Harper's beaksedge (*Rhynchospora harperi*), fewflower beaksedge (*Rhynchospora rariflora*), southern bladderwort (*Utricularia juncea*), and early blue violet (*Viola palmata*).

Preliminary recommendations:

- Conduct floristic inventory and amend preliminary list of vascular plants.
- Voucher *Pogonia ophioglossoides* and *Spiranthes praecox*.

- Survey for *Bartonia paniculata*, *Bartonia virginica*, *Burmanna biflora*, *Dichantherium scabriusculum*, *Ludwigia pilosa*, *Ludwigia virgata*, *Marshallia tenuifolia*, *Nemastylis floridana*, *Panicum verrucosum*, *Rhynchospora baldwinii*, *Rhynchospora breviseta*, *Rhynchospora harperi*, *Rhynchospora rariflora*, *Utricularia juncea*, and *Viola palmata*.
- Map *Pogonia ophioglossoides* at least every three years
- Map *Spiranthes praecox* every year it is present.
- Monitor *Pogonia ophioglossoides* and *Spiranthes praecox* every year during the flowering season.
- Continue projects to acquire additional land for the park.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Calopogon multiflorus</i>		E	S2S3
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Pogonia ophioglossoides</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Pteris vittata* and *Urena lobata*.

Palm Drive Pineland

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 20 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1986a) plant list. G.N. Avery, Bradley, and Woodmansee made field observations.

The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Continue floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Bourreria cassiniifolia</i> (E)		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Galactia smallii</i>	E	E	S1
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Tripsacum floridanum</i>		T	S2
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Peck Lake Park

Location: Martin County.

Manager: Martin County.

Size: 70 acres (Jue et al., 2001).

Existing plant data: Bradley et al. (1999) prepared a preliminary list of vascular plants for the scrubby flatwoods portion of the site. The authors, S. Vardaman, and C. McCartney have made field observations. Bradley & Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Jack-in-the-pulpit (*Arisaema triphyllum*) and Fuchs' vanilla (*Vanilla inodora*).

Preliminary recommendations:

- Make photographic voucher of *Vanilla inodora*.
- Map and monitor *Arisaema triphyllum* and *Vanilla inodora*.
- Consider augmentation of *Vanilla inodora*.
- Protect *Vanilla inodora* from poaching.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Encyclia tampensis</i>		C	
<i>Lechea cernua</i>		T	S3
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Vanilla inodora</i>		E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Lantana camara*, *Lygodium microphyllum*, *Nephrolepis multiflora*,

Psidium cattleianum, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Urena lobata* and *Wedelia trilobata*.

Phipp's Park

Location: Martin County.

Manager: Martin County.

Size: 14 acres.

Comments: Not included in Jue et al. (2001). There is also a Phipp's Ocean Park in Palm Beach County, which is included in Jue et al. (2001), but is not really a conservation area.

Existing plant data: Woodmansee has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Complete floristic inventory and prepare preliminary list of vascular plants.

Picayune Strand State Forest

Location: Collier County.

Manager: Florida Department of Agriculture and Consumer Services, Division of Forestry.

Size: 65,435.79 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations. The IRC Website (Gann et al. 2001) provides a preliminary list of vascular plants, but additional inventory work is needed.

Comments: This is a highly fragmented site that is poorly botanized. Many critically imperiled species could be present within the acquisition boundaries.

Pine Island Ridge Natural Area

Location: Broward County.

Manager: Broward County.

Size: 101 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.) plant list. Broward County Parks & University of Florida (1998g) prepared a preliminary list of vascular plants. Mark McMahon made field observations. P.L. Howell has collected herbarium specimens.

Critically imperiled plants reported for the site: Southern river sage (*Salvia riparia*).

Preliminary recommendations:

- Initiate surveys for *Salvia riparia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Cestrum diurnum*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum fluminense*, *Lantana camara*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Antigonon leptopus*, *Epipremnum pinnatum*, *Ficus altissima*, *Hibiscus tiliaceus*, *Koeleruteria elegans* subsp. *formosana* *Melinis*

minutiflora, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Tribulus cistoides*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Pine Island Sound Aquatic Preserve

Location: Lee County.

Manager: Florida DEP, Office of Coastal & Aquatic Managed Areas.

Size: 54,176 acres (Jue et al., 2001).

Existing Plant data: B.F. Hansen collected a herbarium specimen of *Celtis pallida*.

Critically imperiled plants formerly present at the site: Spiny hackberry (*Celtis pallida*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Celtis pallida* on Big Panther Key.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Celtis pallida</i> (H)		E	S1

Pine Ridge Sanctuary

Location: Miami-Dade County.

Manager: Private.

Size: 14 acres (Jue et al., 2001).

Existing plant data: Glancy & Glancy (1991) prepared a preliminary list of vascular plants. The authors have made field observations. Bradley and C. Lippincott have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Lobed croton (*Croton lobatus*) and Everglades bully (*Sideroxylon reclinatum* subsp. *austrofloridense*).

Preliminary recommendations:

- Survey for *Croton lobatus* following fires or other disturbances. Map plants when present.
- Map *Sideroxylon reclinatum* subsp. *austrofloridense* at least every three years.
- Monitor *Sideroxylon reclinatum* subsp. *austrofloridense* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia smallii</i>	E	E	S1
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	

<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Vernonia blodgettii</i>		S3
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Lantana camara*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*.

Pine Shore Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 7.82 acres; includes 6 acres of pine rockland (Jue et al., 2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Florida ticktrefoil (*Desmodium floridanum*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map *Desmodium floridanum* at least every three years.
- Monitor *Desmodium floridanum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i>	E	E	S1

<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Polygala smallii</i>	E	E	S1
<i>Pteroglossaspis ecristata</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tripsacum floridanum</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbekii*, *Asparagus densiflorus*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Cyperus involucratus*, *Dalbergia sissoo*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, and *Wedelia trilobata*.

Pond Apple Slough

Location: Broward County.

Manager: Broward County.

Size: 200 acres (Jue et al., 2001).

Existing plant data: Austin et al. (1989) and Wilkes (1996) prepared preliminary lists of vascular plants. C. McCartney has made field observations. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum floridense</i>		E	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Saccola lanceolata</i> var. <i>lanceolata</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	

FLEPPC Category I Exotics: *Albizia lebeck*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Eichhornia crassipes*, *Eugenia uniflora*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Panicum repens*, *Pistia stratiotes*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Hibiscus tiliaceus*, *Pteris vittata*, *Rhynchelytrum repens*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Pond Cypress Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 1,538 acres (Jue et al., 2001).

Comments: This is called Fox Natural Area in Jue et al. (2001).

Existing plant data: Farnsworth (1994a) prepared a preliminary list of vascular plants.

Critically imperiled plants present at the site: Slender club-moss (*Lycopodiella caroliniana*).

Preliminary recommendations:

- Voucher *Lycopodiella caroliniana*.
- Map *Lycopodiella caroliniana* at least every three years.
- Monitor *Lycopodiella caroliniana* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bletia purpurea</i>		T	
<i>Calopogon multiflorus</i>		E	S2S3
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Spiranthes longilabris</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category II Exotics: *Pteris vittata*.

Porter-Russell Pineland

Location: Miami-Dade County.

Manager: Tropical Audubon Society

Size: 2 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: Roessler (ca. 1993) and Hammer & Bradley (1999) prepared preliminary lists of vascular plants. Bradley has collected herbarium specimens.

Critically imperiled plants present at the site: None.

Preliminary recommendations:

- Include site in future editions of Florida Conservation Lands.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Melia azedarach*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Asystasia gangetica*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Urena lobata*, and *Wedelia trilobata*.

Prospect Road Natural Area

Location: Broward County.

Manager: City of Fort Lauderdale.

Size: 6.16 acres (Jue et al., 2001).

Existing plant data: Broward County Parks & University of Florida (1998h) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Peperomia obtusifolia</i>		E	S2
<i>Tillandsia balbisiensis</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Calophyllum inophyllum*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Epipremnum pinnatum*, *Oeceoclades maculata*, *Pteris vittata*, *Ricinus communis*, *Solanum diphyllum*, and *Wedelia trilobata*.

Quail Roost Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 48.54 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentea</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Ilex krugiana</i>		T	S3
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Bischofia javanica*, *Casuarina equisetifolia*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Melinis minutiflora*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, and *Urena lobata*.

R. Hardy Matheson Preserve

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 823 acres (Jue et al., 2001).

Existing plant data: Fairchild Tropical Garden (1990a, 1991b) prepared preliminary lists of vascular plants. G.N. Avery, Gann, and Bradley have made field observations. D.S. Correll, P.B. Tomlinson, the authors, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Florida flatsedge (*Cyperus floridanus*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), Carter's flax (*Linum carteri* var. *carteri*), and swampbush (*Pavonia paludicola*).

Preliminary recommendations:

- Continue mapping *Linum carteri* var. *carteri* at least every three years.
- Map *Cyperus floridanus*, *Dalea carthagenensis* var. *floridana*, and *Pavonia paludicola* at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Asplenium dentatum</i>		E	S1S2
<i>Calyptrothrix pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cyperus floridanus</i>		E	S1
<i>Dalea carthagenensis</i> var. <i>floridana</i>		E	S1
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Eugenia confusa</i>		E	S2S3
<i>Jacquemontia curtisii</i>		T	S2
<i>Linum carteri</i> var. <i>carteri</i>		E	S1
<i>Melanthera parvifolia</i>		T	
<i>Pavonia paludicola</i>		E	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pithecellobium keyense</i>		T	
<i>Poinsettia pinetorum</i>		E	S2

<i>Polystachya concreta</i>	E	
<i>Prunus myrtifolia</i>	T	S2
<i>Pteris bahamensis</i>	T	S3
<i>Scleria lithosperma</i>	E	
<i>Smilax havanensis</i>	T	
<i>Tillandsia balbisiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbbeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Colubrina asiatica*, *Dioscorea alata*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Hydrilla verticillata*, *Jasminum dichotomum*, *Jasminum fluminense*, *Manilkara zapota*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Paederia cruddasiana*, *Pennisetum purpureum*, *Psidium guajava*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Agave sisalana*, *Epipremnum pinnatum*, *Ficus altissima*, *Flacourtia indica*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Terminalia catappa*, and *Wedelia trilobata*.

Radnor Beach Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 153.7 acres (Jue et al., 2001).

Comments: Called Radnor in Jue et al. (2001).

Existing plant data: Johnson & Muller (1993a) produced an abbreviated plant list. Bradley & Gann (1995) surveyed the site for

Polygala smallii. USFWS (1996) reported observations of *Jacquemontia reclinata*.

Critically imperiled known at the site: Beach clustervine (*Jacquemontia reclinata*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Map *Jacquemontia reclinata* at least every three years.
- Monitor *Jacquemontia reclinata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia* and *Schinus terebinthifolius*.

**Ramrod Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.
Manager: Florida Fish and Wildlife Commission.
Size: 49.7 acres.
Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary plant list. Bradley & Woodmansee have made field observations and collected herbarium specimens.

Extirpated plants collected at the site: Creeping bramble fern (*Hypolepis repens*).
Critically imperiled plants collected in the vicinity of the site: Silky bluestem (*Schizachyrium sericatum*).

Comments: A project to introduce *Opuntia corallicola* has been initiated.

Preliminary recommendations:

- Consider reintroduction of *Hypolepis repens*.
- Consider introduction of *Schizachyrium sericatum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Byrsonima lucida</i>		T	S3
<i>Coccothrinax argentea</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Gyminda latifolia</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Reynosia septentrionalis</i>		T	
<i>Savia bahamensis</i>		E	S2
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia balbisiiana</i>		T	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Vanilla barbellata</i>		E	S2

FLEPPC Category I Exotics: *Scaevola sericea* and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Cyperus involucratus*, *Flacourtia indica*, *Leucaena leucocephala*, *Sansevieria hyacinthoides*, and *Wedelia trilobata*.

Red Reef Park

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 100 acres (Jue et al., 2001).

Comments: Includes Gumbo Limbo Nature Center, now Gumbo Limbo Environmental Complex (Jue et al., 2001).

Existing plant data: Austin & Coleman-Morris (1976) prepared a preliminary list of vascular plants for the Boca Hammock portion of the site. Johnson & Muller (1993a) prepared an abbreviated plant list. D.F. Austin has made field observations. USFWS (1996) reported observations of *Jacquemontia reclinata*. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

Critically imperiled plants reported for the site: Curtiss' hoarypea (*Tephrosia angustissima* var. *curtissii*).

Critically imperiled plants collected in the vicinity of the site: Yellow nicker (*Caesalpinia major*).

Preliminary recommendations:

- Survey for *Tephrosia angustissima* var. *curtissii*.
- Continue mapping and monitoring of *Jacquemontia reclinata*.
- Consider introduction of *Caesalpinia major*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Drypetes lateriflora</i>		T	
<i>Glandularia maritima</i>		E	S3
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Smilax havanensis</i>		T	
<i>Tephrosia angustissima</i> var. <i>curtissii</i> (H)		E	T1

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Lantana camara*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Ricinus communis*, *Tribulus cistoides*, and *Wedelia trilobata*.

Riverbend Park

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 888.37 acres (Jue et al., 2001).

Comments: Contains Reese Groves of Jue et al. (2001).

Existing plant data: There is an anonymous (no date.m) plant list. The authors have made field observations within the Reese Groves portion of the site. S.L. Orzell & E.L. Bridges, Bradley, and Woodmansee have collected herbarium specimens. The IRC Website (2001) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Jack-in-the-pulpit (*Arisaema triphyllum*), teal love grass (*Eragrostis hypnoides*), forked rush (*Juncus dichotomus*), fewflower beaksedge (*Rhynchospora rariflora*), hairy maiden fern (*Thelypteris hispida* var. *versicolor*), and tall reedtop (*Tridens flavus* var. *flavus*).

Comments: Old World climbing fern (*Lygodium microphyllum*) poses a serious threat to this site.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Continue efforts to control Old World climbing fern (*Lygodium microphyllum*).

Additional data:

Listed Plants:

	US	FL	FNAI
<i>Lycopodiella cernua</i>		C	
<i>Ophioglossum palmatum</i>		E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Ardisia elliptica*, *Bischofia javanica*, *Dioscorea bulbifera*, *Melaleuca quinquenervia*,

Nephrolepis cordifolia, *Nephrolepis multiflora*, *Panicum repens*, *Psidium cattleianum*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Pteris vittata*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Xanthosoma sagittifolium*.

Rock Pit #34

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 5 acres.

Comments: Not included in Jue et al. (2001). This is actually a pine rockland site, not a rock pit.

Existing plant data: Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include in future editions of Florida Conservation Lands.
- Map and monitor *Koanophyllon villosum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Koanophyllon villosum</i>		E	S2
<i>Tetrazygia bicolor</i>		T	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Bischofia javanica*, *Casuarina equisetifolia*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Manilkara zapota*, *Nephrolepis multiflora*, *Pennisetum purpureum*, *Schinus terebinthifolius*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Oeceoclades maculata*, *Ricinus communis*, and *Syzygium jambos*.

Rock Pit #39

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 7 acres.

Comments: Not included in Jue et al. (2001). This is actually a pine rockland site, not a rock pit.

Existing plant data: Bradley, Gann, and T.T. Gann have made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Include in future editions of Florida Conservation Lands.
- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FI	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia smallii</i>	E	E	S1
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2

<i>Scutellaria havanensis</i>	E	S2
<i>Smilax havanensis</i>	T	
<i>Spermacoce terminalis</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Tragia saxicola</i>	T	S2
<i>Tripsacum floridanum</i>	T	S2
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Casuarina equisetifolia*, *Jasminum dichotomum*, *Lantana camara*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Merremia tuberosa*, *Rhynchelytrum repens*, *Ricinus communis*, and *Wedelia trilobata*.

Rockdale Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 37.07 acres (Jue et al., 2001).

Comments: Includes Rockdale Pineland Addition of Jue et al. (2001).

Existing plant data: There is an anonymous (1986a) plant list. G.N. Avery and Bradley have made field observations. Bradley and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: Carter's flax (*Linum carteri* var. *carteri*).

Preliminary recommendations:

- Continue mapping *Linum carteri* var. *carteri* at least every three years.
- Monitor *Linum carteri* var. *carteri* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Linum carteri</i> var. <i>carteri</i>		E	S1
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Pteroglossaspis ecristata</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Scutellaria havanensis</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Jasminum fluminense*, *Lantana camara*, *Melia azedarach*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Melinis minutiflora*, *Pteris vittata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Rocky Point Hammock

Location: Martin County.

Manager: Martin County.

Size: 20 acres.

Comments: Includes Rocky Point Addition of Jue et al. (2001).

Existing plant data: Cox (1988) prepared a preliminary list of vascular plants for the hammock portion of the site. Bradley et al. (1999) prepared a preliminary list of vascular plants for the xeric portions of the site. Bradley & Woodmansee have made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Tall dodder (*Cuscuta exaltata*).

Historical plants collected in the vicinity of the site: Widespread polypody (*Pecluma dispersa*).

Critically imperiled plants collected in the vicinity of the site: Greenvein lady's-tresses (*Spiranthes praecox*).

Recommendations

- Survey for *Pecluma dispersa*.
- Map *Cuscuta exaltata* whenever it is present.
- Monitor *Cuscuta exaltata* station on a quarterly basis.
- Contingent upon results of surveys, consider reintroduction of *Pecluma dispersa*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Conradina grandiflora</i>		T	S3
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Lantana depressa</i> var. <i>floridana</i>			S2
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

Tillandsia utriculata

E

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Melaleuca quinquenervia*, *Panicum repens*, *Rhodomirtus tomentosa*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Rolling Oaks Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 33.5 acres; includes 23 acres of natural area (Jue et al., 2001).

Existing plant data: Bradley has made field observation and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Bischofia javanica*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Jasminum dichotomum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Flacourtia indica*, *Murraya paniculata*, *Sansevieria hyacinthoides*, *Syzygium jambos*, *Urena lobata*, and *Wedelia trilobata*.

Ron Ehman Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 14.6 acres; contains 7 acres of pine rockland (Jue et al., 2001).

Existing plant data: Flynn et al. (1994) prepared a preliminary list of vascular plants. Herndon (1994) reported observations of *Brickellia mosieri*. Bradley has made field observations. Bradley and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Viperina (*Zornia bracteata*).

Preliminary recommendations:

- Map *Zornia bracteata* at least every three years.
- Monitor *Zornia bracteata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Brickellia mosieri</i>		E	S1
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Smilax havanensis</i>		T	
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Bauhinia variegata*, *Bischofia javanica*, *Ficus microcarpa*, *Jasminum fluminense*, *Lantana camara*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Flacourtia indica*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Rookery Bay National Estuarine Research Reserve

Location: Collier County.

Manager: Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas.

Size: 83,107 acres (Jue et al., 2001).

Comments: Includes Deltona Lands, Rookery Bay Aquatic Preserve, and Rookery Bay: Collier-Reed Tract of Jue et al. (2001).

Existing plant data: Christman (1988) and Johnson & Muller (1993b) prepared abbreviated plant lists. Burch (1998) prepared a preliminary list of vascular plants. J. Burch has made field observations. R.P. Wunderlin, B.F. Hansen, and G. Robinson have collected herbarium specimens. The IRC Website (Gann et al., 2001a) has an amended list of vascular plants.

Critically imperiled plants reported for the site: Florida ticktrefoil (*Desmodium floridanum*), Rolfs' oak (*Quercus xrolfsii*), greenvein lady's-tresses (*Spiranthes praecox*), and fuzzywuzzy airplant (*Tillandsia pruinosa*).

Historical plants: Chapman's purpletop tridens (*Tridens flavus* var. *chapmanii*).

Historical plants collected in the vicinity of the site: Lusterspike indigobush (*Amorpha herbacea* var. *herbacea*), Florida milkweed (*Asclepias feayi*).

Comments: The state-listed mahogany (*Swietenia mahagoni*) has naturalized at the site outside of historical range (Burch, 1998).

Preliminary recommendations:

- Complete floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Amorpha herbacea* var. *herbacea*, *Asclepias feayi*, *Desmodium floridanum*, *Quercus xrolfsii*, *Spiranthes praecox*, *Tillandsia pruinosa*, and *Tridens flavus* var. *chapmanii*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Asclepias curtissii</i>		E	S3
<i>Calopogon multiflorus</i>		E	S2S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Cheilanthes microphylla</i>		E	S3
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum anceps</i>		E	
<i>Epidendrum rigidum</i>		E	
<i>Gossypium hirsutum</i>		E	S3
<i>Lechea cernua</i>		T	S3
<i>Lycopodiella cernua</i>		C	
<i>Myrcianthes fragrans</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia pruinosa</i>		E	S1
<i>Tillandsia utriculata</i>		E	
<i>Tripsacum floridanum</i>		T	S2
<i>Zephyranthes simpsonii</i>		T	SH

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Asparagus densiflorus*, *Bauhinia variegata*, *Casuarina equisetifolia*, *Colubrina asiatica*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Lantana camara*, *Lygodium japonicum*,

Manilkara zapota, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Pennisetum purpureum*, *Psidium cattleianum*, *Psidium guajava*, *Rhodomyrtus tomentosa*, *Scaevola sericea*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Ficus altissima*, *Flacourtia indica*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Phoenix reclinata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Syzygium jambos*, *Terminalia catappa*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Rosemary Ridge Preserve

Location: Palm Beach County.
Manager: City of Boca Raton.
Size: 7.29 acres (Jue et al., 2001).

Existing plant data: The Boca Raton Environmentally Sensitive Lands Management Committee (1993) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Epipremnum pinnatum* and *Rhynchelytrum repens*.

Rosemary Scrub Natural Area

Location: Palm Beach County.
Manager: Palm Beach County.
Size: 13.59 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1994d) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Opuntia stricta</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Eugenia uniflora*, *Ficus microcarpa*, *Jasminum fluminense*, *Lantana camara*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Senna pendula* var. *glabrata*.

FLEPPC Category II Exotics: *Agave sisalana*, *Asystasia gangetica*, *Passiflora foetida*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Rotenberger Wildlife Management Area

Location: Broward and Palm Beach counties.

Manager: Florida Fish and Wildlife Conservation Commission.

Size: 28,775 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1996) plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	

FLEPPC Category I Exotics: *Melaleuca quinquenervia* and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*, *Ricinus communis* and *Urena lobata*.

Royal Palm Beach Pines Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 747.23 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1995c) and Black (1996) prepared preliminary lists of vascular plants.

Critically imperiled plants protected only at Royal Palm Beach Pines Natural Area: Slender adder's-tongue (*Ophioglossum nudicaule*).

Other critically imperiled plants present at the site: Celestial lily (*Nemastylis floridana*), yellow butterwort (*Pinguicula lutea*), southern bladderwort (*Utricularia juncea*), and early blue violet (*Viola palmata*).

Critically imperiled plants reported for the site: Yankeeweed (*Eupatorium compositifolium*) and shaggy hedgehyssop (*Gratiola pilosa*).

Preliminary recommendations:

- Voucher *Nemastylis floridana*, *Ophioglossum nudicaule*, *Pinguicula lutea*, *Utricularia juncea*, and *Viola palmata*.
- Survey for *Eupatorium compositifolium* and *Gratiola pilosa*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bletia purpurea</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Lycopodiella cernua</i>		C	
<i>Nemastylis floridana</i>		E	S2
<i>Nephrolepis biserrata</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula lutea</i>		T	
<i>Spiranthes laciniata</i>		T	
<i>Spiranthes longilabris</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Casuarina equisetifolia*, *Dioscorea bulbifera*, *Ficus microcarpa*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium guajava*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Tradescantia fluminensis*.

FLEPPC Category II Exotics: *Passiflora foetida*, *Pteris vittata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Savannas Preserve State Park

Location: Martin and St. Lucie counties.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 5,115.76 acres (Jue et al., 2001).

Existing plant data: Garland (1992) and Miller et al. (1996) prepared preliminary lists of vascular plants. Anderson (1997) prepared a preliminary list of vascular plants for the wetland portions of the site. Bradley et al. (1999) prepared a preliminary list of vascular plants for the xeric portions of the site. The authors have made field observations. M. Garland, E.L. Bridges & R.L. Mears, and the authors have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Savannas State Reserve: Watershield (*Brasenia schreberi*).

Other critically imperiled plants present at the site: Seminole false foxglove (*Agalinis filifolia*), fourpetal pawpaw (*Asimina tetramera*), rushfoil (*Croton michauxii*), viviparous spikerush (*Eleocharis vivipara*), Engler's bogbutton (*Lachnocaulon engleri*), scrub oak (*Quercus inopina*), and fringed yelloweyedgrass (*Xyris fimbriata*).

Comments: This conservation area is located in both Martin and St. Lucie counties. Although St. Lucie County lies outside of South Florida as defined in this manual, for management purposes the additional data below are for the entire conservation area. The federally listed endemic cactus *Harrisia fragrans* occurs on the St. Lucie County portion of this site, and has not been recorded in Martin County.

Preliminary recommendations:

- Voucher *Croton michauxii* and *Lachnocaulon engleri* in Martin County.
- Map all critically imperiled plants at least every three years.

- Monitor all critically imperiled plants at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Aristida rhizomophora</i>			S3
<i>Asclepias curtissii</i>		E	S3
<i>Asimina tetramera</i>	E	E	S1
<i>Chamaesyce cumulicola</i>		E	S2
<i>Coelorachis tuberculosa</i>		T	S3
<i>Conradina grandiflora</i>		T	S3
<i>Dicerandra immaculata</i>			
var. <i>savannarum</i>	E	E	
<i>Encyclia tampensis</i>		C	
<i>Habenaria nivea</i>		T	
<i>Harrisia fragrans</i>		E	S1
<i>Lechea cernua</i>		T	S3
<i>Lilium catesbaei</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Pinguicula caerulea</i>		T	
<i>Pinguicula lutea</i>		T	
<i>Pogonia ophioglossoides</i>		T	
<i>Spiranthes laciniata</i>		T	
<i>Tillandsia balbisia</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Asparagus densiflorus*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Psidium cattleianum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Rhynchelytrum repens*, *Sansevieria*

hyacinthoides, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Sea Oats Beach

Location: Monroe County Keys.

Manager: The Nature Conservancy.

Size: 1.03 acres (Jue et al., 2001).

Comments: Cleanup activities following hurricanes in the 1990s destroyed virtually all of the native vegetation on this site.

Existing plant data: W. Hoffman has made field observations and collected herbarium specimens of *Cuscuta umbellata*.

Historical plants collected at the site: Flatglobe dodder (*Cuscuta umbellata*).

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Cuscuta umbellata*.
- Contingent upon results of surveys, consider reintroduction of *Cuscuta umbellata*.

Seabranh Preserve State Park

Location: Martin County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 918.78 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (no date.n) plant list. Bradley et al. (1999) prepared a preliminary list of vascular plants for the xeric portions of the site. The authors have made field observations. Bradley and Woodmansee have collected herbarium specimens. The IRC website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants protected only at Seabranh Preserve State Park: Pinescrub bluestem (*Schizachyrium niveum*).

Other critically imperiled plants present at the site: Jack-in-the-pulpit (*Arisaema triphyllum*), forked rush (*Juncus dichotomus*), perennial sandgrass (*Triplasis americana*), and Fuchs' vanilla (*Vanilla inodora*).

Preliminary recommendations:

- Voucher *Arisaema triphyllum* and *Schizachyrium niveum*. Make photographic voucher of *Vanilla inodora*.
- Map and monitor all critically imperiled plants on a regular basis.
- Protect *Vanilla inodora* from poaching.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Encyclia tampensis</i>		C	
<i>Halophila johnsonii</i>		S2	G2
<i>Lechea cernua</i>		T	S3
<i>Lycopodiella cernua</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Ophioglossum palmatum</i>		E	S2
<i>Osmunda cinnamomea</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Vanilla inodora</i>		E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Ardisia elliptica*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Hydrilla verticillata*, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Psidium cattleianum*,

Psidium guajava, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Alternanthera philoxeroides*, *Callisia fragrans*, *Koeleria elegans* subsp. *formosana*, *Leucaena leucocephala*, *Limnophila sessiliflora*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Seacrest Scrub Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 53.69 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1996b) and Ecohorizons, Inc. & Palm Beach County Environmental Resources Management (1996b) prepared preliminary lists of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Lechea divaricata</i>		E	S2
<i>Opuntia stricta</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bischofia javanica*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Panicum*

repens, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Asystasia gangetica*, *Ficus altissima*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

Secret Woods Buffer and Nature Center

Location: Broward County.

Manager: Broward County.

Size: 74 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1995d) plant list. The Broward County Parks and Recreation Division (1985) and Broward County Parks & University of Florida (1998i) prepared preliminary lists of vascular plants. C. McCartney and R.L. Hammer have made field observations. R.L. Hammer and P.L. Howell have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations: Map and monitor state-listed endangered plants.
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Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Saccioila lanceolata</i> var. <i>paludicola</i>		T	S1
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Calophyllum inophyllum*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*,

Panicum repens, *Psidium guajava*, *Ruellia tweediana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, *Thespesia populnea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Hiptage benghalensis*, *Pteris vittata*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Solanum torvum*, *Syzygium jambos*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Seminole Wayside Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 27.71 acres; includes 15 acres of pine rockland (Jue et al., 2001).

Existing plant data: Hammer (1993) prepared a preliminary list of vascular plants. G.N. Avery, Bradley, and Woodmansee have made field observations. W.T. Gillis, G.N. Avery, Bradley, and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Coker's beach creeper (*Ernodea cokeri*).

Preliminary recommendations:

- Map *Ernodea cokeri* at least every three years.
- Monitor *Ernodea cokeri* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>pinetorum</i>		E	S1
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argenteata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2

<i>Cynanchum blodgettii</i>		T	
<i>Ernodea cokeri</i>		E	S1
<i>Galactia smallii</i>	E	E	S1
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Tripsacum floridanum</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Albizia lebbek*, *Bauhinia variegata*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Ficus altissima*, *Melinis minutiflora*, *Pteris vittata*, *Rhynchelytrum repens*, and *Wedelia trilobata*.

Serenoa Glade Preserve

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 9 acres (Jue et al., 2001).

Existing plant data: The City of Boca Raton (1993) prepared a preliminary list of vascular plants.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor *Tillandsia fasciculata* var. *densispica*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Opuntia stricta</i>		T	
<i>Osmunda cinnamomea</i>		C	
<i>Spermacoce terminalis</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Rhynchelytrum repens*.

Sewell Park

Location: Miami-Dade County.

Manager: City of Miami.

Size: 10.75 acres.

Comments: Not included in Jue et al. (2001).

Existing plant data: G.N. Avery, Bradley, and D. Keller have made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants.

Critically imperiled plants present at the site: Black calabash (*Amphitecna latifolia*) and bitterbush (*Picramnia pentandra*).

Preliminary recommendations:

- Include site in future additions of Florida Conservation Lands.
- Map *Amphitecna latifolia* and *Picramnia pentandra* at least every three years.
- Monitor *Amphitecna latifolia* and *Picramnia pentandra* at least every year.
- Consider augmentation of *Amphitecna latifolia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Calytranthes pallens</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Picramnia pentandra</i>		E	S1

FLEPPC Category I Exotics: *Albizia lebeck*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Jasminum dichotomum*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Neyraudia reynaudiana*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Epipremnum pinnatum*, *Oeceoclades maculata*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Wedelia trilobata*.

Silver Palm Groves

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 20.36 acres (Jue et al., 2001).

Comments: This site is called Silver Palm Groves Pineland in Jue et al. (2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Angadenia berteroi</i>		T	
<i>Calyptanthes zuzygium</i>		E	S2
<i>Chaptalia albicans</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Ilex krugiana</i>	T		S3
<i>Koanophyllum villosum</i>		E	S2
<i>Leiphaimos parasitica</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Odontosoria clavata</i>		E	S2
<i>Peperomia obtusifolia</i>		E	S2
<i>Prunus myrtifolia</i>		T	S2
<i>Psidium longipes</i>		T	S2
<i>Rhynchospora floridensis</i>			S2
<i>Scutellaria havanensis</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Tectaria fimbriata</i>		E	S2
<i>Tectaria heracleifolia</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris reptans</i>		E	S1
<i>Tragia saxicola</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Bischofia javanica*, *Dioscorea alata*, *Jasminum dichotomum*, *Lantana camara*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium cattleianum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Flacourtia indica*, *Leucaena leucocephala*, *Melinis minutiflora*, *Oeceoclades maculata*, *Pteris vittata*, *Ptychosperma elegans*, *Rhynchelytrum repens*, and *Ricinus communis*.

Silver Palm Hammock

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 10 acres (Jue et al., 2001).

Comments: Silver Palm Hammock was historically known as Caldwell Hammock. The hammock historically known as Silver Palm Hammock is now called Silver Palm Groves. This site contains both rockland hammock (about 6 acres) and fire suppressed pine rockland (about 4 acres).

Existing plant data: There is an anonymous (1981a) plant list. Gann-Matzen (1991) prepared a preliminary list of vascular plants. Gann & Bradley have made field observations. N.L. Britton, J.K. Small, and Bradley have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Hammock shrubverbena (*Lantana canescens*).

Critically imperiled plants formerly present at the site: Goatsfoot (*Passiflora sexflora*) and Kraus' bristle fern (*Trichomanes krausii*).

Critically imperiled plants reported for the site: Florida bristle fern (*Trichomanes punctatum* subsp. *floridanum*).

Preliminary recommendations:

- Map *Lantana canescens* at least every year.
- Monitor *Lantana canescens* at least every three months.
- Consider restoring pine rockland and re-establishing the pine rockland/rockland hammock ecotone.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Alvaradoa amorphoides</i>		E	S1
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Ilex krugiana</i>		T	S3
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana canescens</i>		E	S1
<i>Leiphaimos parasitica</i>		E	S2

<i>Passiflora sexflora</i> (E)	E	S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>		S2
<i>Prunus myrtifolia</i>	T	S2
<i>Rhynchospora floridensis</i>		S2
<i>Smilax havanensis</i>	T	
<i>Tectaria fimbriata</i>	E	S2
<i>Tectaria heracleifolia</i>	T	
<i>Tetrazygia bicolor</i>	T	
<i>Thelypteris reptans</i>	E	S1
<i>Tournefortia hirsutissima</i>	E	
<i>Tragia saxicola</i>	T	S2
<i>Trichomanes krausii</i> (E)	E	S1
<i>Trichomanes punctatum</i> subsp. <i>floridanum</i> (E)	E	S1
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Jasminum dichotomum*, *Lantana camara*, *Manilkara zapota*, *Pennisetum purpureum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Aristolochia littoralis*, *Leucaena leucocephala*, *Melinis minutiflora*, *Murraya paniculata*, *Oeceoclades maculata*, *Ricinus communis*, and *Wedelia trilobata*.

Simpson Park

Location: Miami-Dade County.

Manager: City of Miami.

Size: 8.5 acres (Jue et al., 2001).

Comments: This site is one of the remnant fragments of historical Brickell Hammock, once the largest and most diverse rockland hammock on the South Florida mainland.

Existing plant data: There is an anonymous (no date.p) plant list. Beaudry (1977) prepared a preliminary list of vascular plants. G.N. Avery and the authors have made field observations. W.M. Buswell & R.O. Woodbury, and D.S. Correll & H.B. Correll collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides and amended list of vascular plants.

Critically imperiled plants protected only at Simpson Park: Gulf licaria (*Licaria triandra*).

Other critically imperiled plants present at the site: Black calabash (*Amphitecna latifolia*) and bitterbush (*Picramnia pentandra*).

Extirpated plants collected in the vicinity of site: Balsam torchwood (*Amyris balsamifera*), hammock groundsel (*Baccharis dioica*), and spoonleaf peperomia (*Peperomia magnoliifolia*).

Historical plants collected in the vicinity of the site: Clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*) and Mrs. Lott's vanilla (*Vanilla dilloniana*).

Critically imperiled plants collected in the vicinity of the site: Marsh's Dutchman's-pipe (*Aristolochia pentandra*), modest spleenwort (*Asplenium verecundum*), Biscayne spleenwort (*Asplenium xbiscaynianum*), tall redbot (*Tridens flavus* var. *flavus*), and young palm orchid (*Tropidia polystachya*).

Preliminary recommendations:

- Map *Amphitecna latifolia*, *Licaria triandra*, and *Picramnia pentandra* at least every three years.
- Monitor *Amphitecna latifolia*, *Licaria triandra*, and *Picramnia pentandra* at least every year.
- Consider augmentation of *Amphitecna latifolia*.
- Consider introductions of *Amyris balsamifera*, *Aristolochia pentandra*, *Baccharis dioica*, *Peperomia magnoliifolia*, *Tillandsia fasciculata* var. *clavispica*, *Tridens flavus* var. *flavus*, and *Tropidia polystachya*, and *Vanilla dilloniana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bouyeria succulenta</i>		E	
<i>Calyptanthes pallens</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Dalbergia brownii</i>		E	
<i>Drypetes lateriflora</i>		T	
<i>Eugenia confusa</i>		E	S2S3
<i>Licaria triandra</i>		E	SH
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Myrcianthes fragrans</i>		T	

<i>Peperomia obtusifolia</i>	E	S2
<i>Picramnia pentandra</i>	E	S1
<i>Prunus myrtifolia</i>	T	S2
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tournefortia hirsutissima</i>	E	
<i>Zamia integrifolia</i>	C	

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Lantana camara*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Neyraudia reynaudiana*, *Ruellia tweediana*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenantha pavonina*, *Antigonon leptopus*, *Epipremnum pinnatum*, *Leucaena leucocephala*, *Merremia tuberosa*, and *Sansevieria hyacinthoides*.

Six Mile Cypress Slough Preserve

Location: Lee County.

Manager: Lee County.

Size: 2089.51 acres (Jue et al., 2001).

Existing plant data: Terrestrial Environmental Specialists, Inc. (1984) and Bradley et al. (1997b) prepared preliminary lists of vascular plants. The authors have made field observations. R. Clark, the authors, and others have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Six Mile Cypress Slough Preserve: Crowpoison (*Nothoscordum bivalve*).

Other critically imperiled plants present at the site: Giant sedge (*Carex gigantea*), rough barnyard grass (*Echinochloa muricata*), Engler's bogbutton (*Lachnocaulon engleri*), shade mudflower (*Micranthemum umbrosum*), Browne's savory (*Micromeria brownei* var. *pilosiuscula*), oak mistletoe (*Phoradendron leucarpum*), Fernald's beaksedge (*Rhynchospora fernaldii*), American elm (*Ulmus americana*), and Florida mudmidget (*Wolffiella gladiata*).

Extirpated plants collected in the vicinity of the site: Smallfruit spikerush (*Eleocharis microcarpa*).

Preliminary recommendations:

- Voucher *Carex gigantea*, *Micranthemum umbrosum*, *Micromeria brownei* var. *pilosiuscula*, and *Wolffiella gladiata*.
- Map all critically imperiled plants at least every three years.
- Monitor all critically imperiled plants at least every year.
- Consider introduction of *Eleocharis microcarpa*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Encyclia cochleata</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Epidendrum anceps</i>		E	
<i>Epidendrum rigidum</i>		E	
<i>Harrisella filiformis</i>		T	
<i>Lilium catesbaei</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Polystachya concreta</i>		E	
<i>Sacoila lanceolata</i> var. <i>lanceolata</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	
<i>Tillandsia variabilis</i>		T	
<i>Tripsacum floridanum</i>		T	S2
<i>Vernonia blodgettii</i>			S3

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Bischofia javanica*, *Cupaniopsis anacardioides*, *Eichhornia crassipes*, *Eugenia uniflora*, *Ficus microcarpa*, *Hymenachne amplexicaulis*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Panicum repens*, *Pistia stratiotes*, *Psidium cattleianum*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Solanum tampicense*, *Solanum viarum*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Leucaena leucocephala*, *Pteris vittata*, *Rhynchelytrum repens*, *Urena lobata*, and *Wedelia trilobata*.

Snake Creek/Miramar Pineland Natural Area

Location: Broward County.

Manager: Broward County.

Size: 97.6 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1995c) plant list. Broward County Park & University of Florida (1998k) prepared a preliminary list of vascular plants. Bradley and P.L. Howell have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Critically imperiled plants reported for the site: Savannah primrosewillow (*Ludwigia virgata*) and perennial sandgrass (*Triplasis americana*).

Preliminary recommendations:

- Survey for *Ludwigia virgata* and *Triplasis americana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Lycopodiella cernua</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Casuarina glauca*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Nephrolepis cordifolia*, *Panicum repens*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Antigonon leptopus*, *Callisia fragrans*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

**Snake Creek Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 75.3 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: The National Audubon Society et al. (1992) prepared a preliminary list of vascular plants for the Snake Creek Hammock acquisition area. Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations collected herbarium specimens.

Critically imperiled plants present at the site: Limestone flatsedge (*Cyperus fuliginus*) and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*).

Preliminary recommendations:

- Voucher *Cyperus fuliginus* and *Indigofera mucronata* var. *keyensis*.
- Map *Cyperus fuliginus* and *Indigofera mucronata* var. *keyensis* at least every three years.
- Monitor *Cyperus fuliginus* and *Indigofera mucronata* var. *keyensis* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Chamaesyce porteriana</i>		E	S2
<i>Cordia globosa</i>		E	
<i>Cyperus fuliginus</i>		E	S1
<i>Drypetes diversifolia</i>		E	S2
<i>Gossypium hirsutum</i>		E	S3
<i>Hibiscus poeppigii</i>		E	

<i>Hypelate trifoliata</i>	E	S1
<i>Indigofera mucronata</i> var. <i>keyensis</i>	E	S1
<i>Opuntia stricta</i>	T	
<i>Paspalidium chapmanii</i>	E	
<i>Pithecellobium keyense</i>	T	
<i>Reynosia septentrionalis</i>	T	
<i>Schaefferia frutescens</i>	E	S2
<i>Smilax havanensis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Swietenia mahagoni</i>	T	S3

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Lantana camara*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

South Beach Park

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 40 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) produced an abbreviated plant list. USFWS (1996) reported observations of *Jacquemontia reclinata*. G.N. Avery made field observations.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

Critically imperiled plants formerly present at the site: Curtiss' hoarypea (*Tephrosia angustissima* var. *curtissii*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Survey for *Tephrosia angustissima* var. *curtissii*.
- Map *Jacquemontia reclinata* at least every three years.

- Monitor *Jacquemontia reclinata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Argusia gnaphalodes</i>		E	S3
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Okenia hypogaea</i>		E	S2
<i>Pithecellobium keyense</i>		T	
<i>Tephrosia angustissima</i> var. <i>curtissii</i> (H)		E	T1

FLEPPC Category I Exotics: *Casuarina equisetifolia* and *Schinus terebinthifolius*.

Southern Glades

Location: Miami-Dade County.

Manager: South Florida Water Management District.

Size: 32,299 acres (Jue et al., 2001).

Existing plant data: G.N. Avery (1975) prepared a preliminary plant list of Aerojet Hammock. Avery, Gann, T.T. Gann, and Bradley have made field observations. D.S. Correll and J. Popenoe collected herbarium specimens. The IRC website (2001) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Lattice-vein fern (*Thelypteris reticulata*).

Critically imperiled plants formerly present at the site: Fuchs' vanilla (*Vanilla inodora*)

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map *Thelypteris reticulata* at least every three years.
- Monitor *Thelypteris reticulata* at least every year.
- Consider reintroduction of *Vanilla inodora*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acrostichum aureum</i>		T	S3
<i>Aeschynomene pratensis</i> var. <i>pratensis</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tetrazygia bicolor</i>		T	
<i>Thelypteris reticulata</i> (H)		E	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Vanilla barbellata</i>		E	S2
<i>Vanilla inodora</i> (E)		E	S1

FLEPPC Category I Exotics: *Casuarina equisetifolia*.

Spanish River Park

Location: Palm Beach County.

Manager: City of Boca Raton.

Size: 94.4 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) produced an abbreviated plant list. USFWS (1996) reported observations of *Jacquemontia reclinata*.

Critically imperiled plants present at the site: Beach clustervine (*Jacquemontia reclinata*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Continue mapping *Jacquemontia reclinata* at least every three years.
- Monitor *Jacquemontia reclinata* every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Jacquemontia reclinata</i>	E	E	S1
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Scaevola sericea*, and *Schinus terebinthifolius*.

**Spoonbill Sound Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.
Manager: Florida Fish and Wildlife Commission.
Size: 26.21 acres.
Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee and collected herbarium specimens.

Critically imperiled plants known at the site: None.
Comments: A project to introduce *Opuntia corallicola* has been initiated.

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| <p>Preliminary recommendations:</p> <ul style="list-style-type: none"> Map and monitor state-listed endangered plants. |
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Additional data:

Listed Plants:	US	FL	FNAI
<i>Bourreria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S3
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Erithalis fruticosa</i>		T	
<i>Gyminda latifolia</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3

<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Paspalidium chapmanii</i>	E	
<i>Pithecellobium keyense</i>	T	
<i>Psidium longipes</i>	T	S2
<i>Reynosia septentrionalis</i>	T	
<i>Solanum verbascifolium</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Leucaena leucocephala*, *Oeceoclades maculata*, and *Terminalia catappa*.

St. James Creek Preserve

Location: Lee County.

Manager: Lee County and Calusa Land Trust.

Size: 118 acres (Jue et al., 2001).

Existing plant data: U.S. Fish and Wildlife Service (2000) reported on the translocation of *Deeringothamnus pulchellus* to the site.

Critically imperiled plants known at the site: No natural populations.

Comments: The critically imperiled pretty false pawpaw (*Deeringothamnus pulchellus*) has been translocated to the park, but no recruitment has been noted (USFWS, 2000).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Continue introduction of *Deeringothamnus pulchellus*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Deeringothamnus pulchellus</i> (C)	E	E	S1

St. Lucie Inlet Preserve State Park

Location: Martin County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 4,834.65 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) produced an abbreviated plant list. Gann, T.T Gann, J.A. Duquesnel, and J.B. Miller have made field observations. Gann & Gann have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Opuntia stricta</i>		T	
<i>Pithecellobium keyense</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Ficus microcarpa*, *Nephrolepis multiflora*, *Scaevola sericea*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Pteris vittata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Terminalia catappa*, *Urena lobata*, and *Wedelia trilobata*.

Stuart Beach Park

Location: Martin County.

Manager: Martin County.

Size: 76 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993a) produced an abbreviated plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Glandularia maritima</i>		E	S3
<i>Scaevola plumieri</i>		T	

FLEPPC Category I Exotics: *Schinus terebinthifolius*.

Stump Pass Beach State Park

Location: Charlotte County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 230.99 acres (Jue et al., 2001).

Comments: This site was formerly known as Port Charlotte Beach State Recreation Area.

Existing plant data: Johnson & Muller (1993b) prepared an abbreviated plant list. The Florida Park Service District 4 (1993b)

prepared a preliminary list of vascular plants. Gann has made field observations. S. Erickson and S. Cole have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: West coast dune sunflower (*Helianthus debilis* subsp. *vestitus*).

Preliminary recommendations:

- Map *Helianthus debilis* subsp. *vestitus* every year.
- Monitor *Helianthus debilis* subsp. *vestitus* every quarter.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Helianthus debilis</i> subsp. <i>vestitus</i>		S2	G5T2
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Scaevola sericea*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Sansevieria hyacinthoides*.

**Sugarloaf Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 1,171 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Weiner (1980) prepared a preliminary list of plants for a portion of the site. Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations and collected herbarium specimens.

Critically imperiled plants present at the site: Pride-of-Big-Pine (*Strumpfia maritima*).

Critically imperiled plants formerly present at the site: Red stopper (*Eugenia rhombea*).

Historical plants collected in the vicinity of the site: Key West heliotrope (*Heliotropium fruticosum*).

Preliminary recommendations:

- Continue surveys for *Eugenia rhombea* and *Heliotropium fruticosum*.
- Map *Strumpfia maritima* at least every three years.
- Monitor *Strumpfia maritima* at least every year.
- Acquire Sugarloaf Key Heliotropium Site.
- Contingent upon results of surveys, consider introduction of *Heliotropium fruticosum*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Ageratum littorale</i>		E	S2
<i>Bletia purpurea</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Calyptanthes pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Cordia globosa</i>		E	
<i>Crossopetalum rhacoma</i>		T	S3
<i>Drypetes diversifolia</i>		E	S2
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Gyminda latifolia</i>		E	S2
<i>Harrisia simpsonii</i>		E	S2
<i>Hippomane mancinella</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Linum arenicola</i>		E	S1S2
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Pithecellobium keyense</i>		T	
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3

<i>Reynosia septentrionalis</i>	T	
<i>Savia bahamensis</i>	E	S2
<i>Solanum verbascifolium</i>	T	
<i>Strumpfia maritima</i>	E	S1
<i>Swietenia mahagoni</i>	T	S3
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia balbisiiana</i>	T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	
<i>Vanilla barbellata</i>	E	S2

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Manilkara zapota*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Casuarina cunninghamiana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Ricinus communis*, *Terminalia catappa*, and *Wedelia trilobata*.

Sunny Palms Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 40.77 acres (Jue et al., 2001).

Comments: This site was formerly known as Navy Wells #42.

Existing plant data: There is an anonymous (1993f) plant list. Bradley & Woodmansee have made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present known at the site: None.

Preliminary recommendations:

- Continue floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Galactia smallii</i>	E	E	S1
<i>Ilex krugiana</i>		T	S3
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Neyraudia reynaudiana*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Leucaena leucocephala*.

Tall Cypress Natural Area

Location: Broward County.

Manager: City of Coral Springs and Broward County.

Size: 66.4 acres (Jue et al., 2001).

Existing plant data: Tropical Bioindustries, Inc. (1986) and the Broward County Parks & University of Florida (1998I) prepared preliminary lists of vascular plants. M. McMahon made field observations. P.L. Howell has collected herbarium specimens.

Critically imperiled plants reported for the site: Southern river sage (*Salvia riparia*).

Preliminary recommendations:

- Initiate surveys for *Salvia riparia*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Cupaniopsis anacardioides*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Ficus microcarpa*, *Lantana camara*, *Melaleuca quinquenervia*, *Neyraudia reynaudiana*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Solanum viarum*, *Syngonium podophyllum*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Koelreuteria elegans* subsp. *formosana*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Pteris vittata*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Solanum torvum*, *Syzygium jambos*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Tamiami Pineland Complex Addition

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 25.58 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1993e) plant list. G.N. Avery and Woodmansee have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Historical plants collected in the vicinity of the site: Ames' lady's-tresses (*Spiranthes amesiana*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> (H)	E	E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>			S2
<i>Galactia pinetorum</i>			S2
<i>Ipomoea microdactyla</i>		E	S1S2
<i>Ipomoea tenuissima</i>		E	S1S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Linum carteri</i> var. <i>smallii</i>		E	S2
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Psidium longipes</i>		T	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Scutellaria havanensis</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Tragia saxicola</i>		T	S2
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Ardisia elliptica*, *Bischofia javanica*, *Lantana camara*, *Nephrolepis multiflora*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Pteris vittata* and *Rhynchelytrum repens*.

Ten Thousand Islands National Wildlife Refuge

Location: Collier County.

Manager: United States Fish and Wildlife Service.

Size: 19,650 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) prepared an abbreviated list of plants. Nalley et al. (1997) produced abbreviated lists of plants for shell island in the refuge.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Cynanchum blodgettii</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Gossypium hirsutum</i>		E	S3
<i>Myrcianthes fragrans</i>		T	
<i>Opuntia stricta</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Colubrina asiatica*, *Manilkara zapota*, *Psidium guajava*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Oeceoclades maculata*, and *Rhynchelytrum repens*.

Terrestris Preserve

Location: Monroe County Keys.

Manager: The Nature Conservancy.

Size: 20.68 acres (Jue et al., 2001).

Existing plant data: O'Brien (1991) reported field observations of South Florida endemics.

Critically imperiled plants present at the site: Florida Keys sandmat (*Chamaesyce deltoidea* subsp. *serpyllum*).

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.
- Voucher *Chamaesyce deltoidea* subsp. *serpyllum*.
- Map *Chamaesyce deltoidea* subsp. *serpyllum* at least every three years.
- Monitor *Chamaesyce deltoidea* subsp. *serpyllum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chamaecrista lineata</i> var. <i>keyensis</i>		E	S2
<i>Chamaesyce deltoidea</i> subsp. <i>serpyllum</i>		E	S1
<i>Chamaesyce porteriana</i>		E	S2
<i>Linum arenicola</i>		E	S1S2
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Rhynchospora floridensis</i>			S2
<i>Spermacoce terminalis</i>		T	
<i>Stylosanthes calcicola</i>		E	S2

<i>Tragia saxicola</i>	T	S2
<i>Vernonia blodgettii</i>		S3

The Barnacle State Historic Park

Location: Miami-Dade County.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 9.43 acres (Jue et al., 2001); approximately 3 acres of natural area.

Existing plant data: The Dade County Native Plant Workshop (1980) prepared a preliminary list of plants, which was amended by Avery (1981b) and Hammer (1984a). Gann and E.C. Golden have made field observations. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Bitterbush (*Picramnia pentandra*).

Extirpated plants collected in the vicinity of the site: Balsam torchwood (*Amyris balsamifera*).

Preliminary recommendations:

- Voucher *Picramnia pentandra*.
- Map *Picramnia pentandra* at least every three years.
- Monitor *Picramnia pentandra* at least every year.
- Consider introduction of *Amyris balsamifera*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Calyptanthus pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Eugenia confusa</i>		E	S2S3
<i>Peperomia obtusifolia</i> (E)		E	S2
<i>Picramnia pentandra</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Rhynchosia parvifolia</i> (E)		T	

<i>Smilax havanensis</i>	T
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E
<i>Tillandsia utriculata</i>	E
<i>Zamia integrifolia</i>	C

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbbeck*, *Ardisia elliptica*, *Dioscorea alata*, *Eugenia uniflora*, *Jasminum dichotomum*, *Jasminum fluminense*, *Manilkara zapota*, *Nephrolepis cordifolia*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Broussonetia papyrifera*, *Cyperus involucratus*, *Epipremnum pinnatum*, *Flacourtia indica*, *Leucaena leucocephala*, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, *Sansevieria hyacinthoides*, *Terminalia catappa*, and *Wedelia trilobata*.

The Jungle Natural Area

Location: Broward County.
Manager: Broward County.
Size: 28.5 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1995e) plant list. Broward County Parks & University of Florida (1998d) prepared a preliminary list of vascular plants. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3

Tillandsia fasciculata var. *densispica* E
Tillandsia utriculata E

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebbek*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Eugenia uniflora*, *Lantana camara*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Agave sisalana*, *Asystasia gangetica*, *Callisia fragrans*, *Epipremnum pinnatum*, *Merremia tuberosa*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Tigertail Beach County Park

Location: Collier County.
Manager: Collier County.
Size: 32 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) produced an abbreviated plant list. Bradley has made field observations. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.
Critically imperiled plants collected in the vicinity of the site: Big sandbur (*Cenchrus myosuroides*) and white spikerush (*Eleocharis albida*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants: US FL FNAI
Scaevola plumieri T

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Scaevola sericea*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana* and *Pennisetum setaceum*.

Tilton

Location: Martin County.

Manager: Martin County.

Size: 39 acres (Jue et al., 2001).

Existing plant data: Woodmansee & S. Vardaman have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Scrub oak (*Quercus inopina*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map *Quercus inopina* at least every three years.
- Monitor *Quercus inopina* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>			S3
<i>Lycopodiella cernua</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Asparagus densiflorus*, *Cupaniopsis anacardioides*,

Eugenia uniflora, *Lantana camara*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Psidium cattleianum*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Epipremnum pinnatum*, *Rhynchelytrum repens*, *Ricinus communis*, *Urena lobata*, and *Wedelia trilobata*.

Torchwood Hammock Preserve

Location: Monroe County Keys.
Manager: The Nature Conservancy.
Size: 243 acres (Jue et al., 2001).

Existing plant data: Weiner (1980, as amended), Kruer (1992), and Hilsenbeck et al. (1994) have prepared preliminary lists of vascular plants. G.N. Avery made field observations. R.W. Long et al., T.A. Williams, and L.C. Anderson have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants present at the site: Semaphore pricklypear (*Opuntia corallicola*).

Comments: The Nature Conservancy has an existing, intensive program to monitor *Opuntia corallicola* and control the larvae of the exotic moth *Cactoblastis cactorum*. *O. corallicola* is also being augmented on the site.

Preliminary recommendations:

- Continue mapping and monitoring of *Opuntia corallicola*.
- Control controlling *Cactoblastis cactorum* on *Opuntia corallicola*.
- Continue augmentation of *Opuntia corallicola*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Bouyeria succulenta</i>		E	
<i>Byrsonima lucida</i>		T	S
<i>Calyptanthes pallens</i>		T	

<i>Chamaesyce porteriana</i>	E	S2
<i>Coccothrinax argentata</i>	T	S3
<i>Crossopetalum rhacoma</i>	T	S3
<i>Dodonaea elaeagnoides</i>	E	S1
<i>Drypetes diversifolia</i>	E	S2
<i>Erithalis fruticosa</i>	T	
<i>Gossypium hirsutum</i>	E	S3
<i>Gyminda latifolia</i>	E	S2
<i>Hippomane mancinella</i>	E	S2
<i>Jacquinia keyensis</i>	T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>	T	S3
<i>Maytenus phyllanthoides</i>	T	
<i>Opuntia corallicola</i>	E	S1
<i>Opuntia stricta</i>		
<i>Pithecellobium keyense</i>	T	
<i>Psidium longipes</i>	T	S2
<i>Reynosia septentrionalis</i>	T	
<i>Savia bahamensis</i>	E	S2
<i>Senna mexicana</i> var. <i>chapmanii</i>	T	
<i>Thrinax morrisii</i>	E	S3
<i>Thrinax radiata</i>	E	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E	
<i>Tillandsia flexuosa</i>	T	S3
<i>Tillandsia utriculata</i>	E	

FLEPPC Category I Exotics: *Casuarina equisetifolia*, *Schinus terebinthifolius*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Casuarina cunninghamiana* and *Leucaena leucocephala*.

Tradewinds Regional Park

Location: Broward County.

Manager: Broward County.

Size: 600 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1995g) plant list. Broward County Parks & University of Florida (1998m) prepared a preliminary list of vascular plants. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Casuarina glauca*, *Eugenia uniflora*, *Ficus microcarpa*, *Melaleuca quinquenervia*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Leucaena leucocephala*, *Phoenix reclinata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, *Syzygium jambos*, *Urena lobata*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Trail Glades Range

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 675 acres (Jue et al., 2001).

Existing plant data: Woodmansee has made field observations and collected herbarium specimens. The IRC Website provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Ardisia elliptica*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Melaleuca quinquenervia*, *Nephrolepis multiflora*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Phoenix reclinata*, *Pteris vittata*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Solanum diphyllum*, and *Wedelia trilobata*.

Treetops Regional Park

Location: Broward County.
Manager: Broward County.
Size: 250 acres (Jue et al., 2001).

Existing plant data: Howell (1995) prepared a preliminary list of vascular plants. A. Buckley & T. Hendrickson and P.L. Howell have collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor all state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Encyclia tampensis</i>		C	

<i>Osmunda regalis</i> var. <i>spectabilis</i>	C
<i>Tillandsia balbisi</i>	T
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	E
<i>Tillandsia utriculata</i>	E
<i>Zamia integrifolia</i>	C

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Asparagus densiflorus*, *Bauhinia variegata*, *Bischofia javanica*, *Calophyllum inophyllum*, *Cestrum diurnum*, *Colocasia esculenta*, *Dioscorea bulbifera*, *Eichhornia crassipes*, *Eugenia uniflora*, *Hydrilla verticillata*, *Ipomoea aquatica*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Panicum repens*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Solanum viarum*, *Syngonium podophyllum*, *Thespesia populnea*, *Tradescantia spathacea*, and *Urochloa mutica*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Antigonon leptopus*, *Casuarina cunninghamiana*, *Epipremnum pinnatum*, *Hibiscus tiliaceus*, *Melinis minutiflora*, *Oeceoclades maculata*, *Pteris vittata*, *Ricinus communis*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Trinity Pineland

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 10 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1986a) plant list. Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

- Preliminary recommendations:**
- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Angadenia berteroi</i>		T	
<i>Chamaesyce deltoidea</i> subsp. <i>deltoidea</i> E		E	S1
<i>Chamaesyce pergamena</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Jacquemontia curtisii</i>		T	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Scutellaria havanensis</i>		E	S2
<i>Smilax havanensis</i>		T	
<i>Spermacoce terminalis</i>		T	
<i>Vernonia blodgettii</i>			S3
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Albizia lebbek*, *Casuarina equisetifolia*, *Eugenia uniflora*, *Jasminum dichotomum*, *Lantana camara*, *Neyraudia reynaudiana*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Agave sisalana*, *Melinis minutiflora*, *Pteris vittata*, *Rhynchelytrum repens*, and *Urena lobata*.

Tropical Park

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 275 acres; contains 5 acres of pine rockland (Jue et al., 2001).

Existing plant data: Bradley & Woodmansee have made field observations. B. Tan & N. Raymond, and Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Crenulate leadplant (*Amorpha herbacea* var. *crenulata*).

Comments: Fairchild Tropical Garden mapped and recorded other data on crenulate leadplant at this site in 2000 (Fisher, 2000).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Continue mapping *Amorpha herbacea* var. *crenulata* at least every three years.
- Monitor *Amorpha herbacea* var. *crenulata* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Amorpha herbacea</i> var. <i>crenulata</i>	E	E	S1
<i>Angadenia berteroi</i>		T	
<i>Chaptalia albicans</i>		T	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Galactia pinetorum</i>			S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchospora floridensis</i>			S2
<i>Tragia saxicola</i>		T	S2
<i>Tripsacum floridanum</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Bischofia javanica*, *Casuarina equisetifolia*, *Lantana camara*, *Neyraudia reynaudiana*, *Pennisetum purpureum*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, and *Syngonium podophyllum*.

FLEPPC Category II Exotics: *Agave sisalana*, *Dalbergia sissoo*, *Melinis minutiflora*, *Rhynchelytrum repens*, *Ricinus communis*, *Urena lobata*, and *Wedelia trilobata*.

Twin Rivers

Location: Martin County.

Manager: Martin County.

Size: 24 acres (Jue et al., 2001).

Existing plant data: Woodmansee, S. Vardaman, and C. McCartney have made field observations. Woodmansee has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Giant ironweed (*Vernonia gigantea*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Map *Vernonia gigantea* at least every three years.
- Monitor *Vernonia gigantea* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Dioscorea alata*, *Lantana camara*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, and *Thespesia populnea*.

FLEPPC Category II Exotics: *Callisia fragrans*, *Oeceoclades maculata*, *Rhynchelytrum repens*, *Sansevieria hyacinthoides*, *Urena lobata*, and *Wedelia trilobata*.

Vanderbilt Beach County Park

Location: Collier County.

Manager: Collier County.

Size: 5 acres (Jue et al., 2001).

Existing plant data: Johnson & Muller (1993b) produced an abbreviated plant list.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Conduct floristic inventory and prepare preliminary list of vascular plants.

Additional data:

Listed Plants:

Opuntia stricta

Scaevola plumieri

US

T

FL

T

FNAI

FLEPPC Category I Exotics: *Scaevola sericea* and *Schinus terebinthifolius*.

Virginia Key and Marine Stadium

Location: Miami-Dade County.

Manager: City of Miami.

Size: 496 acres (Jue et al., 2001).

Comments: Much of this site is highly disturbed uplands created by dredge and fill activities. However significant natural areas are found on this site including mangrove swamps and coastal uplands. The City of Miami has initiated a maritime hammock restoration project on the Virginia Key Hammock portion of the site, which includes the control of exotic pest plants and the out-planting of native species.

Existing plant data: G.N. Avery, Gann, and Bradley have made field observations. Gann & Bradley have collected herbarium specimens. The IRC Website (2001) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Florida shrubverbena (*Lantana depressa* var. *floridana*) and Biscayne pricklyash (*Zanthoxylum coriaceum*).

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.
- Voucher *Lantana depressa* var. *floridana* and *Zanthoxylum coriaceum*.
- Map *Lantana depressa* var. *floridana* and *Zanthoxylum coriaceum* at least every three years.
- Monitor *Lantana depressa* var. *floridana* and *Zanthoxylum coriaceum* at least every year.
- Extirpate *Lantana camara* and destroy hybrids with *Lantana depressa* var. *floridana*.
- Consider augmentation of *Zanthoxylum coriaceum*.
- Encourage the continuation of the maritime hammock restoration initiated by the City of Miami.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Lantana depressa</i> var. <i>floridana</i>			S2
<i>Okenia hypogaea</i>		E	S2
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Scaevola plumieri</i>		T	
<i>Smilax havanensis</i>		T	
<i>Zamia integrifolia</i>		C	
<i>Zanthoxylum coriaceum</i>		E	S1

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Casuarina equisetifolia*, *Colubrina asiatica*,

Neyraudia reynaudiana, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Passiflora foetida*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, and *Wedelia trilobata*.

Vizcaya Museum and Gardens

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 22.62; includes 16 acres of natural area (Jue et al., 2001).

Comments: This site contains one of the remnant fragments of historical Brickell Hammock, once the largest and most diverse rockland hammock on the South Florida mainland.

Existing plant data: Hammer (1984b) and Bradley et al. (1996) have prepared preliminary lists of vascular plants. G.N. Avery made field observations. C. Lippincott & R. Tate vouchered *Caesalpinia major*.

Critically imperiled plants present at the site: Yellow nicker (*Caesalpinia major*) and bitterbush (*Picramnia pentandra*).

Extirpated plants collected in the vicinity of site: Balsam torchwood (*Amyris balsamifera*), hammock groundsel (*Baccharis dioica*), and spoonleaf peperomia (*Peperomia magnoliifolia*).

Historical plants collected in the vicinity of the site: Clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*) and Mrs. Lott's vanilla (*Vanilla dilloniana*).

Critically imperiled plants collected in the vicinity of the site: Black calabash (*Amphitecna latifolia*), Marsh's-dutchman's-pipe (*Aristolochia pentandra*), modest spleenwort (*Asplenium verecundum*), Biscayne spleenwort (*Asplenium xibiscaynianum*), Gulf licaria (*Licaria triandra*), tall redtop (*Tridens flavus* var. *flavus*), and young palm orchid (*Tropidia polystachya*).

Preliminary recommendations:

- Map *Caesalpinia major* and *Picramnia pentandra* at least every three years.
- Ensure that coordinates of *Caesalpinia major* are included in park planning documents.

- Monitor *Caesalpinia major* and *Picramnia pentandra* at least every year.
- Consider augmentation of *Caesalpinia major*.
- Consider introductions of *Amphitecna latifolia*, *Amyris balsamifera*, *Aristolochia pentandra*, *Baccharis dioica*, *Licaria triandra*, *Peperomia magnoliifolia*, *Tillandsia fasciculata* var. *clavispica*, *Tridens flavus* var. *flavus*, *Tropidia polystachya*, and *Vanilla dilloniana*.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Adiantum tenerum</i>		E	S3
<i>Caesalpinia major</i>		E	
<i>Calyptanthes pallens</i>		T	
<i>Chrysophyllum oliviforme</i>		T	
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Eugenia confusa</i>		E	S2S3
<i>Picramnia pentandra</i>		E	S1
<i>Pithecellobium keyense</i>		T	
<i>Polystachya concreta</i>		E	
<i>Prunus myrtifolia</i>		T	S2
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Albizia lebbbeck*, *Asparagus densiflorus*, *Macfadyena unguis-cati*, *Manilkara zapota*, *Neyraudia reynaudiana*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Syngonium podophyllum*, *Syzygium cumini*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Adenanthera pavonina*, *Epipremnum pinnatum*, *Ficus altissima*, *Hibiscus tiliaceus*, *Murraya paniculata*, *Oeceoclades maculata*, *Phoenix reclinata*, *Pteris vittata*, *Ptychosperma elegans*, and *Terminalia catappa*.

**Wahoo Hammocks,
Florida Keys Wildlife and Environmental Area**

Location: Monroe County Keys.

Manager: Florida Fish and Wildlife Commission.

Size: 12.27 acres.

Comments: Included in Florida Keys Wildlife and Environmental Area by Jue et al. (2001).

Existing plant data: Weiner (1980) prepared a preliminary list of vascular plants. Bradley et al. (2000b) prepared a preliminary list of vascular plants. Bradley & Woodmansee have made field observations.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI S
<i>Chamaesyce porteriana</i>		E	S2
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum rhacoma</i>		T	S3
<i>Erithalis fruticosa</i>		T	
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Senna mexicana</i> var. <i>chapmanii</i>		T	
<i>Solanum verbascifolium</i>		T	
<i>Thrinax morrisii</i>		E	S3
<i>Thrinax radiata</i>		E	S2

FLEPPC Category I Exotics: *Manilkara zapota*.

FLEPPC Category II Exotics: *Oeceoclades maculata*.

West Biscayne Pineland

Location: Miami-Dade County.

Manager: Miami-Dade County.

Size: 15.1 acres (Jue et al., 2001).

Existing plant data: Bradley has made field observations and collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	State	FNAI
<i>Angadenia berteroi</i>		T	
<i>Brickellia mosieri</i>		E	S1
<i>Byrsonima lucida</i>		T	S3
<i>Chaptalia albicans</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Cynanchum blodgettii</i>		T	
<i>Jacquemontia curtisii</i>		T	S2
<i>Koanophyllon villosum</i>		E	S2
<i>Lantana depressa</i> var. <i>depressa</i>		E	S3
<i>Melanthera parvifolia</i>		T	
<i>Phyllanthus pentaphyllus</i> var. <i>floridanus</i>			S2
<i>Poinsettia pinetorum</i>		E	S2
<i>Pteris bahamensis</i>		T	S3
<i>Rhynchosia parvifolia</i>		T	
<i>Rhynchospora floridensis</i>			S2
<i>Sachsia polycephala</i>		T	S2
<i>Scutellaria havanensis</i>		E	S2
<i>Tetrazygia bicolor</i>		T	
<i>Trema lamarckianum</i>		E	S2
<i>Tripsacum floridanum</i>		T	S2
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia lebeck*, *Bauhinia variegata*, *Casuarina glauca*, *Jasminum dichotomum*, *Lantana camara*, *Neyraudia*

reynaudiana, *Psidium guajava*, *Schinus terebinthifolius*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Melinis minutiflora*, *Oeceoclades maculata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

West Lake Park/Anne Kolb Nature Center

Location: Broward County.

Manager: Broward County.

Size: 1,533.8 acres (Jue et al., 2001).

Comments: Includes Dania Salt Marsh and Sheridan Street Natural Area of Jue et al. (2001).

Existing plant data: Broward County Parks (1996) prepared a preliminary list of vascular plants, which was revised by Broward County Parks & University of Florida (1998j). P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations: None.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Chrysophyllum oliviforme</i> (C)		T	
<i>Opuntia stricta</i>		T	
<i>Zamia integrifolia</i> (C)		C	

FLEPPC Category I Exotics: *Acacia auriculiformis*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Lantana camara*, *Melaleuca quinquenervia*, *Panicum repens*, *Psidium guajava*, *Schefflera actinophylla*, and *Schinus terebinthifolius*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Phoenix reclinata*, *Pteris vittata*, *Ricinus communis*, and *Wedelia trilobata*.

Whispering Pines Hammock Preserve

Location: Miami-Dade County.
Manager: Miami-Dade County.
Size: 5.4 acres (Jue et al., 2001).

Existing plant data: There is an anonymous (1981b) plant list. C.E. Nauman (1987) reported observations of *Adiantum caudatum*. Bradley collected *Tectaria heracleifolia*. The IRC Website (Gann et al., 2001b) provides a preliminary list of vascular plants, but additional inventory work is needed.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Complete floristic inventory and amend preliminary list of vascular plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Calyptanthes pallens</i>		T	
<i>Coccothrinax argentata</i>		T	S3
<i>Ilex krugiana</i>		T	S3
<i>Pteris bahamensis</i>		T	S3
<i>Tectaria heracleifolia</i>		T	
<i>Tetrazygia bicolor</i>		T	
<i>Zamia integrifolia</i>		C	

FLEPPC Category I Exotics: *Ardisia elliptica*, *Bischofia javanica*, *Cestrum diurnum*, *Lantana camara*, *Neyraudia reynaudiana*, and *Schefflera actinophylla*.

FLEPPC Category II Exotics: *Ptychosperma elegans*, *Ricinus communis*, *Wedelia trilobata*, and *Xanthosoma sagittifolium*.

Windley Key Fossil Reef Geological State Park

Location: Monroe County Keys.

Manager: Florida Department of Environmental Protection, Division of Recreation and Parks.

Size: 31.88 acres (Jue et al., 2001).

Existing plant data: Kruer (1992) prepared a preliminary list of vascular plants. Gann, Bradley, and J.A. Duquesnel have made field observations. Bradley has collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an updated list of vascular plants, but additional inventory work is needed.

Critically imperiled plants present at the site: Yucatan flymallow (*Cienfuegosia yucatanensis*) and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*).

Critically imperiled plants collected in the vicinity of the site: Red stopper (*Eugenia rhombea*) and Keys tree cactus (*Pilosocereus robinii*).

Comments: The populations of *Cienfuegosia yucatanensis* and *Indigofera mucronata* var. *keyensis* are found on an extremely small coastal rock barren and some research would be valuable to determine management options for this unique and critically important site. Red stopper (*Eugenia rhombea*) and lignumvitae (*Guajacum sanctum*), both critically imperiled in South Florida, are cultivated at the site within their historical ranges.

Preliminary recommendations:

- Complete floristic inventory and amend list of vascular plants.
- Voucher *Cienfuegosia yucatanensis*.
- Map *Cienfuegosia yucatanensis* and *Indigofera mucronata* var. *keyensis* at least every three years.
- Monitor *Cienfuegosia yucatanensis* and *Indigofera mucronata* var. *keyensis* at least every year.
- Consider formalizing introduction of *Eugenia rhombea* and *Guajacum sanctum*.
- Consider introduction of *Pilosocereus robinii*.
- Conduct research to determine best management options at the coastal rock barren at the site.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Acanthocereus tetragonus</i>		T	
<i>Acrostichum aureum</i>		T	S3
<i>Argythamnia blodgettii</i>		E	S2
<i>Bouyeria succulenta</i>		E	
<i>Chamaesyce porteriana</i>		E	S2
<i>Cienfuegosia yucatanensis</i>		E	S1
<i>Cordia globosa</i>		E	
<i>Crossopetalum ilicifolium</i>		T	S2
<i>Drypetes diversifolia</i>		E	S2
<i>Drypetes lateriflora</i>		T	
<i>Encyclia tampensis</i>		C	
<i>Erithalis fruticosa</i>		T	
<i>Eugenia rhombea</i> (C)		E	S1
<i>Evolvulus convolvuloides</i>		E	
<i>Exostema caribaeum</i>		E	S2
<i>Harrisia simpsonii</i>		E	S2
<i>Hibiscus poeppigii</i>		E	
<i>Hypelate trifoliata</i>		E	S1
<i>Indigofera mucronata</i> var. <i>keyensis</i>		E	S1
<i>Jacquemontia pentanthos</i>		E	S2
<i>Jacquinia keyensis</i>		T	S3
<i>Manilkara jaimiqui</i> subsp. <i>emarginata</i>		T	S3
<i>Maytenus phyllanthoides</i>		T	
<i>Opuntia stricta</i>		T	
<i>Paspalidium chapmanii</i>		E	
<i>Pithecellobium keyense</i>		T	
<i>Reynosia septentrionalis</i>		T	
<i>Schaefferia frutescens</i>		E	S2
<i>Solanum verbascifolium</i>		T	
<i>Swietenia mahagoni</i>		T	S3
<i>Thrinax radiata</i>		E	S2
<i>Tillandsia flexuosa</i>		T	S3

FLEPPC Category I Exotics: *Asparagus densiflorus*, *Casuarina equisetifolia*, *Lantana camara*, *Manilkara zapota*, *Scaevola sericea*, *Schinus terebinthifolius*, *Thespesia populnea*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Agave sisalana*, *Cyperus involucratus*, *Leucaena leucocephala*, *Oeceoclades maculata*, *Rhynchelytrum repens*, and *Sansevieria hyacinthoides*.

Woodmont Natural Area

Location: Broward County.

Manager: Broward County.

Size: 21.6 acres (Jue et al., 2001).

Existing plant data: Broward County Parks & University of Florida (1996b, 1998n) prepared preliminary lists of vascular plants. P.L. Howell has collected herbarium specimens.

Critically imperiled plants known at the site: None.

Preliminary recommendations:

- Map and monitor state-listed endangered plants.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Encyclia tampensis</i>		C	
<i>Nephrolepis biserrata</i>		T	
<i>Osmunda regalis</i> var. <i>spectabilis</i>		C	
<i>Tillandsia balbisia</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia utriculata</i>		E	

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Albizia julibrissin*, *Albizia lebeck*, *Bauhinia variegata*, *Bischofia javanica*, *Casuarina equisetifolia*, *Cestrum diurnum*, *Dioscorea bulbifera*, *Eugenia uniflora*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Neyraudia reynaudiana*, *Panicum repens*, *Psidium guajava*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syngonium podophyllum*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Hibiscus tiliaceus*, *Leucaena leucocephala*, *Pteris vittata*, *Ricinus communis*, *Urena lobata*, and *Wedelia trilobata*.

Yamato Scrub Natural Area

Location: Palm Beach County.

Manager: Palm Beach County.

Size: 216.7 acres (Jue et al., 2001).

Existing plant data: Farnsworth (1998) prepared a preliminary list of vascular plants. Farnsworth and the authors have made field observations. Bradley & Woodmansee have collected herbarium specimens. The IRC Website (Gann et al., 2001b) provides an amended list of vascular plants.

Critically imperiled plants protected only at Yamato Scrub Natural Area: Cut-throat grass (*Panicum abscissum*).

Other critically imperiled plants present at the site: Tall dodder (*Cuscuta exaltata*).

Preliminary recommendations:

- Voucher *Panicum abscissum*.
- Map *Cuscuta exaltata* whenever plants are present.
- Map *Panicum abscissum* at least every three years.
- Monitor *Cuscuta exaltata* stations on a quarterly basis.
- Monitor *Panicum abscissum* at least every year.

Additional data:

Listed Plants:	US	FL	FNAI
<i>Asclepias curtissii</i>		E	S3
<i>Chamaesyce cumulicola</i>		E	S2
<i>Conradina grandiflora</i>		T	S3
<i>Lechea cernua</i>		T	S3
<i>Okenia hypogaea</i>		E	S2
<i>Panicum abscissum</i>		E	S3
<i>Tillandsia balbisiana</i>		T	
<i>Tillandsia fasciculata</i> var. <i>densispica</i>		E	
<i>Tillandsia flexuosa</i>		T	S3

Tillandsia utriculata
Tillandsia variabilis

E
T

FLEPPC Category I Exotics: *Abrus precatorius*, *Acacia auriculiformis*, *Ardisia elliptica*, *Asparagus densiflorus*, *Casuarina equisetifolia*, *Cupaniopsis anacardioides*, *Eugenia uniflora*, *Ficus microcarpa*, *Hydrilla verticillata*, *Lantana camara*, *Melaleuca quinquenervia*, *Nephrolepis cordifolia*, *Nephrolepis multiflora*, *Panicum repens*, *Pennisetum purpureum*, *Schefflera actinophylla*, *Schinus terebinthifolius*, *Senna pendula* var. *glabrata*, *Syzygium cumini*, and *Tradescantia spathacea*.

FLEPPC Category II Exotics: *Alternanthera philoxeroides*, *Leucaena leucocephala*, *Pennisetum setaceum*, *Pteris vittata*, *Rhynchelytrum repens*, *Ricinus communis*, *Sansevieria hyacinthoides*, *Tribulus cistoides*, *Urena lobata*, and *Wedelia trilobata*.

Appendix 1
Extirpated Taxa Formerly Present Within
Conservation Areas³

Taxon	Conservation Areas
<i>Acacia choriophylla</i>	Dagny Johnson Key Largo Hammocks Botanical State Park
<i>Amyris balsamifera</i>	Matheson Hammock Park*
<i>Brassia caudata</i>	Everglades National Park*
<i>Bulbophyllum pachyrachis</i>	Fakahatchee Strand Preserve State Park
<i>Chloris elata</i>	Dagny Johnson Key Largo Hammocks Botanical State Park
<i>Cissampelos pareira</i>	Matheson Hammock Park*
<i>Epidendrum blancheanum</i>	Fakahatchee Strand Preserve State Park
<i>Hypolepis repens</i>	Ramrod Hammocks
<i>Leersia monandra</i>	Everglades National Park
<i>Macradenia lutescens</i>	Everglades National Park*
<i>Nevrodium lanceolatum</i>	Biscayne National Park
<i>Oncidium carthagenense</i>	Everglades National Park
<i>Peperomia alata</i>	Fakahatchee Strand Preserve State Park
<i>Salvia micrantha</i>	Biscayne National Park Dry Tortugas National Park
<i>Spiranthes polyantha</i>	Biscayne National Park
<i>Trichomanes lineolatum</i>	Castellow Hammock Park Meissner Hammock

³ An asterisk indicates that the plant was extirpated after the site became a conservation area.

Appendix 2
Historical Taxa Formerly Present Within Conservation Areas⁴

Taxon	Conservation Areas
<i>Acacia tortuosa</i>	Everglades National Park
<i>Amaranthus floridanus</i>	Cayo Costa State Park*
<i>Asplenium platyneuron</i>	Everglades National Park*
<i>Ceratophyllum muricatum</i> subsp. <i>australe</i>	National Key Deer Refuge*
	Management Area
<i>Cuscuta umbellata</i>	Sea Oats Beach*
<i>Cyperus cuspidatus</i>	Collier-Seminole State Park State Park
<i>Echinodorus berteroi</i>	Big Cypress National Preserve*
<i>Eriochloa michauxii</i> var. <i>simpsonii</i>	Everglades National Park
<i>Govenia utriculata</i>	Everglades National Park*
<i>Harrisia fragrans</i> *	Everglades National Park
<i>Isoetes flaccida</i>	Big Cypress National Preserve,* Fakahatchee Strand Preserve State Park
<i>Lepanthopsis melanantha</i>	Fakahatchee Strand Preserve State Park*
<i>Lobelia homophylla</i>	Big Cypress National Preserve Fisheating Creek Wildlife Management Area
<i>Maxillaria parviflora</i>	Fakahatchee Strand Preserve State Park*
<i>Pelexia adnata</i>	Fuchs Hammock Preserve*
<i>Peperomia glabella</i>	Big Cypress National Preserve, Fakahatchee Strand Preserve State Park*
<i>Ponthieva brittoniae</i>	Everglades National Park*
<i>Prunus umbellata</i>	Jonathan Dickinson State Park*
<i>Spiranthes brevilabris</i>	Big Cypress National Preserve
<i>Spiranthes elata</i>	Big and Little George Hammocks
<i>Tillandsia fasciculata</i> var. <i>clavispica</i>	Everglades National Park*
<i>Vanilla dilloniana</i>	Everglades National Park

⁴ An asterisk indicates that the plant was apparently extirpated after the site became a conservation area.

Appendix 3
Critically Imperiled Taxa Not Known in Any
Conservation Area⁵

Taxon	Counties
<i>Anagallis pumila</i>	Lee
<i>Asplenium xbiscaynianum</i>	Miami-Dade
<i>Carya glabra</i>	Charlotte
<i>Cucurbita okeechobeensis</i>	Glades and Palm Beach
<i>Cuscuta americana</i>	Miami-Dade
<i>Desmodium strictum</i>	Miami-Dade
<i>Dicranopteris flexuosa</i>	Palm Beach
<i>Gymnopogon chapmanianus</i>	Charlotte
<i>Lactuca floridana</i>	Glades
<i>Nelumbo lutea</i> *	Collier, Glades, and Palm Beach
<i>Nolina atopocarpa</i>	Charlotte and Lee
<i>Orontium aquaticum</i> *	Glades
<i>Potamogeton pusillus</i>	Charlotte, Martin, and Palm Beach
<i>Rhynchospora pusilla</i> *	Collier
<i>Schizachyrium sericatum</i>	Monroe County Keys
<i>Tephrosia angustissima</i> var. <i>corallicola</i>	Miami-Dade

⁵ An asterisk indicates that surveys may locate plants in one or more conservation area.

Appendix 4
Critically Imperiled Taxa Occurring in Only
One Conservation Area⁶

Taxon	Conservation Areas
<i>Adiantum villosum</i>	Castellow Hammock Park
<i>Anagallis minima</i>	Corkscrew Regional Ecosystem Watershed
<i>Aristida floridana</i>	Little Hamaca Park
<i>Aristolochia pentandra</i>	Biscayne National Park
<i>Asimina obovata</i>	Jonathan Dickinson State Park
<i>Asplenium abscissum</i>	Fern Forest Nature Center
<i>Asplenium erosum</i>	Fakahatchee Strand Preserve State Park
<i>Bourreria radula*</i>	Little Hamaca Park
<i>Brasenia schreberi</i>	Savannas Preserve State Park
<i>Burmannia flava</i>	Big Cypress National Preserve
<i>Caesalpinia pauciflora*</i>	National Key Deer Refuge
<i>Campylocentrum pachyrrhizum</i>	Fakahatchee Strand Preserve State Park
<i>Campyloneurum angustifolium</i>	Fakahatchee Strand Preserve State Park
<i>Catopsis nutans</i>	Fakahatchee Strand Preserve State Park
<i>Cayaponia americana</i>	Castellow Hammock Park
<i>Celtis iguanaea</i>	Mound Key Archaeological State Park
<i>Cenchrus myosuroides</i>	Dry Tortugas National Park
<i>Cheilanthes microphylla</i>	Everglades National Park
<i>Chrysopsis mariana</i>	Big Cypress National Preserve
<i>Clitoria mariana</i>	Juno Dunes Natural Area
<i>Coelorachis tuberculosa</i>	Jonathan Dickinson State Park
<i>Croton humilis</i>	Big Cypress National Preserve
<i>Cyperus squarrosus*</i>	National Key Deer Refuge
<i>Dalea pinnata</i> var. <i>pinnata</i>	Jonathan Dickinson State Park
<i>Dichantherium scabriusculum</i>	Pal-Mar
<i>Digitaria pauciflora</i>	Everglades National Park
<i>Eleocharis albida</i>	Bill Baggs Cape Florida State Park

⁶ An asterisk indicates that additional plants are also known from non-conservation lands.

**Appendix 4 (cont.)
Critically Imperiled Taxa Occurring In Only
One Conservation Area**

Taxon	Conservation Areas
<i>Encyclia pygmaea</i>	Fakahatchee Strand Preserve State Park
<i>Epidendrum strobiliferum</i>	Fakahatchee Strand Preserve State Park
<i>Eragrostis tracyi</i> *	Mound Key Archaeological State Park
<i>Eupatorium compositifolium</i> *	Nixon Smiley Pineland Preserve
<i>Euphorbia inundata</i>	Fred C. Babcock-Cecil M. Webb Wildlife Management Area
<i>Evolvulus grisebachii</i> *	National Key Deer Refuge
<i>Gratiola pilosa</i>	Jonathan Dickinson State Park
<i>Gymnopogon ambiguus</i>	Larry and Penny Thompson Park
<i>Helenium flexuosum</i> *	Everglades National Park
<i>Helianthus radula</i>	Big Cypress National Preserve
<i>Hexalectris spicata</i>	J.N. "Ding" Darling National Wildlife Refuge
<i>Hibiscus coccineus</i>	Corkscrew Swamp Sanctuary
<i>Huperzia dichotoma</i>	Fakahatchee Strand Preserve State Park
<i>Ilex ambigua</i>	Jonathan Dickinson State Park
<i>Kosteletzkya depressa</i>	Everglades National Park
<i>Leptochloa uninervia</i>	Frog Pond/L-31 N Transition Lands
<i>Leptochloa virgata</i>	Fakahatchee Strand Preserve State Park
<i>Licaria triandra</i>	Simpson Park
<i>Liparis nervosa</i>	Fakahatchee Strand Preserve State Park
<i>Ludwigia palustris</i>	Jonathan Dickinson State Park
<i>Ludwigia virgata</i>	Pal-Mar
<i>Lythrum flagellare</i>	Fred C. Babcock-Cecil M. Webb Wildlife Management Area Watershed
<i>Mitchella repens</i>	Jonathan Dickinson State Park
<i>Najas wrightiana</i>	Big Cypress National Preserve
<i>Nothoscordum bivalve</i>	Six Mile Cypress Slough Preserve

**Appendix 4 (cont.)
Critically Imperiled Taxa Occurring in Only
One Conservation Area**

Taxon	Conservation Areas
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Caloosahatchee Regional Park
<i>Nymphaea mexicana</i>	Arthur R. Marshall Loxahatchee National Wildlife Refuge
<i>Oncidium ensatum</i>	Everglades National Park
<i>Oncidium undulatum</i>	Everglades National Park
<i>Ophioglossum nudicaule</i>	Royal Palm Beach Pines Natural Area
<i>Opuntia cubensis</i>	National Key Deer Refuge
<i>Panicum abscissum</i> *	Yamato Scrub Natural Area
<i>Pecluma plumula</i>	Everglades National Park
<i>Peperomia rotundifolia</i>	Big Cypress National Preserve
<i>Peperomia</i> species A	Fakahatchee Strand Preserve State Park
<i>Phanopyrum gymnocarpon</i>	Fakahatchee Strand Preserve State Park
<i>Phoebanthus grandiflorus</i>	Jonathan Dickinson State Park
<i>Phoradendron rubrum</i>	Dagny Johnson Key Largo Hammocks Botanical State Park
<i>Pilosocereus bahamensis</i>	John Pennekamp Coral Reef State Park
<i>Pleurothallis gelida</i>	Fakahatchee Strand Preserve State Park
<i>Polygonella gracilis</i>	Don Pedro Island State Park
<i>Polygonum setaceum</i>	Nicodemus Slough
<i>Pseudophoenix sargentii</i>	Biscayne National Park
<i>Quercus xroffsii</i>	County Line Scrub, Miami-Dade County)
<i>Rhipsalis baccifera</i>	Everglades National Park
<i>Rhynchospora baldwinii</i>	Pal-Mar
<i>Rhynchospora fernaldii</i>	Six Mile Cypress Slough Preserve
<i>Rorippa floridana</i>	Fakahatchee Strand Preserve State Park
<i>Schizachyrium niveum</i>	Seabranche Preserve State Park
<i>Schoenocaulon dubium</i>	Jonathan Dickinson State Park
<i>Schizaea pennula</i>	Arthur R. Marshall Loxahatchee National Wildlife Refuge

**Appendix 4 (cont.)
Critically Imperiled Taxa Occurring in Only
One Conservation Area**

Taxon	Conservation Areas
<i>Scleria ciliata</i> var. <i>pauciflora</i>	Fred C. Babcock-Cecil M. Webb Wildlife Management Area
<i>Scutellaria arenicola</i>	Collier-Seminole State Park
<i>Spiranthes costaricensis</i>	Everglades National Park
<i>Sporobolus compositus</i> var. <i>clandestinus</i> *	Everglades National Park
<i>Stylisma abdita</i>	Rookery Bay National Estuarine Research Reserve
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Hollywood North Beach Regional Park
<i>Tephrosia chrysophylla</i>	Jonathan Dickinson State Park
<i>Tephrosia hispidula</i>	Jonathan Dickinson State Park
<i>Thelypteris grandis</i>	Fakahatchee Strand Preserve State Park
<i>Thelypteris serrata</i>	Jonathan Dickinson State Park
<i>Trichomanes holopterum</i>	Big Cypress National Preserve
<i>Trichostigma octandrum</i>	Everglades and Francis S. Taylor Wildlife Management Area
<i>Tropidia polystachya</i>	Alice C. Wainwright Park
<i>Vaccinium arboreum</i>	Hickey Creek Mitigation Park Wildlife and Environmental Area
<i>Vanilla phaeantha</i>	Fakahatchee Strand Preserve State Park
<i>Xyris platylepis</i>	Jonathan Dickinson State Park

Appendix 5
Critically Imperiled Taxa Occurring in Only One
Conservation Area by Conservation Area

Conservation Area	Number of Unique Taxa
Fakahatchee Strand Preserve State Park	14
Jonathan Dickinson State Park	12
Everglades National Park	9
Big Cypress National Preserve	6
Fred C. Babcock-Cecil M. Webb Wildlife Management Area	3
National Key Deer Refuge	3
Arthur R. Marshall Loxahatchee National Wildlife Refuge	2
Biscayne National Park	2
Castellow Hammock Park	2
Corkscrew Swamp Sanctuary	2
Little Hamaca Park	2
Mound Key Archaeological State Park	2
Pal-Mar	2
Alice C. Wainwright Park	1
Bill Baggs Cape Florida State Park	1
Caloosahatchee Regional Park	1
Collier-Seminole State Park	1
Corkscrew Regional Ecosystem Watershed	1
County Line Scrub, Miami-Dade	1
Dagny Johnson Key Largo Hammocks Botanical State Park	1
Don Pedro Island State Park	1
Dry Tortugas National Park	1
Everglades and Francis S. Taylor Wildlife Management Area	1
Fern Forest Nature Center	1
Frog Pond/L-31 N Transition Lands	1
J.N. "Ding" Darling National Wildlife Refuge	1
John Pennekamp Coral Reef State Park	1
Juno Dunes Natural Area	1
Larry and Penny Thompson Park	1
Nicodemus Slough	1
Nixon Smiley Pineland Preserve	1
Royal Palm Beach Pines Natural Area	1

Appendix 5 (cont.)
Critically Imperiled Taxa Occurring in Only One
Conservation Area by Conservation Area

Conservation Area	Number of Unique Taxa
Savannas Preserve State Park	1
Seabranh Preserve State Park	1
Simpson Park	1
Six Mile Cypress Slough Preserve	1
Yamato Scrub Natural Area	1

Appendix 6
Critically Imperiled Taxa Occurring in Only One
Conservation Area by Managing Agency

<u>Managing Agency Type</u>	<u>Number of Unique Taxa</u>
State	43
Federal	24
County	11
City	4
Private	2

Appendix 7 Sites Recommended for Acquisition

Multi-County Sites

Charlotte Harbor State Buffer Preserve additions, Charlotte and Lee counties. Additional flatwoods have been identified for acquisition by the CARL program in Charlotte and Lee counties. These addition areas include the Burnt Store Road area, which is habitat for the critically imperiled Florida beargrass (*Nolina atopocarpa*).

Corkscrew Regional Ecosystem Watershed (CREW). Additional flatwoods have been identified for acquisition by the CARL program in Collier and Lee counties. These flatwoods are habitat for a number of critically imperiled plants, which are discussed in Chapter 6.

Fred C. Babcock-Cecil M. Webb Wildlife Management Area additions, Charlotte and Lee counties. Additional flatwoods have been identified for acquisition by the CARL program in Charlotte and Lee counties. These addition areas include the Burnt Store Road area, which is habitat for the critically imperiled Florida beargrass (*Nolina atopocarpa*).

Jonathan Dickinson State Park area, Martin and Palm Beach counties. Numerous critically imperiled plant species are found in and around this park, and efforts to acquire additional acreage should be encouraged.

Pal-Mar CARL Site, un-acquired portions, Martin and Palm Beach counties. Steven L. Orzell and Edwin L. Bridges made several important collections in the un-acquired portions of this site in 1991. Critically imperiled species collected include yellow screwstem (*Bartonia virginica*), bluethread (*Burmannia biflora*), Baldwin's beaksedge (*Rhynchospora baldwinii*), shortbristle beaksedge (*Rhynchospora breviseta*), Harper's beaksedge (*Rhynchospora harperi*), fewflower beaksedge (*Rhynchospora rariflora*), and southern bladderwort (*Utricularia juncea*). Acquisition of the remainder of the Pal-Mar CARL Site should continue.

Broward County

Fort Lauderdale Scrub Sites. Several scrub sites are found in and around the Fort Lauderdale Executive Airport. This area is habitat for critically imperiled species such as Dixie aster (*Aster tortifolius*) and tall jointweed (*Polygonella gracilis*), as well as the federally listed tiny polygala (*Polygala smallii*). The endemic and historical Lakela's pinweed (*Lechea lakelae*) could be present in this area as well.

Charlotte County

Charlotte County Bluestem Palmetto Site. The historical bluestem palmetto (*Sabal minor*) was collected once at this site in 1983. Gann attempted to visit this station in 2000, but it was fenced and posted. It appears that the bluestem palmetto portion of the site is still undeveloped, and it should be considered for acquisition. This site is in the Burnt Store Road area, and may be within the acquisition area of Charlotte Harbor State Buffer Preserve.

State Road 764 Chapman's Skeleton Grass Site. Located in north-central Charlotte County, this site is the only known station of Chapman's skeleton grass (*Gymnopogon chapmanianus*) in South Florida.

Collier County

Immokalee Scrubby Flatwoods Site. Robin B. Huck collected fernleaf yellow false foxglove (*Aureolaria pedicularia* var. *pectinata*) at this site in 1986. This is one of the interior scrub sites in Collier County. If the site is still undeveloped, it should be acquired.

Lakela's Pinweed Site. The historical and endemic Lakela's pinweed (*Lechea lakelae*) was collected on Marco Island several times between 1964 and 1987. Plants that may prove to be Lakela's pinweed have been observed growing in this privately owned lot on Marco Island.

Lake Trafford Flatwoods Site. Bradley collected here in 1998. Critically imperiled taxa included Dixie aster (*Aster tortifolius*) and

fairy beaksedge (*Rhynchospora pusilla*), which is known in South Florida only from this site.

Glades County

Fisheating Creek Wildlife Management Area additions. Habitat for a number of critically imperiled plants, acquisition of additional area for this new conservation area should be encouraged. See the Fisheating Creek Wildlife Management Area account in Chapter 6 for a list of species from this area.

Lee County

Pine Island Flatwoods. Although much of Pine Island has been developed, extensive pine forests remain that could be acquired. Harold N. Moldenke collected the now historical Florida milkweed (*Asclepias feayi*) there in 1930, and Olga Lakela collected the critically imperiled Chapman's skeleton grass (*Gymnopogon chapmanianus*) there in 1967. Flatwoods on Pine Island are also habitat for the critically imperiled and federally listed pretty false pawpaw (*Deeringothamnus pulchellus*).

Tamiami Village Flatwoods Site. Several critically imperiled plants have been collected in or near this site including Florida pimpernel (*Anagallis pumila*), Florida pineland spurge (*Euphorbia inundata*), Florida loosestrife (*Lythrum flagellare*), and crowpoison (*Nothoscordum bivalve*). The site is located immediately to the north of Tamiami Village in North Fort Myers. Although fire excluded and impacted by invasive species such as melaleuca (*Melaleuca quinquenervia*), this site should be considered to acquisition and restoration.

Yellow Fever Creek Site. Elliott Brown made the last known collection of Carolina scalystem (*Elytraria caroliniensis* var. *caroliniensis*) in South Florida at this station in 1985. Gann and Tiffany Troxler Gann made a brief visit of this site in 2000. It is still extant, but disturbed. Carolina scalystem could still be present. This site may be floristically interesting in that Carolina scalystem is known to grow in areas of abundant calcium, a soil type that is unusual in southwestern Florida.

Miami-Dade County

Amorpha Railroad Site. A large population of crenulate leadplant (*Amorpha herbacea* var. *crenulata*) is present at this site. Although the site has been disturbed, restoration is possible. Unfortunately, the current owner seems unwilling to sell the property and it appears that it will be destroyed.

Cocoplum Development Carter's Flax Site. This is one of the few remnants of the Coral Gables Pinelands (see Appendix 10). The critically imperiled Carter's flax (*Linum carteri* var. *carteri*) is present there. While the site has been cleared, it is maintained by mowing, which allows native pine rockland understory plants to persist on the site.

Goulds Pineland area. The Goulds Pineland area begins near the intersection of Old Cutler Road and S.W. 216 Street and extends west to US 1 and south to about southwest 248 Street. Several important conservation areas are found in this area including Andrew Dodge Memorial Pineland, Black Creek Forest, Goulds Pineland, and Institute for Regional Conservation Preserve. In addition, many small fragments occur in or around these conservation areas. These fragments contain the federally endangered Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*) and other critically imperiled plants. The acquisition of additional pine rockland fragments in this area should be encouraged.

Little Cox Hammock. This site is protected by a restrictive covenant, but would be better managed if acquired. Gann observed the critically imperiled lobed croton (*Croton lobatus*) there in 1990. It contains a small rockland hammock and adjoining pine rockland habitat – one of the few sites with both communities outside of Everglades National Park.

Natural Forest Community P-305. This pine rockland site is one of the known stations of the critically imperiled Curtiss' nutrush (*Scleria ciliata* var. *curtissii*). It has not been well inventoried, and could contain populations of other rare species.

Notre Dame Pineland. This site is located near the Homestead Air Reserve Base and is being considered for acquisition by

Miami-Dade EEL. Notre Dame Pineland contains the largest known population of the critically imperiled Coker's beach creeper (*Ernodea cokeri*), as well as a remnant population of purplehead sneezeweed (*Helenium flexuosum*).

Old Dixie Pineland. This site contains the largest known population of pineland strongback in South Florida (*Bouyeria cassinifolia*), as well as plants of the federally endangered Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*). The only known population of American dodder (*Cuscuta americana*) in South Florida is also known from the vicinity of this pineland. Unfortunately, this site lies in the path of a future transportation corridor between Cutler Ridge and Homestead and will likely be destroyed.

Ponce and Riviera Pineland. This is one of the few remnants of the Coral Gables Pinelands (see Appendix 10). The critically imperiled Carter's flax (*Linum carteri* var. *carteri*) is present there. While the site has been cleared, it is maintained by mowing, which allows native pine rockland understory plants to persist on the site.

Strawberry Fields Hammock. This hammock in the Cutler Ridge area is protected by a restrictive covenant, but would be better managed if acquired. This is one of the only stations of the brown-hair comb fern (*Ctenitis submarginalis*) in South Florida.

Monroe County

Big Pine Key Pine Rocklands. Several critically imperiled taxa have been recorded on Big Pine Key in and around the National Key Deer Refuge. These include tenlobe false foxglove (*Agalinis obtusifolia*), Carter's orchid (*Basiphylaea corallicola*), pineland strongback (*Bouyeria cassinifolia*), fewflower holdback (*Caesalpinia pauciflora*), smallflower lilythorn (*Catesbaea parviflora*), Florida Keys sandmat (*Chamaesyce deltoidea* subsp. *serpyllum*), Grisebach's dwarf morningglory (*Evolvulus grisebachii*), smooth devilsclaws (*Pisonia rotundata*), and southern lady's-tresses (*Spiranthes torta*). Efforts to acquire additional upland properties on Big Pine Key should be encouraged.

Boot Key. This is one of the stations for the critically imperiled pearlberry (*Vallesia antillana*). Big sandbur (*Cenchrus myosuroides*) has also been collected at this site.

Burnt Point Florida Keys Indigo Site. This is a privately owned site on Long Point Key immediately adjacent to Curry Hammock State Park. The endemic Florida Keys indigo (*Indigofera mucronata* var. *keyensis*) has been reported for this site (Ross & Ruiz, 1996).

Cupania Hammock. This site contains the second largest population of America toadwood (*Cupania glabra*) in South Florida.

Grassy Key Pride-of-Big-Pine Site. Located adjacent to Curry Hammock State Park, this site contains one of three known populations of pride-of-Big-Pine (*Strumpfia maritima*) in South Florida.

Long Key Layton Coastal Rock Barren. This is an extremely important site located close to Long Key State Park and adjacent to North Layton Hammock. It is one of only six coastal rock barren sites in the Florida Keys. Together with the North Layton Hammock, this site contains the largest known population of Yucatan flymallow (*Cienfuegosia yucatanensis*) in the United States. The critically imperiled jumping cactus (*Opuntia triacanthos*) is present there also.

Lower Matecumbe Key Rockland Hammocks (Weiner L5/3 & Weiner L5/4). While some rockland hammock has been preserved in the Klopp Track of Lignumvitae Key Botanical State Park, much private hammock remains to the southwest of this preserve. Critically imperiled taxa associated with these rockland hammock fragments include yellow nicker (*Caesalpinia major*), lignumvitae (*Guajacum sanctum*), and Keys tree cactus (*Pilosocereus robinii*).

No Name Key Uplands. While a portion of No Name Key is now part of National Key Deer Refuge, a significant amount of uplands on the island is unprotected. The critically imperiled smooth devilscaws (*Pisonia rotundata*) is present there. Efforts to acquire additional upland properties on No Name Key should be encouraged.

North Layton Hammock. This important hammock is located adjacent to the Long Key Layton Coastal Rock Barren and near

Long Key State Park. Several critically imperiled species have been recorded for the site, including Florida Keys thoroughwort (*Chromolaena frustrata*), Yucatan flymallow (*Cienfuegosia yucatanensis*), lignumvitae (*Guajacum sanctum*), and Keys tree cactus (*Pilosocereus robinii*). Together with the Long Key Layton Coastal Rock Barren Site, this site contains the largest known population of Yucatan flymallow in the United States.

Plantation Hammock (Weiner hammock L4/1), un-acquired portions. Part of Plantation Hammock is now protected within Lake San Pedro, Florida Keys Wildlife and Environmental Area, but there are still unprotected portions that could be acquired. The critically imperiled lignumvitae (*Guajacum sanctum*), has been observed in this hammock.

Pumpkin Key. This privately owned island is located in the vicinity of Biscayne National Park, Crocodile Lake National Wildlife Refuge, and John Pennekamp Coral Reef State Park. Widespread polypody (*Pecluma dispersa*), which appears to be extirpated in South Florida, was present on the island until at least 1980. Critically imperiled species collected on Pumpkin Key include Marsh's Dutchman's-pipe (*Aristolochia pentandra*) and hoopvine (*Trichostigma octandrum*).

Ramrod Key Coastal Berm Site. George N. Avery discovered the now historical porknut (*Acacia macracantha*) at this site in 1963 and the critically imperiled limestone flatsedge (*Cyperus fuliginus*) in 1965. It may also be habitat for the critically imperiled and endemic silky bluestem (*Schizachyrium sericatum*), which is known only from a roadside on Ramrod Key. Part of this site is owned by Monroe County, and part is privately owned. The privately owned portion of the site should be acquired.

Sugarloaf Key Heliotropium Site. This site is in the immediate vicinity of Sugarloaf Hammocks, Florida Keys Wildlife and Environmental Area. George N. Avery made the last known observation of Key West heliotrope (*Heliotropium fruticosum*) at this site in 1978.

Teatable Hammock (Weiner hammock L4/5). This privately owned hammock on Upper Matecumbe Key is habitat for a number of critically imperiled taxa including yellow nicker (*Caesalpinia major*), Florida Keys thoroughwort (*Chromolaena*

frustrata), red stopper (*Eugenia rhombea*), lignumvitae (*Guajacum sanctum*), and Florida Keys indigo (*Indigofera mucronata* var. *keyensis*). The critically imperiled and federally endangered Keys tree cactus (*Pilosocereus robinii*) is present at the site.

Vaca Key Red Stopper Site (Weiner hammock L7/4). This site is located just south of the Key Lime Resort on Vaca Key, and is one of the extant stations for the critically imperiled red stopper (*Eugenia rhombea*) in South Florida.

Valhalla Rock Barren. This is an extremely important site located on Crawl Key immediately adjacent to Curry Hammock State Park. It is one of only six coastal rock barren sites in the Florida Keys. Critically imperiled taxa found at this site include limestone flatsedge (*Cyperus fuliginus*), bearded flatsedge (*Cyperus squarrosus*), Florida Keys indigo (*Indigofera mucronata* var. *keyensis*), and jumping cactus (*Opuntia triacanthos*).

Appendix 8

Publicly-Owned Sites That Should Be Designated and Managed as Conservation Areas

Multi-County Sites

Lake Okeechobee: Glades, Hendry, Martin, and Palm Beach counties. An extremely important habitat for plants, Lake Okeechobee currently is not managed as a plant conservation area. The now-extirpated giant bulrush (*Scirpus californicus*) was collected there in the 1950s and the historical sago pondweed (*Potamogeton pectinatus*) was collected there in 1988. Critically imperiled plants found only in marshes or on islands in the lake include the federally listed Okeechobee gourd (*Cucurbita okeechobeensis*), woodland lettuce (*Lactuca floridana*), American lotus (*Nelumbo lutea*), and small pondweed (*Potamogeton pusillus*). Other critically imperiled plants found in the lake include yellow waterlily (*Nymphaea mexicana*) and bog smartweed (*Polygonum setaceum*). Lake Okeechobee includes Lake Okeechobee Sanctuaries, a 28,250-acre parcel owned by the State of Florida and managed by Audubon of Florida, primarily as a nesting habitat for snail kites and wading birds.

Charlotte County

Alligator Creek Pignut Hickory Site. This site is found along Alligator Creek south of a rest station at the intersection of I-75 and Charlotte County Road 768. This is the only known station for pignut hickory (*Carya glabra*) in South Florida, and one of the few stations for the critically imperiled sparkleberry (*Vaccinium arboreum*) in South Florida.

Miami-Dade County

Luis C. Martinez U.S. Army Reserve Station, Richmond Pine Rocklands. This site is located within the Richmond Pine Rocklands, and contains an important pine rockland fragment. Woodmansee inventoried this site in 2000 (Bradley et al., 2000a). Critically imperiled species recorded at the site include twospike crab grass (*Digitaria pauciflora*), Coker's beach creeper (*Ernodea cokeri*), and southern lady's-tresses (*Spiranthes torta*). It also

contains 24 state-listed species, including one federally listed plant (*Chamaesyce deltoidea* subsp. *deltoidea*). Part of the site is an active Army Reserve Station, while 144 acres are being considered for surplus. This 144-acre parcel should be transferred immediately to a conservation agency.

Lummus Park. This site is a recreational park on Miami Beach with a renourished beach and restored beach dune vegetation. This is the southernmost known station for Curtiss' hoarypea (*Tephrosia angustissima* var. *curtissii*) which apparently became reestablished in the area following beach renourishment. The native vegetation at this site should be managed and, if possible, enhanced.

Naranja School Board Pineland. This important pine rockland site contains a population of the critically imperiled Carter's orchid (*Basiphyllaea corallicola*). The federally listed Redland sandmat (*Chamaesyce deltoidea* subsp. *adhaerens*) also has been reported for the site, along with 21 state-listed species.

Navy Wells #2, Dade County School Board. This pine rockland site is located less than two miles from the Navy Wells Pineland and has been considered for acquisition by CARL and Miami-Dade Environmentally Endangered Lands Program (EEL). The critically imperiled sand ticktrefoil (*Desmodium lineatum*) and hidden dropseed (*Sporobolus compositus* var. *clandestinus*) are present there, and pineland strongback (*Bourreria cassinifolia*) has been reported for the site. It also contains 13 state-listed species.

NFC H-287. This site, which is owned by the Miami-Dade County Public Health Department, contains a population of the critically imperiled spiked hoarypea (*Tephrosia spicata*).

USDA Subtropical Horticulture Research Station. This site has several very important pine rockland fragments, but they are not protected.⁷ Critically imperiled plants include pineland strongback (*Bourreria cassinifolia*) and coral hoarypea (*Tephrosia angustissima* var. *corallicola*). In South Florida, coral hoarypea is found only at this site. While the actual pine rockland fragments at

⁷ Although this site is listed in Jue et al. (2001) as a conservation area, it has no real protection status.

this site are small, there is potential for restoring pine rocklands and reconnecting the fragments.

Monroe County

Ramrod Key Coastal Berm Site. George N. Avery discovered the now-historical porknut (*Acacia macracantha*) at this site in 1963 and the critically imperiled limestone flatsedge (*Cyperus fuliginous*) there in 1965. Part of this site is owned by Monroe County, and part is privately owned. The Monroe County portion of the site should be designated as a conservation area.

Appendix 9 Other Important Sites

Glades County

Fisheating Creek Conservation Easement. This 41,523-acre site is described in Jue et al. (2001), and includes habitat for numerous rare plants, including the critically imperiled cut-throat grass (*Panicum abscissum*). While a conservation agreement has already been developed, this site would benefit from inventory work and technical assistance.

Hendry County

Big Cypress Seminole Indian Reservation. John Kunkel Small collected in the Fort Shackleford area in 1917, as did Perley Poore Sheehan in 1919. Nigel Morris made additional collections in the Reservation in 1989. Sheehan collected the now-historical Texas lady's-tresses (*Spiranthes brevilabris*). Critically imperiled plants collected at this site include Florida loosestrife (*Lythrum flagellare*), Savannah panicum (*Phanopyrum gymnocarpon*), and Curtiss' hoarypea (*Tephrosia angustissima* var. *curtissii*). Inventory work is needed at this site.

Miami-Dade County

Boy Scout Troop 69 Site. This county-owned site is one of three known stations where the critically imperiled fragrant maidenhair (*Adiantum melanoleucum*) is located. This site offers an excellent educational opportunity.

Burger King World Headquarters Tree Preserve. This important site formerly contained a number of rare plants, including the critically imperiled pineland strongback (*Bourreria cassinifolia*) and two federally listed plants (*Chamaesyce deltoidea* subsp. *deltoidea*, *Polygala smallii*). A recent survey by the authors failed to locate pineland strongback or either federally listed species known from the site. Efforts in the late 1980s by Burger King Corporations to restore the site were abandoned in the early 1990s, and it is now dominated by exotic species. This is an extremely important site in the pinelands between Cutler and Goulds and it should be restored and managed. It is also a

potential reintroduction site for twospike crab grass (*Digitaria pauciflora*) and Carter's pinelandcress (*Warea carteri*), both of which have been extirpated from the area.

Cox Hammock (Monkey Jungle). The eastern part of Cox Hammock was developed as the Monkey Jungle, a tourist attraction and zoological garden. Much rockland hammock remains, although in a highly disturbed state. Critically imperiled taxa collected or observed at Cox Hammock include modest spleenwort (*Asplenium verecundum*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), and goatsfoot (*Passiflora sexflora*).

Federal Correctional Institution, Richmond Pine Rocklands. This site contains one of two known populations of the critically imperiled yankeeweed (*Eupatorium compositifolium*) in South Florida. It also contains 19 state-listed species, including one federally listed plant (*Chamaesyce deltoidea* subsp. *deltoidea*). Bradley and Woodmansee inventoried this site in 2000 (Bradley et al., 2000a).

Florida Power and Light Mitigation Bank. Spiny black olive (*Bucida spinosa*), which is now historical in South Florida, was formerly known to be present on the site, but the last known plants were destroyed by canal construction. Surveys may reveal that plants are present or, if not, then habitat may exist for reintroduction.

Former U.S. Naval Observatory Site, Richmond Pine Rocklands. This site is now owned by the University of Miami. Several critically imperiled species have been recorded there, including sand ticktrefoil (*Desmodium lineatum*), bearded skeleton grass (*Gymnopogon ambiguus*), and viperina (*Zornia bracteata*). It also contains 22 state-listed species, including one federally listed plant (*Chamaesyce deltoidea* subsp. *deltoidea*). This site was inventoried by Bradley & Gann (1996) and by Bradley & Woodmansee in 2000 (Bradley et al., 2000a).

Girl Scout Camp Choe. This site is located immediately to the east of the Richmond Pine Rocklands across the Florida's Turnpike. Several critically imperiled species have been recorded for this site including sand ticktrefoil (*Desmodium lineatum*) and bearded skeleton grass (*Gymnopogon ambiguus*), as well as 18 species of state-listed plants.

Ludlam Florida Power and Light Easement. This pine rockland site is located immediately to the south of Ludlam Pineland Tract and about a half mile north of Deering Estate at Cutler. A relatively undisturbed pine rockland understory has been retained under high voltage power lines. The critically imperiled pinebarren ticktrefoil (*Desmodium strictum*) is present there, the only known station for this species in South Florida. Florida prairieclover (*Dalea carthagenensis* var. *floridana*) has also been observed in the vicinity of this site. It also contains the federally listed tiny polygala (*Polygala smallii*) and wedge sandmat (*Chamaesyce deltoidea* subsp. *deltoidea*).

Montgomery Botanical Center. This site, which contains several pine rockland fragments, contains a population of the critically imperiled spiked hoarypea (*Tephrosia spicata*).

U.S. Air Force Property, Richmond Pine Rocklands. This site is one of the few known stations of the critically imperiled viperina (*Zornia bracteata*), and contains 14 state-listed species, including two federally listed plants (*Chamaesyce deltoidea* subsp. *deltoidea*, *Polygala smallii*). Bradley and Woodmansee inventoried this site in 2000 (Bradley et al., 2000a).

U.S. Coast Guard Communication Station, Richmond Pine Rocklands. The critically imperiled bearded skeleton grass (*Gymnopogon ambiguus*) is present at this site, along with 22 state-listed species, including two federally listed plants (*Chamaesyce deltoidea* subsp. *deltoidea*, *Polygala smallii*). Bradley and Woodmansee inventoried the site in 2000 (Bradley et al., 2000a). It is considered a conservation area by Jue et al. (2001), but in our opinion this is not an accurate assessment of its status.

University of Miami South Campus, Richmond Pine Rocklands. This site is one of the few known stations of the critically imperiled viperina (*Zornia bracteata*). In addition, it contains 19 state-listed species, including two federally listed plants (*Chamaesyce deltoidea* subsp. *deltoidea*, *Polygala smallii*). Bradley, Woodmansee, and David W. Hall inventoried the site in 2000 (Bradley et al., 2000a).

Warwick Hammock. This rockland hammock has mostly been destroyed for residential houses. However, the only known station for the critically imperiled Biscayne spleenwort (*Asplenium xbiscaynianum*) in South Florida is located in a private yard in this development. The critically imperiled modest spleenwort (*Asplenium verecundum*) also is present, and numerous other critically imperiled plants have been collected there over the years.

Monroe County

Big Munson Island. This property is located in the lower Florida Keys and is owned by the Boy Scouts of America. The critically imperiled Florida Keys thoroughwort (*Chromolaena frustrata*), lignumvitae (*Guajacum sanctum*) and jumping cactus (*Opuntia triacanthos*) are present at this site. Bradley conducted a brief inventory of this site in 2001.

Crane Point Hammock Museum Site. This site is located adjacent to Crane Point Museum, and is the likely location where the historical porknut (*Acacia macracantha*) was collected and observed on Vaca Key.

Key West Golf Course, Stock Island. This is one of three known stations for the critically imperiled yellowwood (*Zanthoxylum flavum*). Opportunities for rockland hammock restoration and yellowwood augmentation should be explored.

Key West Naval Air Station. This site is included in Jue et al. (2001). Inventory work is needed, as it could contain critically imperiled and state-listed species.

Krome Hammock. This hammock contains populations of the critically imperiled lobed croton (*Croton lobatus*) and goatsfoot (*Passiflora sexflora*). Although fragmented by residential development, individual landowners can successfully manage the hammock and the rare species it contains.

Palm Beach County

Drooping Forked Fern Site. This site is the only known locality for drooping forked fern (*Dicranopteris flexuosa*) in South Florida. It is managed by the North County Water Control District

Appendix 10

Key Ecological Restoration Areas

Essentially, every ecosystem in South Florida has been degraded to one degree or another. Actions to restore these degraded ecosystems, including in South Florida's conservation areas, are discussed in Chapter 3 and elsewhere in this manual. This appendix provides descriptions of a number of areas in South Florida that would provide key habitats for rare plants in South Florida if restored.

Multi-County Sites

Caloosahatchee River Floodplain. A very important region for plant diversity, the Caloosahatchee River is basically managed as a giant canal. Rare plants collected or observed in floodplain forest along the Caloosahatchee River include southern grape fern (*Botrychium biternatum*), matted waterstarwort (*Callitriche peploides*), trumpet creeper (*Campsis radicans*), scaldweed (*Cuscuta gronovii*), coastalplain flatsedge (*Cyperus cuspidatus*), Tampa mock vervain (*Glandularia tampensis*), sweetgum (*Liquidambar styraciflua*), sago pondweed (*Potamogeton pectinatus*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), American elm (*Ulmus americana*), and netted chain fern (*Woodwardia areolata*). Most of these are temperate species at or near the southern limit of their natural ranges.

A review of the management of the Caloosahatchee River to determine if there are opportunities for the restoration of important wetlands, including hydric hammocks and floodplain forests, would be extremely worthwhile.

Collier County

Chokoloskee/Everglades City Shell Mound Hammocks. Shell mounds deposited by Caloosa Indians are and were extremely important habitats for rare plants in southwestern Florida. While many shell mounds are now protected in Collier County, important shell mounds in or near the town of Chokoloskee have been decimated by development. These shell mounds were known to contain numerous rare species, including the extirpated Yucatan

sage (*Salvia micrantha*), the historical poponax (*Acacia tortuosa*), and the critically imperiled hoopvine (*Trichostigma octandrum*).

While the original location of many of these shell mounds now contains houses, land is available to restore these hammocks on fill areas between Chokoloskee and Everglades City.

Marco Island Scrub and Flatwoods. Coastal uplands on Marco Island were important habitat for a number of rare species, including the historical lusterspike indigobush (*Amorpha herbacea* var. *herbacea*), velvetleaf milkweed (*Asclepias tomentosa*), Lakela's pinweed (*Lechea lakelae*), and the critically imperiled Atlantic pigeonwings (*Clitoria mariana*) and Chapman's skeleton grass (*Gymnopogon chapmanianus*).

Although all of the scrub and scrubby flatwoods on the island have been cleared, remnant native vegetation can be found in undeveloped lots. These important uplands could be restored to provide both habitat for rare species and green space in a rapidly growing area of South Florida.

Miami-Dade County

Brickell Hammock. The largest and most diverse rockland hammock on the South Florida mainland was mostly destroyed by the end of the 20th century. Many plants now extirpated in South Florida were collected there, including balsam torchwood (*Amyris balsamifera*), hammock groundsel (*Baccharis dioica*), spoonleaf peperomia (*Peperomia magnoliifolia*), and Yucatan sage (*Salvia micrantha*). Historical species collected in Brickell Hammock include Clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*) and Mrs. Lott's vanilla (*Vanilla dilloniana*). Critically imperiled taxa collected in Brickell Hammock include black calabash (*Amphitecna latifolia*), Marsh's Dutchman's-pipe (*Aristolochia pentandra*), modest spleenwort (*Asplenium verecundum*), Biscayne spleenwort (*Asplenium xbiscaynianum*), yellow nicker (*Caesalpinia major*), lobed croton (*Croton lobatus*), Gulf licaria (*Licaria triandra*), and tall redtop (*Tridens flavus* var. *flavus*). With the exception of black calabash, yellow nicker, and Gulf licaria, all of these species are now extirpated from the Brickell Hammock area.

At present about 50 acres of the historical Brickell Hammock is protected at Alice C. Wainwright Park, Simpson Park, and Vizcaya Museum and Gardens. Rockland hammocks are one of the plant communities that can be restored in a relatively dense urban or suburban area. The restoration of additional areas of historical Brickell Hammock would provide habitat for numerous rare plants, as well as important environmental services, such as carbon sequestration and the filtration of urban runoff before it enters Biscayne Bay.

Coral Gables Pinelands. Pine rocklands once stretched from the Miami River south through Coral Gables and Coconut Grove. These pine rocklands were extremely important, due to the presence of pockets of silica-based sand.

Many species typical of sandhills to the north were found in this area. Important species collected in this area include woolly pyramidflower (*Melochia tomentosa*), thicket bean (*Phaseolus polystachios* var. *sinuatus*), Yucatan sage (*Salvia micrantha*), and Ames' lady's-tresses (*Spiranthes amesiana*), all of which are now extirpated in South Florida. Historical taxa collected in this area include Carter's pinelandcress (*Warea carteri*). Critically imperiled taxa collected in the area include American dodder (*Cuscuta americana*), Florida ticktrefoil (*Desmodium floridanum*), Coker's beach creeper (*Ernodea cokeri*), tall jointweed (*Polygonella gracilis*), and twistedleaf goldenrod (*Solidago tortifolia*).

The critically imperiled Carter's flax (*Linum carteri* var. *carteri*) is still present in some cleared but undeveloped lots in Coral Gables, including the Cocoplum Development Carter's Flax Site and Ponce and Riviera Pineland, which are recommended for acquisition (see Appendix 7) . The restoration of pine rocklands in these undeveloped lots would provide important habitat for rare plants species, as well as provide important green space in a congested part of Miami-Dade County.

Miami River Estuary Coastal Marshes. Although we know hardly anything about the historical coastal marshes of the Miami River estuary, we do know that beaked spikerush (*Eleocharis rostellata*) once was present there. Beaked spikerush is listed as endangered by the state of Florida and is now extirpated in South Florida. The restoration of coastal marshes along the Miami River

would provide habitat for beaked spikerush as well as numerous other native plants and animals.

Miami River Pinelands. Historically, sandy pine rocklands were present on both sides of the Miami River, including where present-day downtown Miami is now located. All of these pinelands have been destroyed by development.

Many plants that are now extirpated in South Florida were historically found in these pinelands, including largeflower milkweed (*Asclepias connivens*), tall windmill grass (*Chloris elata*), Carolina jointtail grass (*Coelorachis cylindrica*), bunch cutgrass (*Leersia monandra*), woolly pyramidflower (*Melochia tomentosa*), and thicket bean (*Phaseolus polystachios* var. *sinuatus*). Historical taxa collected in this area include Dress' goldenaster (*Chrysopsis linearifolia* subsp. *dressii*) and Carter's pinelandcress (*Warea carteri*).

Numerous critically imperiled plants were collected in the area including Seminole false foxglove (*Agalinis filifolia*), crenulate leadplant (*Amorpha herbacea* var. *crenulata*), Dixie aster (*Aster tortifolius*), Atlantic pigeonwings (*Clitoria mariana*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), shortleaf skeleton grass (*Gymnopogon ambiguus*), slender adder's-tongue (*Ophioglossum nudicaule*), racemed milkwort (*Polygala polygama*), tall jointweed (*Polygonella gracilis*), Curtiss' nutrush (*Scleria ciliata* var. *curtissii*), scurf hoarypea (*Tephrosia chrysophylla*).

The Miami River Pinelands was a major area of plant diversity in South Florida. The restoration of a few examples of these pinelands would be difficult, but worth the effort. In addition to providing habitat for numerous rare species, the restoration of these pineland could provide excellent opportunities for environmental and historical education in a part of South Florida where few people are aware of the natural heritage of the area.

Monroe County

Key West Hammocks. The island of Key West is the oldest continuously inhabited area in South Florida. It is also the most tropical city in the continental United States. A high elevation island composed of oolitic limestone, Key West was historically a

botanical treasure trove. Important upland species collected on Key West include slimbristle sandbur (*Cenchrus brownii*), bunch cutgrass (*Leersia monandra*), and love grass tridens (*Tridens eragrostoides*), all of which are now extirpated in South Florida. Historical plants collected on Key West include Florida amaranth (*Amaranthus floridanus*), Key West heliotrope (*Heliotropium fruticosum*), and clubspike cardinal airplant (*Tillandsia fasciculata* var. *clavispica*).

Numerous critically imperiled plants have been collected on Key West including Key West threeawn (*Aristida floridana*), rough strongback (*Bourreria radula*), big sandbur (*Cenchrus myosuroides*), pepperbush (*Croton humilis*), Florida flatsedge (*Cyperus floridanus*), limestone flatsedge (*Cyperus fuliginus*), bearded flatsedge (*Cyperus squarrosus*), red stopper (*Eugenia rhombea*), lignumvitae (*Guajacum sanctum*), Swartz's snoutbean (*Rhynchosia swartzii*), and yellowwood (*Zanthoxylum flavum*). Of these, only rough strongback is still found on the island in what appears to be naturally occurring population. Florida threeawn and Florida flatsedge can be found in disturbed areas, while lignumvitae and red stopped persist as remnant trees in residential yards, or are cultivated.

The restoration of high-elevation rockland hammocks on Key West would be an exceptionally valuable effort. Little Hamaca Park does provide some habitat for rockland hammock, but this is a low elevation area that is probably threatened by sea-level rise. Not only would the restoration of upland habitats on the island of Key West provide habitat for many rare plant species, but it would also provide important habitat for birds who migrate through the Florida Keys.

Palm Beach County

Belle Glade Hammocks. Before the widespread destruction of pond apple (*Annona glabra*) swamps south and east of Lake Okeechobee, hydric and mesic hammocks could be found interspersed in the wetland mosaic. This was the habitat for bipinnate cuplet fern (*Dennstaedtia bipinnata*), which is now extirpated in South Florida, and the critically imperiled brown-hair comb fern (*Ctenitis submarginalis*), which is still present in Miami-Dade County. The restoration of hammocks in the Belle Glade

area would be an important element of the effort to restore the greater Everglades ecosystem.

Palm Beach Coastal Uplands. Before the development of barrier islands in southeastern Florida, maritime hammocks and coastal strand were located behind the primary beach dune. These coastal uplands were prime real estate and, with few exceptions, have been destroyed.

Several rare plants were recorded for the island of Palm Beach and coastal uplands to the south of the Town of Palm Beach in Palm Beach County. These include Florida roseling (*Callisia cordifolia*) and Yucatan sage (*Salvia micrantha*), both of which are now extirpated in South Florida, and critically imperiled plants such as yellow nicker (*Caesalpinia major*), Florida prairieclover (*Dalea carthagenensis* var. *floridana*), beach clustervine (*Jacquemontia reclinata*), Curtiss' hoarypea (*Tephrosia angustissima* var. *curtissii*), and Biscayne pricklyash (*Zanthoxylum coriaceum*). Of these, only the endemic beach clustervine still persists in a few small areas.

Opportunities to restore coastal uplands in southeastern Palm Beach County abound, both on public and private lands. While many people are now familiar with beach dune vegetation and the benefits it has in combating coastal erosion, few are aware of coastal strand and maritime hammocks and the contribution that these plant communities make in plant diversity. The restoration of coastal uplands in central and southern Palm Beach County would be a great contribution to the effort to restore plant diversity in South Florida.

Appendix 11 Herbarium Citations

AMES	Harvard University (orchids)
ARCH	Archbold Biological Station
ARIZ	University of Arizona
DUKE	Duke University
F	Field Museum of Natural History
FAU	Florida Atlantic University
FLAS	University of Florida
FSU	Florida State University
FTG	Fairchild Tropical Garden
GH	Harvard University
ISC	Iowa State University
MO	Missouri Botanical Garden
NA	United States National Arboretum
NCU	University of North Carolina
NY	New York Botanical Garden
PH	Academy of Natural Sciences of Philadelphia
RSA	Rancho Santa Ana Botanic Garden
SEL	Marie Selby Botanical Garden
TAES	Texas A&M University
TEX	University of Texas
UC	University of California
US	Smithsonian Institution
USF	University of South Florida
VDB	Vanderbilt University

Glossary

- achene** – a one-seeded indehiscent capsule whose seed coat is free from the pericarp.
- alternate** – whereby a single leaf exists at each node.
- annual** – a plant which completes its vegetative life cycle within a year.
- anther** – the apical part of the stamen which possesses pollen.
- anthropogenic** – human caused.
- antrorse** – growing upwards at an acute angle to the surface.
- apex** – the tip.
- apiculate** – terminating in a small, narrow flexible tip, like a stiff hair.
- awn** – a narrow bristlelike appendage.
- axil** – the junction of two branches or similar organs.
- axis** – the elongate feature at which a branch or group of organs arise.
- basal** – positioned at or arising from the base.
- beak** – an appendage found terminally on fruits or achenes which is short and abrupt.
- biennial** – plants which lives vegetatively for two years.
- bract** – a modified leaf or similar structure subtending flowers and or inflorescences.
- bromeliad** – a plant which belongs to the family Bromeliaceae.
- bur** – the fruit in *Cenchrus* which possess hook or barbed spines.
- caespitose** – growing in dense clumps or tufts.
- callus (pl. calli)** – a hard and or scabrous projection or nodule.
- calyx** – a group of sepals; the outer perianth of the flower.
- canescent** – possessing short pubescence which appears gray or whitish.
- capsule** – a fruit that is typically dry, multi-chambered, and indehiscent.
- cleft** – a feature in leaves or scales where they are split halfway to the midrib or base.
- compound** – more than one organ such as leaves characterized by two or more leaflets.
- conspecific** – a term used to apply to species which were once thought to be different, are now again, considered the same.
- corolla** – the group of petals; the inner perianth of the flower.
- corymb** – a type of racemose inflorescence with a top that is flat or round, wide, and whereby the marginal (outside) flowers are the first to open.

- corymbose** – possessing features of a corymb.
- crenulate** – possessing a small rounded toothlike margin.
- culm** – a hollow or pithy stem characteristic of graminoids (members of the plant families Poaceae, Cyperaceae, and Juncaceae).
- cuneate** – shaped like a wedge or triangle.
- cyme** – a type of inflorescence appearing flat or round and wide whereby the central flowers are the first to open.
- decumbent** – reclining on the ground with the apex raised up.
- dicotyledon** – One of two major groups of fruit bearing plants possessing two cotyledons, which are the embryonic leaves on a newly germinated seed. This group of plants includes legumes, sunflowers, oaks, apples, mints, and many others.
- dioecious** – male and female reproductive organs are located on different individuals.
- disjunct** – where a plant's native range is separated geographically.
- disk flower** – the flowers in the Asteraceae which are tubular and radially symmetric.
- dispersal** – the mechanism by which plants move from place to place by seed or vegetative methods.
- dormant** – the condition of seeds which live for long periods of time in the soil or leaf litter.
- ecotone** – the band of area where two habitats converge.
- elliptic** – broadest in the middle and tapering at both ends.
- endemic** – found exclusive to the area in context. In reference to this manual, found only in South Florida.
- epiphyte** – plants which grow on other plants and are typically commensal organisms deriving no nutrients directly from their host plant.
- excurrent** – projecting from the tip, often a spine or awn at the end of a leaf or bract.
- exotic** – non native. In South Florida, plants which were anthropologically introduced after the arrival of Europeans in 1492 are considered to be exotic.
- ex situ** – literally translated: “off site.” Used in context to managing rare species, and keeping germplasm in a known, looked after establishment, usually a public garden or similar institution.
- feral animal** – domesticated animals which have become wild. Examples of feral animals are wild hogs and cats.
- filiform** – fine, threadlike.

fire suppression – the anthropogenic act of preventing and suppressing fire in natural areas, thereby changing the species composition and reducing biodiversity.

floret – a small individual flower within a cluster of flowers. A term often used for the flowers in the Poaceae and Asteraceae.

foliaceous – leaflike in appearance.

foliose – leafy.

gametophyte – the haploid gamete producing generation of the plant reproductive cycle which in ferns is characterized by a small, green leaflike, thallus.

germplasm – plant material needed for reproduction such as seeds, or vegetative propagules.

GIS – geographical information system.

GIS coverage – one or more layers of information used in an electronic geographical information system.

glabrate – approaching glabrous.

glabrous – smooth, hairless, and eglandular.

gland – a structure which secretes a fluid.

glandular – possessing glands.

global warming – the theory that the release of carbon dioxide and other pollutants in the atmosphere creates a greenhouse effect, thereby threatening the earth with an increased average temperature, thereby destabilizing weather and altering existing ecosystems. Many believe sea-level rise is a current symptom of global warming.

glume – one of the two bracts at the base of the spikelet in the Poaceae.

GPS – global positioning system. A navigational system using satellite signals to fix the location of a receiver on or above the earth's surface.

GPS point – a geographical coordinate.

GPS unit – a radio receiver used to collect a GPS point.

graminoid – a plant belonging to one of the plant families Poaceae, Cyperaceae, and Juncaceae.

gymnosperm – plants such as pines, cypress, and cycads which bear seeds without an ovary, usually in cones.

herb – a plant lacking woody parts.

herbarium – a collection of dried plant specimens often kept in a museum where they are organized, and catalogued.

herbarium specimen – a plant specimen which has been dried, mounted, deposited, and cataloged at a herbarium.

hispid – possessing hairs like those of a boar, short, stiff, and coarse.

honeycombed – appearing as a honeycomb shape with transverse and vertical ridges.

inflorescence – a group of flowers, or the flowering part of a plant.

infructescence – the fruiting structure of a plant.

involucre – a floral feature constituted by a group of bracts enveloping the flower or inflorescence.

lacerate – having a torn edge.

lanceolate – lance-shaped, wider than long, broadest at the base, gradually tapering to the tip.

lemma – a feature on the spikelet of the Poaceae composing of the lowest of the two bracts enclosing the floret.

linear – extremely long and narrow the margins of which are parallel.

lip – a large modified petal in the center of the corolla.

lithophyte – plants that grow on rocks.

meiotic – of or relating the process of nuclear cell division in which the number of chromosomes is reduced from the diploid to haploid in the new cells.

membranaceous – appearing as a membrane, a thin, soft, flexible, translucent skin-like layer.

monocotyledon – one of two major groups of fruit bearing plants possessing a single cotyledon, which is the embryonic leaf on a newly germinated seed. This group of plants includes palms, grasses, sedges, lilies, orchids, and many others.

muco – a feature on plant organs where the end of the organ terminates in a short, sharp, abrupt point.

mycorrhizal fungi – fungi which are symbiotically associated to plants whereby their hyphae work in conjunction with the plants roots.

nectivorous – nectar feeding.

neutral – possessing no functioning reproductive parts.

niche – a specific role, condition, or region which a species possesses, and although it may overlap with other species, it is unique to that species.

oblanceolate – broadest at the ends and narrowest at the base.

obtuse – blunt shaped, possessing an angle greater than ninety degrees.

opposite – across from each other; as in leaves which are opposite at the node.

ovate – egg shaped, broadest below the middle, rounded at the ends.

papillate – possessing diminutive round nipple-like nodules.

parasite – an organism which is totally dependent upon a host organism by deriving nutrients directly from their host organisms without supplying anything in return.

pedicel – the stalk of one flower in an inflorescence.

pedicellate – having a pedicel.

peduncle – the stalk of a solitary flower or the entire inflorescence which attaches it to the stem or branch.

pedunculate – having a peduncle.

perennial – plants which persist vegetatively for more than two years.

perianth – the calyx and the corolla of a flower.

pericarp – the wall of a fruit.

petiole – the stalk of the leaf which attaches to the main stem of the plant.

pilose – possessing long silky hairs.

pinnae (pl. pinna) – a segment in a compound leaf.

pinnate – a compound, feather shaped, leaf.

pinnatifid – a feature in leaves whereby the pinna are divided, but not all the way, to the midrib.

plumose – feather like.

poaching – the illegal removal of plants and animals from a conservation area.

pollination – the meeting of the pollen (sperm) with the stigma, eventually resulting in the fertilization of the ova (egg).

polyploidy – the condition resulting from having the number of chromosomes in the somatic cells more than twice the haploid number.

prescribed fire – a fire which is purposefully set by land managers.

propagules – young plants, seeds, or spores used in planting for restoration.

pteridophyte – a vascular spore bearing plant. Ferns and their allies.

puberulent – possessing small fine hairs.

pubescent – hairy.

punctate – possessing pits, depressed glands, or colored dots.

raceme – a type of simple unbranched inflorescence whereby the flowers mature upwards along the peduncle.

racemose – possessing features of a raceme.

rachis – the central axis of a compound leaf or inflorescence.

reticulate – appearing as a network.

retuse – possessing a slight dip or notch at the obtuse tip.

revolute – with margins curved inward toward the underside.

rhizomatous – possessing rhizomes.

rhizome – an underground, horizontal stem.

ridged – possessing elevated lines.

ruderal – Confined to disturbed areas and dependent upon disturbance.

saprophyte – a plant which possesses no chlorophyll (and hence cannot photosynthesize) and derives its nutrients from leaf litter.

scabrous – rough textured.

scale – a small structure that can be leaflike, or may resemble a broadened flat hair.

sepal – a segment in the calyx which is the leaflike structure subtending the petals on a flower.

sessile – resting directly on the stem or branch. Possesses no stalk.

spike – an un-branched inflorescence or bloom.

spikelet – the floral unit of the inflorescences in the Poaceae and Cyperaceae.

sporophyte – the diploid, spore-producing generation of the plant reproductive cycle which in ferns is characterized as the dominant plant.

stamen – the male part of the flower which is made up of the filament and the anther.

stellate pubescent – possessing hairs with several terminal projections resembling a star.

sterile – infertile. Possessing no or immature floral parts or seeds.

stipule – one of a pair of diminutive leaflike structures found at the base of the petiole.

strigose – possessing sharp, straight, appressed hairs, all pointing in the same direction.

style – the elongated structure in the female flower (pistil) which begins at the ovary, and terminates at the stigma.

subovate – almost ovate.

subsessile – almost sessile.

subspecies – a taxon within a species which is not found in the same geographical region, and is unable to interbreed due only to geographical boundaries.

subumbellate – less than umbellate.

succulent – fleshy and possessing lots of water.

taxon (taxa pl.) – referring to any species, genus, family, etc.; in reference to this manual, any species, variety, subspecies, or hybrid.

trichome – a hair.

trifoliolate – possessing leaves or three leaflets.

tubercle – a small bump or nodule.

type specimen – the herbarium specimen for which a species was described.

umbellate – umbel shaped inflorescence whereby the pedicels originate at a common point.

uncinate – hairs which are hooklike at the ends.

undulate – possessing wavy surfaces or margins.

variety – a taxon within a species, whereby they possess distinct notable features, yet individual varieties are able to interbreed.

vascular plants – plants possessing conductive tissue such as pteridophytes (ferns and their allies), gymnosperms (cone bearing plants), and angiosperms (fruit bearing plants).

villous – possessing long, soft, unmatted hairs.

viviparous – a plant whose seeds are borne (germinate) on the adult.

waif – a species which hasn't shown any evidence of establishment (i.e. reproduction and further dispersal).

whorled – possessing more than two leaves at a node.

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George holds a B.A. with distinction in Environmental Conservation and International Affairs from the University of Colorado (1984). In 1984, he co-founded what is now The Institute for Regional Conservation (IRC), and in 1994 initiated the Floristic Inventory of South Florida. He has served on the board of directors of the Society for Ecological Restoration since 1993, and as chair of the board from 1997 to 1999. He served as a board member of the Florida Native Plant Society (1988-1998), and is currently a board member of the Tropical Audubon Society. George received the Conservation Colleague Award from The Nature Conservancy (1994) and the Excellence in Leadership Award from the Society for Ecological Restoration (1999).

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All three authors are natives of
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"A book with profound significance for plant conservation, not only for South Florida, but for the entire state of Florida, the nation, and the world." - Richard P. Wunderlin, Ph.D., University of South Florida, Tampa.

"This volume provides clear, well-considered, and well-researched guidance about the status and management needs of rare plants in a region critical for biodiversity. It is an invaluable reference for conservation, management, and research efforts in South Florida." - Doria Gordon, Ph.D., State Ecologist, The Nature Conservancy of Florida.

"This book fills a huge void of information regarding rare plants of South Florida and will be invaluable to resource managers charged with preserving natural areas that harbor federal- and state-listed threatened and endangered species. Indeed, anyone with a keen interest in Florida's rare flora will find this book to be a cherished resource." - Roger L. Hammer, Naturalist, Miami-Dade Parks & Recreation Department.

"Gann and his team have produced a permanent reference point against which future plant restoration efforts will be judged. For the first time there is a comprehensive, regional rare flora that incorporates restoration recommendations for each of several hundred critically-imperiled species alongside general advice and a status report on conservation areas. This book, and the database behind it, will be indispensable for restorationists, land managers and avid naturalists in South Florida. Will such a complicated document also serve to inspire a wider public? I think so. The cure for despair is hope, and hope is built from knowing the extent of a problem and what practical actions will bring about change." - Eric Higgs, Ph.D., Chair, Society for Ecological Restoration and Director, School of Environmental Studies, University of Victoria.

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