Volume 28: Number 1 > Winter/Spring 2011

The Quarterly Journal of the Florida Native Plant Society

Palmetto

Protecting Endangered Plants in Panhandle Parks • Native or Not? *Carica papaya* • Water Science & Plants

Protecting Endangered Plant Species

Sweetwater slope: Bill and Pam Anderson

To date, a total of 117 listed taxa have been recorded in 26 panhandle parks, making these parks a key resource for the protection of endangered plant species.

in Panhandle State Parks

by Gil Nelson and Tova Spector

Sarracenia rosea (purple pitcherplant) at Ponce de Leon Springs State Park: Tova Spector, Florida Department of Environmental Protection

The Florida Panhandle is well known for its natural endowments, chief among which are its botanical and ecological diversity. Approximately 242 sensitive plant taxa occur in the 21 counties west of the Suwannee River. These include 15 taxa listed as endangered or threatened by the U. S. Fish and Wildlife Service (USFWS), 212 listed as endangered or threatened by the State of Florida, 191 tracked by the Florida Natural Areas Inventory, 52 candidates for federal listing, and 7 categorized by the state as commercially exploited.

Since the conservation of threatened and endangered plant species depends largely on effective management of protected populations, the occurrence of such plants on publicly or privately owned conservation lands, coupled with institutional knowledge of their location and extent is essential. District 1 of the Florida Park Service manages 33 state parks encompassing approximately 53,877 acres in the 18 counties from Jefferson County and the southwestern portion of Taylor County westward. While not all of the Panhandle's sensitive plants occur within the confines of these parks, many do, including several known to occur on conservation lands only within state park boundaries. Federally listed species of particular interest to park personnel include: *Conradina glabra*, *Spigelia gentianoides*, *Taxus floridana*, and *Torreya taxifolia*. An herbarium voucher of the federally listed *Silene polypetala* was collected in 1843 from Torreya State Park, but no recent observations within the park are known. To date, a total of 117 listed taxa have been recorded in 26 panhandle parks, making these parks a key resource for the protection of endangered plant species.

In early 2008 we began a joint effort to catalog all endangered plant species that occur in District 1 parks, a project that is ongoing. The second author, as part of her continuing professional role, had previously developed lists, localities, and management plans for endangered species in panhandle parks using a combination of personal knowledge, historical reports, and numerous field surveys throughout the district. The goal of our project was to augment this ongoing work by seeking new avenues for cataloging and locating endangered plant species and providing additional field resources to support survey efforts.

Our proposed project included three phases. Phase I (completed in 2008) consisted of searching all regional herbaria and cataloging any specimen collected within (or in a few cases, very close to) known state park boundaries. Phase II (ongoing) includes ground truthing herbarium records and verifying and/or finding sensitive sites based on previous collections. Phase III (ongoing) includes pinpointing state parks that are under-represented in our data, or that currently lack or significantly lack records of endangered species. Parks so identified are then surveyed for listed taxa.

Cataloging Herbarium Collections

The first phase of our project was to catalog all herbarium specimens collected from regional herbaria. This included visiting (electronically and/or physically) several important herbaria (Table 1) and examining all specimens of endangered species known or suspected to occur in the panhandle. Specimen locality data were

Table 1: Regional Herbaria

Herbarium	Acronym	Records	Visitation Type
Angus K. Gholson *(personal herbarium, now at FLAS)*	AKG	135	Physical
Florida State University *(Robert K. Godfrey Herbarium)*	FSU	272	Physical/Electronic
Tall Timbers Research Station *(Robert K. Godfrey Herbarium)*	TTRS	53	Physical/Electronic
University of Florida Herbarium *(Museum of Florida History)*	FLAS	126	Physical/Electronic
University of South Florida	USF	57	Electronic
University of West Florida *(M. I. Cousens Herbarium)*	UWFP	39	Physical
Total		**682**	

Continued on page 6

Protecting Endangered Plant Species in Panhandle State Parks

compared to a multi-layer GIS-based map of current park boundaries. In many cases, label data included notation of the park in which the collection was made. In other cases, labels lacked such data, or the collections were made prior to the establishment or expansion of park boundaries. This resulted in a number of records for plants that were not located within state park boundaries when originally collected, but that are located within state park boundaries today. Phase I also included reviewing records from the database of the Florida Natural Areas Inventory, which includes references to numerous vouchered records. We recorded 682 specimens from six herbaria included in our study.

We established a secure, password protected online database for our records, hosted through www.gilnelson.com/PanFlora, which facilitates remote access and allows for customized searching, data analysis, and downloads in various formats. To date, our herbarium reviews and ongoing field surveys reveal that 26 District 1 parks include at least one listed species (Table 2). This constitutes 79% of all parks managed by District 1, and 87 % of those parks with significant natural areas (30 parks). A total of 117 listed and special interest taxa have been recorded district wide (Table 3), meaning that approximately 48% of the threatened or endangered plant taxa that occur in the panhandle are protected in at least one state park. This effort recorded sensitive plant taxa for 5 parks in District 1 that were previously not known to harbor listed species.

Phase 2 of the project includes ground truthing records to determine species presence and location on state parks. Based on information found in herbaria, some of the rarer plants were targeted for field surveys. In several cases targeted plant species were not found. For example, a herbarium record of *Asplenium verecundum* occurring at a recently acquired part of Torreya State Park was selected for ground truthing. Despite survey efforts, *A. verecundum* has not yet been re-discovered. Instead, surveys helped to verify the presence and extent of a new exotic invader, *Deparia petersenii* (Japanese False Spleenwort) at the park in the areas where we were also looking for *A. verecundum*. Failure to find historically recorded species could mean that the species is no longer on site, the species is on site but has not been found despite searching, or that the species was never on site and was misidentified or the purported location of the species was poorly described in the record.

Disappearance of species can be puzzling but can also help land managers recognize when or if different management practices are needed. A restoration of a small area of upland pine natural community is being conducted at Florida Caverns State Park in response to the disappearance of two occurrences of *Brickellia cordifolia*. Restoration planning and efforts were only undertaken after failure to find *B. cordifolia* in historically known locations. Hopefully, *B. cordifolia* will respond to these efforts.

Phase 3 of the project, plant surveys, has also yielded surprises. No listed plant species had been previously vouchered for T.H. Stone St. Joseph Peninsula State Park prior to this project. Since the majority of the park is a designated wilderness preserve with little development, famously high intact dunes, and multiple listed wildlife species, the lack of listed plant species was unexpected. Many listed coastal dune plant species in the panhandle occur in similar natural communities in nearby coastal parks. A limited plant survey of the park yielded one listed plant species thus far, *Chrysopsis godfreyi*. Similar plant surveys may yield discovery of listed plant species on other parks where they were previously unknown.

Table 2: District 1 State Parks in which Listed or Special Interest Plant Species have been Documented

Park	Number of Species
Bald Point State Park	2
Big Lagoon State Park	1
Blackwater River State Park	4
Camp Helen State Park	2
Deer Lake State Park	7
Econfina River State Park	1
Falling Waters State Park	5
Florida Caverns State Park	37
Grayton Beach State Park	5
Henderson Beach State Park	3
Lake Talquin State Park	6
Maclay Gardens State Park	4
Ochlockonee River State Park	3
Perdido Key State Park	2
Ponce de Leon Springs State Park	2
Rocky Bayou State Park	10
San Marcos de Apalachee Historic State Park	2
St. Andrews State Park	1
St. George Island State Park	1
St. Joseph Peninsula State Park	1
Tarkiln Bayou State Park	4
Three Rivers State Park	13
Topsail Hill Preserve State Park	6
Torreya State Park	65
Wakulla Springs State Park	2
Yellow River Marsh Preserve State Park	1

Sweetwater Ravines

In 2009, the Florida Native Plant Society joined with District 1 through a $2,500 FNPS conservation grant for the purpose of conducting additional rare plant surveys in the Sweetwater Ravines tract of Torreya State Park. District 1 provided a partial match to the grant through in-kind contributions.

Torreya State Park is located approximately 7 miles north of Bristol. Conservation purchases over approximately the last decade have expanded the park dramatically from about 3,000 acres in the year 2000 to more than 13,200 acres today. These acquisitions include essentially all of the biologically rich Big Sweetwater Creek drainage on the southeastern side of the park as well as the Aspalaga and Flat Creek landings tracts north of the main park.

The Sweetwater tract, acquired from St. Joe Paper Co. within the last decade, encompasses approximately 2,000 acres of steep-sided ravines, steepheads, and steephead streams surrounded by approximately 4,000 acres of degraded longleaf pinelands, now planted mostly in sand pine but in the process of being restored to longleaf pine–wiregrass upland.

Table 3: Listed and Special Interest Plant Taxa Recorded in State Parks of the Florida Panhandle

Actaea pachypoda	*Chrysopsis godfreyi*	*Hymenocallis godfreyi*	*Matelea floridana*	*Sarracenia rubra*
Agrimonia incisa	*Chrysopsis gossypina*	*Illicium floridanum*	*Matelea gonocarpos*	*Schisandra glabra*
Anemone americana	subsp. *cruiseana*	*Kalmia latifolia*	*Myriophyllum laxum*	*Sideroxylon lycioides*
Aquilegia canadensis	*Conradina glabra*	*Leitneria floridana*	*Najas filifolia*	*Silene polypetala*
Aristolochia tomentosa	*Corallorhiza wisteriana*	*Liatris gholsonii*	*Nuphar advena* subsp. *ulvacea*	*Sium suave*
Arnoglossum diversifolium	*Croomia pauciflora*	*Liatris provincialis*	*Osmunda cinnamomea*	*Spigelia gentianoides*
Asarum arifolium	*Cryptotaenia canadensis*	*Lilium catesbaei*	*Osmunda regalis* var. *spectabilis*	*Spiranthes laciniata*
Asplenium monanthes	*Cynoglossum virginianum*	*Lilium iridollae*	*Pachysandra procumbens*	*Spiranthes tuberosa*
Asplenium resiliens	*Desmodium ochroleucum*	*Lilium michauxii*	*Physocarpus opulifolius*	*Staphylea trifolia*
Asplenium verecundum	*Dirca palustris*	*Lindera benzoin*	*Pinckneya bracteata*	*Stewartia malacodendron*
Asplenium x heteroresiliens	*Drosera intermedia*	*Listera australis*	*Platanthera flava*	*Symphyotrichum racemosum*
Athyrium filix-femina	*Echinacea purpurea*	*Litsea aestivalis*	*Podophyllum peltatum*	*Taxus floridana*
subsp. *asplenioides*	*Eleocharis rostellata*	*Lobelia cardinalis*	*Polygonella macrophylla*	*Tephrosia mohrii*
Baptisia calycosa var. *villosa*	*Enemion biternatum*	*Lupinus westianus*	*Polymnia laevigata*	*Thalictrum thalictroides*
Baptisia megacarpa	*Epidendrum conopseum*	*Lycopodiella cernua*	*Quercus arkansana*	*Tipularia discolor*
Brickellia cordifolia	*Epigaea repens*	*Lythrum curtissii*	*Rhapidophyllum hystrix*	*Torreya taxifolia*
Calamintha dentata	*Erythronium umbilicatum*	*Magnolia ashei*	*Rhexia salicifolia*	*Trillium lancifolium*
Calamovilfa curtissii	*Euonymus atropurpureus*	*Magnolia pyramidata*	*Rhododendron austrinum*	*Uvularia floridana*
Callirhoe papaver	*Euphorbia commutata*	*Malaxis unifolia*	*Rhododendron canescens*	*Veratrum woodii*
Calopogon multiflorus	*Forestiera godfreyi*	*Malus angustifolia*	*Rudbeckia triloba*	*Woodsia obtusa*
Calycanthus floridus	*Gentiana pennelliana*	*Marshallia obovata*	*Salvia urticifolia*	*Yucca gloriosa*
Calystegia catesbeiana	*Goodyera pubescens*	*Matelea alabamensis*	*Sarracenia leucophylla*	*Zanthoxylum americanum*
Carex baltzellii	*Hexalectris spicata*	*Matelea baldwyniana*	*Sarracenia psittacina*	*Zephyranthes atamasca*
Carex tenax	*Hydrangea arborescens*	*Matelea flavidula*	*Sarracenia rosea*	

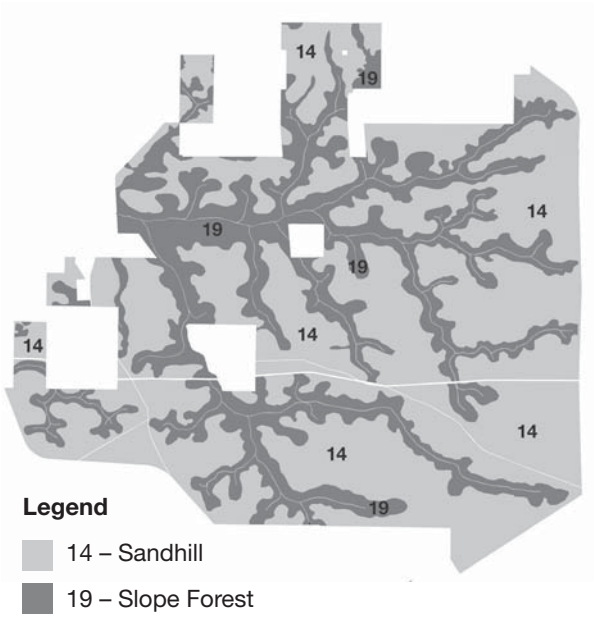
Coastal flatwoods at Topsail Hill Preserve State Park: Tova Spector, Florida Department of Environmental Protection

Continued on page 15

Continued from page 7

Protecting Endangered Plant Species in Panhandle State Parks

Figure 1: Sweetwater Tract



Above, left to right: Beach dunes at St. Joseph Peninsula State Park, and Campbell Lake at Topsail Hill Preserve State Park: Tova Spector, Florida Department of Environmental Protection

Big Sweetwater Creek, the centerpiece of this tract, lies at the center of distribution of some of Florida's richest examples of slope forest habitat. It is bordered on the south by the Apalachicola Bluffs and Ravines Preserve, a Nature Conservancy (TNC) holding well known for its botanical richness. This region is valued for its large number of rare, endangered, and special interest plant species. Figure 1 shows the dendritic pattern of the Big Sweetwater Creek drainage.

During summer and fall 2009 and spring 2010, we made several field trips into the ravines; additional field trips have continued following the close of the one-year FNPS grant. In addition to the authors, several knowledgeable naturalists and field botanists volunteered on one or more of these surveys. To this end, we acknowledge the assistance of Bill Anderson, Pam Anderson, Wilson Baker, and Mark Ludlow. Based on these surveys and those conducted following the FNPS project year, our Sweetwater database includes a total of 177 points for 17 listed or otherwise special interest species (Table 4). These numbers do not include known locations for mountain laurel (*Kalmia latifolia*), sweetshrub (*Calycanthus floridus*), and torreya (*Torreya taxifolia*). Approximately 50 records of *Torreya taxifolia* from the Sweetwater region are maintained in an offline database as part of an ongoing range-wide study of the status and health of this species. It should also be noted that the single occurrence for *Liatris gholsonii* was recorded to ensure this species' inclusion on the list. *Liatris gholsonii* is common and widespread along the upper 25% of the slope along many if not most of the drainages in the Sweetwater region.

Use of the data generated from our herbarium review and continuing surveys will enhance management of endangered species in District 1 parks, facilitate a centralized districtwide database of important park resources, and provide for the smooth flow of information to new park managers and staff.

Table 4: Specialty Plants in the Sweetwater Ravines

Taxon	Occurrences
Amelanchier arborea	2
Asarum arifolium	4
Calamintha dentata	1
Carex baltzellii	36
Conradina glabra	10
Epifagus virginiana	1
Epigaea repens	11
Liatris gholsonii	1
Magnolia ashei	12
Magnolia pyramidata	46
Matelea alabamensis	8
Pinckneya bracteata	1
Polygonatum biflorum	1
Rhapidophyllum hystrix	3
Taxus floridana	29
Tipularia discolor	10
Viola walteri	1
Total	**177**

About the Authors

Gil Nelson holds a Beadel Fellowship in Botany at Tall Timbers Research Station, 13093 Henry Beadel Drive, Tallahassee, FL 32312; gnelson@ttrs.org

Tova Spector is an Environmental Specialist, District 1, Florida Park Service, 4620 State Park Lane, Panama City, FL 32408; Tova.Spector@dep.state.fl.us

The Florida Native Plant Society
PO Box 278
Melbourne FL 32902-0278

The Palmetto
(ISSN 0276-4164) Copyright 2014, Florida Native Plant Society, all rights reserved. No part of the contents of this magazine may be reproduced by any means without written consent of the editor. *The Palmetto* is published four times a year by the Florida Native Plant Society (FNPS) as a benefit to members. The observations and opinions expressed in attributed columns and articles are those of the respective authors and should not be interpreted as representing the official views of the Florida Native Plant Society or the editor, except where otherwise stated.

Editorial Content
We welcome articles on native plant species and related conservation topics, as well as high-quality botanical illustrations and photographs. Contact the editor for guidelines, deadlines and other information.
Editor: Marjorie Shropshire, Visual Key Creative, Inc. palmetto@fnps.org • (772) 285-4286 • 1876 NW Fork Road, Stuart, FL 34994

The purpose of the Florida Native Plant Society is to conserve, preserve, and restore the native plants and native plant communities of Florida.

Official definition of native plant:
For most purposes, the phrase Florida native plant refers to those species occurring within the state boundaries prior to European contact, according to the best available scientific and historical documentation. More specifically, it includes those species understood as indigenous, occurring in natural associations in habitats that existed prior to significant human impacts and alterations of the landscape.

For more Information:
http://fnps.org

To become a member, contact your local Chapter Representative, call, write, or e-mail FNPS, or join online at www.fnps.org/join

Follow FNPS online:
Blog: http://fnpsblog.blogspot.com/
Facebook: www.facebook.com/FNPSfans
Twitter: twitter.com/FNPSonline
LinkedIn: Groups, Florida Native Plant Society