FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

Memorandum

TO: James Parker
Office of Environmental Services
Division of State Lands

FROM: Tyler Maldonado
Office of Park Planning
Division of Recreation and Parks

SUBJECT: Bahia Honda State Park
Ten Year Management Plan Update (Lease No. 3609)
Acquisition and Restoration Council (ARC) Public Hearing

DATE: September 1, 2020

Attached for your convenience and use are five discs with the subject management plan update file, along with a printed hard copy of the document. Contained on the discs is the ARC executive summary, the Division of State Lands checklist and a copy of the subject management plan amendment. This plan is being submitted for the Division of State Lands' compliance review and for review by ARC members at their December 2020 meeting.

An electronic version of the document is available on the DEP Park Planning Public Participation webpage at the following link: https://floridadep.gov/parks/public-participation

Please contact me by email at Tyler.Maldonado@floridadep.gov if there are any questions related to this submission.

Thank you for your assistance.

TM
Attachments

cc: Deborah Burr

LAND MANAGEMENT PLAN COMPLIANCE CHECKLIST

→ Required for State-owned conservation lands over 160 acres ←

Instructions for managers:
Complete each item and fill in the applicable correlating page numbers and/or appendix where the item can be found within the land management plan (LMP). If an item does not apply to the subject property, please describe that fact on a correlating page number of the LMP. Do not mark an "N/A" for any items below.

For more information, please visit the stewardship portion of the Division of State Lands' website at: http://www.dep.state.fl.us/lands/stewardship.htm.

Section A: Acquisition Information Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
1.	The common name of the property.	18-2.018 & 18-2.021	1, Add. 1
2.	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	1, Add. 1
3.	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	1, Add. 1
4.	The legal description and acreage of the property.	18-2.018 & 18-2.021	1, Add. 1
5.	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	65
6.	An **assessment** as to whether the property, or any portion, should be declared surplus. *Provide Information regarding **assessment and analysis** in the plan, and provide **corresponding map**.*	18-2.021	75-77
7.	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. *Please clearly indicate parcels on a map.*	18-2.021	75-77
8.	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	58-59
9.	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034, and the statutory authority for such use or uses.	259.032(10)	1, Add. 1
10.	Proximity of property to other significant State, local, or federal land or water resources.	18-2.021	3, 15, 58

Section B: Use Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
11.	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	1, 7
12.	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	1-2, 62
13.	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	1-2
14.	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	7-9
15.	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	9, 49, 52, Add. 7
16.	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	7-9

17.	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032(10)	57-75
18.	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority, and any other legislative or executive directives that constrain the use of such property.	18-2.021	1-2
19.	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	62-63, Add. 2
20.	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	15-20, 57-75
21.	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	1-2
22.	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	53
23.	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	1-2

*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities, and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

Section C: Public Involvement Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
24.	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	9
25.	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032(10)	9
26.	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. *Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.*	259.032(10)	9, Add. 2
27.	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	Add. 2
28.	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. *Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.*	253.034(5) & 259.032(10)	9

29.	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. *Include manager's replies to the team's findings and recommendations.*	259.036	55, Add. 8
30.	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	55, Add. 8
31.	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	55, Add. 8

Section D: Natural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
32.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. *Use brief descriptions and include USDA maps when available.*	18-2.021	15-20
33.	Insert FNAI based natural community maps when available.	ARC consensus	23
34.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.	18-2.021	21-37
35.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns, and large sinkholes.	18-2.018 & 18-2.021	21-37
36.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	21-37
37.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas, and phosphate, etc.	18-2.018 & 18-2.021	15
38.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	21-45
39.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	38-45
40.	The identification or resources on the property that are listed in the Natural Areas Inventory. *Include letter from FNAI or consultant where appropriate.*	18-2.021	21-37
41.	Specific description of how the managing agency plans to identify, locate, protect, and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032(10)	21-52
42.	Habitat Restoration and Improvement	259.032(10) & 253.034(5) ↓	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection, and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.		21-37
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.		21-37
42-C.	The associated measurable objectives to achieve the goals.		81-83
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. *Include fire management plans - they can be in plan body or an appendix.*		81-83

42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.		81-83
43.	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. *See footnote.*	253.034(5)	21-37
44.	Sustainable Forest Management, including implementation of prescribed fire management	18-2.021, 253.034(5) & 259.032(10) ↓	
44-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		21-37
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		21-37
44-C.	Measurable objectives (see requirement for #42-C).		81-83
44-D.	Related activities (see requirement for #42-D).		81-83
44-E.	Budgets (see requirement for #42-E).		81-83
45.	Imperiled species, habitat maintenance, enhancement, restoration or population restoration	259.032(10) & 253.034(5) ↓	
45-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		38-45
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		38-45
45-C.	Measurable objectives (see requirement for #42-C).		81-83
45-D.	Related activities (see requirement for #42-D).		81-83
45-E.	Budgets (see requirement for #42-E).		81-83
46.	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. *See footnote.*	253.034(5)	45-48
47.	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	53
48.	Exotic and invasive species maintenance and control	259.032(10) & 253.034(5) ↓	
48-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		45-48
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		45-48
48-C.	Measurable objectives (see requirement for #42-C).		81-83
48-D.	Related activities (see requirement for #42-D).		81-83
48-E.	Budgets (see requirement for #42-E).		81-83

Section E: Water Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
49.	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. *If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.*	18-2.018 & 18-2.021	9, 53-54
50.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	9, 15-20
51.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes, and other wetlands.	18-2.021	21-37
52.	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. *See footnote.*	253.034(5)	15-20

53.	Hydrological Preservation and Restoration	259.032(10) & 253.034(5) ↓	
53-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		15-20
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		15-20
53-C.	Measurable objectives (see requirement for #42-C).		81-83
53-D.	Related activities (see requirement for #42-D).		81-83
53-E.	Budgets (see requirement for #42-E).		81-83

Section F: Historical, Archeological, and Cultural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
54.	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. *Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.*	18-2.018, 18-2.021 & per DHR's request	49-53
55.	***Quantitative data description of the land regarding an inventory of significant land, cultural, or historical features and associated acreage.	253.034(5)	49-53
56.	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	49-53
57.	Cultural and Historical Resources	259.032(10) & 253.034(5) ↓	
57-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		49-53
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		49-53
57-C.	Measurable objectives (see requirement for #42-C).		81-83
57-D.	Related activities (see requirement for #42-D).		81-83
57-E.	Budgets (see requirement for #42-E).		81-83

**While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing, and coordinating their management activities.

Section G: Facilities (Infrastructure, Access, Recreation)

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
58.	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. *See footnote.*	253.034(5)	65, 67
59.	Capital Facilities and Infrastructure	259.032(10) & 253.034(5) ↓	
59-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		57-75
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		57-75
59-C.	Measurable objectives (see requirement for #42-C).		81-83

59-D.	Related activities (see requirement for #42-D).		81-83
59-E.	Budgets (see requirement for #42-E).		81-83
60.	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	65, 67
61.	Public Access and Recreational Opportunities	259.032(10) & 253.034(5) ↓	
61-A.	Management needs, problems, and a desired outcome (see requirement for # 42-A).		57-75
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		57-75
61-C.	Measurable objectives (see requirement for #42-C).		81-83
61-D.	Related activities (see requirement for #42-D).		81-83
61-E.	Budgets (see requirement for #42-E).		81-83

Section H: Other/ Managing Agency Tools

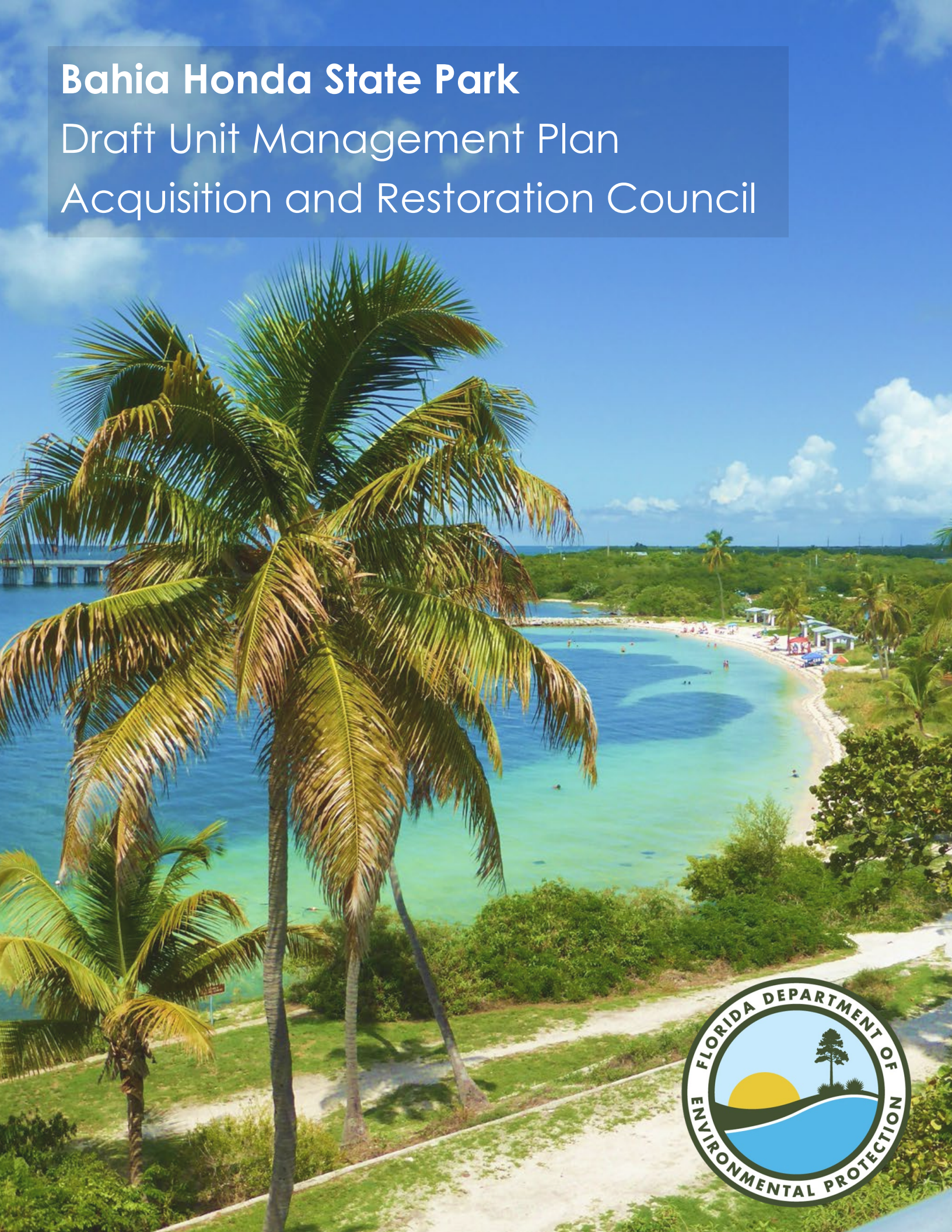
Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
62.	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	Front
63.	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	i-vi
64.	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	81-83
65.	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	v-vi, 81-83
66.	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034(5)	81-83
67.	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032(10)	81-83
68.	A statement of gross income generated, net income, and expenses.	18-2.018	ii, 63

*** = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

Bahia Honda State Park

Draft Unit Management Plan

Acquisition and Restoration Council



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RESOURCE MANAGEMENT COMPONENT

LAND USE COMPONENT

IMPLEMENTATION COMPONENT

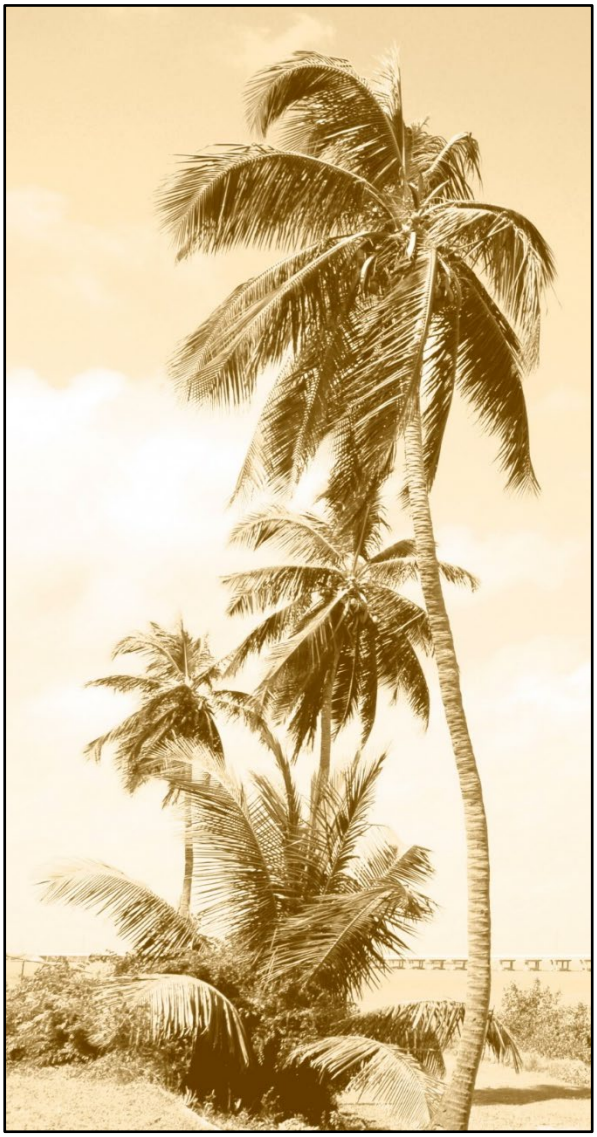
TABLES

MAPS

LIST OF ADDENDA

Executive Summary

Bahia Honda State Park is located in Monroe County at mile marker 36, east of Big Pine Key. The park was initially acquired on September 21, 1961 through a donation by Monroe County. Subsequent additions to the park were obtained through the Save Our Coasts and Land Acquisition Trust Fund (LATF) programs. Currently, the park's total acreage is approximately 491 acres.

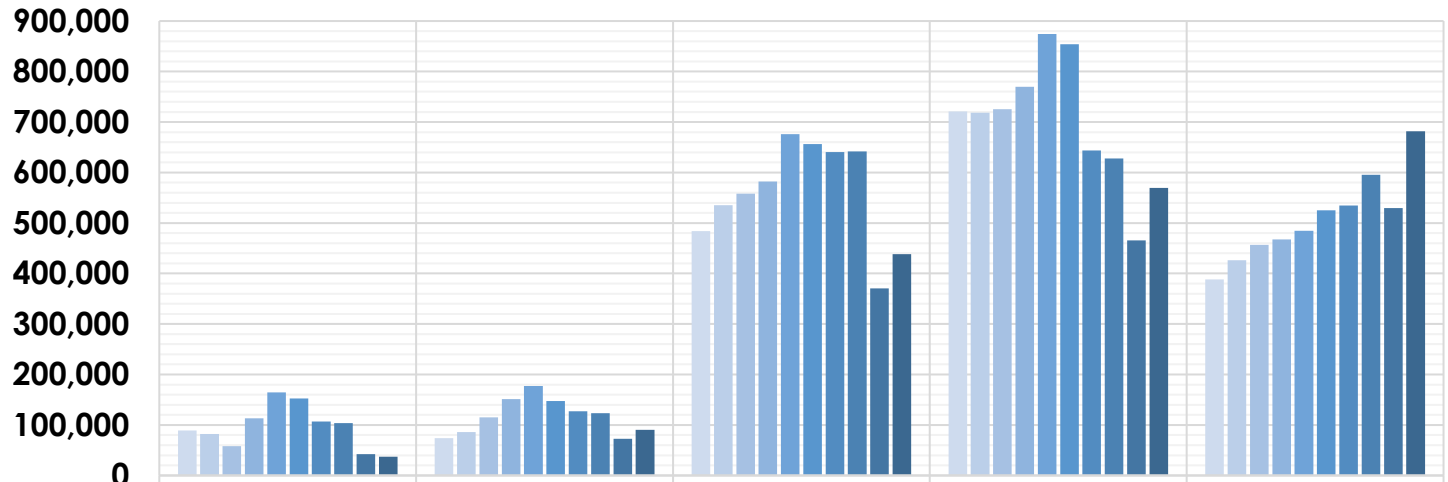


The purpose of Bahia Honda State Park is to protect and preserve Bahia Honda Key, which includes rare natural communities and one of the most recognizable segments of the Old Keys Bridges. Segments of Henry Flagler's railroad bridges built in the early 1900s are still important parts of the local landscape providing remarkable panoramic views of the key and surrounding waters.

The natural break in the offshore coral reef allows for the establishment of some of the largest segments of sandy and accessible beaches in the Florida Keys at the park. Beaches are a rare occurrence in the Florida Keys due to the majority of the natural shoreline consisting of low energy mangrove habitat. The beach dune natural community includes the largest silver palm hammock in the Florida Keys. In total, there are 43 listed plant and animal species that rely on the park for crucial habitat.

Bahia Honda State Park Natural Communities and Altered Landcover Types		
Landcovers	**Acreage**	**Percentage**
Marine Tidal Swamp	146.38	30%
Marine Substrate	135.15	27%
Developed	72.38	15%
Marine Tidal Marsh	52.64	11%
Beach Dune	36.73	7%
Coastal Berm	27.61	6%
Marine Seagrass Bed	18.20	4%
Spoil Area	0.96	0.1%
Key Tidal Rock Barren	0.54	0.1%
Total	**490.59**	**100%**

Annual Attendance: Fiscal Year 2009/10 - 2018/19



	Long Key	Curry Hammock	Bahia Honda	John Pennekamp	Fort Zachary Taylor
FY 09/10	89,426	73,846	484,070	721,091	388,521
FY 10/11	81,862	86,242	535,578	718,303	425,993
FY 11/12	58,033	115,360	557,785	725,619	456,452
FY 12/13	113,107	151,461	582,093	769,751	467,765
FY13/14	164,615	177,241	675,997	874,179	484,772
FY14/15	152,388	147,142	656,159	853,846	524,859
FY15/16	106,931	127,239	640,369	643,569	534,842
FY16/17	103,831	123,112	641,591	628,005	595,528
FY 17/18	41,945	72,898	370,222	465,511	529,809
FY 18/19	37,181	90,546	438,179	569,194	681,718

Hurricane Irma

On September 17, 2017, Hurricane Irma made landfall in the Florida Keys as a Category 4 hurricane. The storm's eye traversed across Cudjoe Key, just 15 miles west on US Highway 1 from Bahia Honda State Park. Maximum sustained winds reached speeds of 132 mph and storm surge was up as much as 8 feet. Given the size and strength of the storm, much of the park was devasted (as shown in the before and after images below). The park's main day use areas, support facilities, and main road were largely destroyed. Since 2017, park management and district staff have been hard at work rebuilding one of the most significant and treasured units of the Florida Park Service.

Post-Hurricane Irma Recovery

When Hurricane Irma made landfall on Cudjoe Key in 2017, the impact at Bahia Honda State Park was substantial. The oceanside shoreline was severely impacted, resulting in vegetative and infrastructure damage. The storm surge flowed into the secondary dune, and a deep wrack line was deposited approximately 180 feet from the shoreline. Sandspur campground and day use area were destroyed, the park road was heavily damaged, and Loggerhead Beach was severely damaged. Bahia Honda State Park was closed for two months to enable clean-up and debris removal. When the park reopened in November of 2017, only the area west of the ranger station was open to the public. Over time, native vegetation including sea lavender, bay cedar, railroad vine, sea oats, southern sea rocket, and inkberry slowly recruited along the shoreline, and the population of sea lavender is once again abundant. Overall, the beach has recovered from the impacts from Hurricane Irma. Loggerhead Beach required restoration and stabilization, and large boulders were installed to prevent erosion and protect the park road. Over 500 native plants, donated by the Dagny Johnson Key Largo Hammock Nursery, have been planted to aid in natural resource recovery.

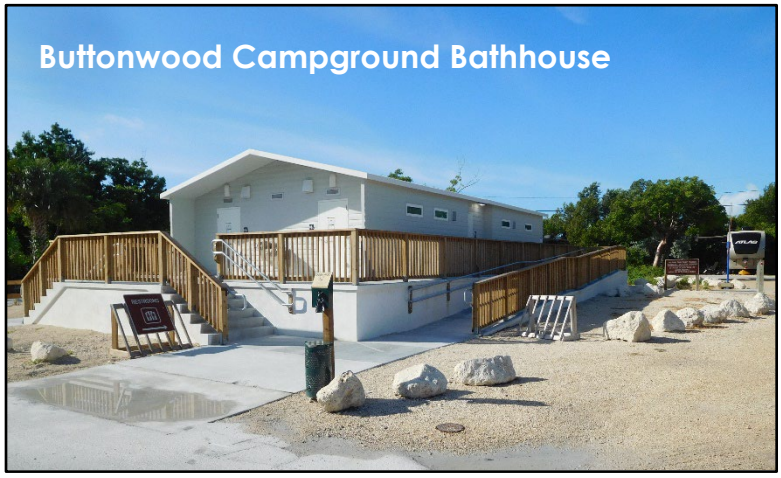
Infrastructure Repairs

Loggerhead Beach
Parking area fully rebuilt
Accessible beach ramp added
Restroom constructed to withstand Cat-5 storm
Three beach access stairs constructed
Accessible ramp added to concession building


Loggerhead Beach Restroom

Marina
Dredged to re-accommodate vessels
All fenders, posts, utilities repaired

Buttonwood Campground
Campground reopened
Utilities repaired at all sites
Bathhouse constructed to withstand Cat-5 storm


Buttonwood Campground Bathhouse

Cabins
New roofs, siding, interior furnishings

Sandspur Beach and Campground
Beach parking area ~50% complete
Restroom ~40% complete
Campground ~50% complete

Total Rebuild Cost to Date: $8.8 million

Resource Management Goals and Objectives

Hydrological Management

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.

Objective: Conduct/obtain an assessment of the park's hydrological restoration needs.
Objective: Restore natural hydrological conditions and functions to approximately 8 acres of seagrass and mangrove salt marsh natural communities.

Natural Communities Management

Goal: Restore and maintain the natural communities/habitats of the park.

Objective: Conduct habitat improvement activities on 10 acres of coastal berm, beach/dune, and mangrove natural communities.

Imperiled Species Management

Goal: Maintain, improve or restore imperiled species populations and habitats.

Objective: Monitor and document 6 selected imperiled animal species.
Objective: Monitor and document 15 selected imperiled plant species.

Exotic Species Management

Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.

Objective: Annually treat 0.2 acres of exotic plant species in the park.
Objective: Implement control measures on 5 exotic animal species in the park.

Cultural Resource Management

Goal: Protect, preserve and maintain the cultural resources of the park.

Objective: Bring 1 of 2 recorded cultural resources into good condition.

Capital Facilities Goals and Objectives

Facilities and Infrastructure Management

Goal: Develop and maintain the capital facilities and infrastructure.

Objective: Improve/repair six existing use areas and 1.6 miles of road.

Cabin Area
Develop new cabins (2)
Add floating dock

Concession Area
Construct ADA paddling launch

Calusa Beach Day Use Area
Add small picnic pavilions (2)
Replace restroom
Improve landscaping
Redesign parking area
Improve fishing platform

Loggerhead Beach Day Use Area
Renovate storage facility
Create special events pavilion

Buttonwood Campground
Redesign site configuration

Parkwide
Improve park road

Optimum Boundary and Land Acquisition

Southwest of the park, several parcels totaling approximately 40 acres have been added to the park's optimum boundary and are identified for potential acquisition as funding becomes available. The parcels on located on West Summerland Key, which is also known as Spanish Harbor Key. These parcels include the Spanish Harbor borrow pit and adjacent land to the north of US Highway 1 between mile marker 34 and mile marker 35.3.

Introduction

Bahia Honda State Park is located in Monroe County in between Marathon and Big Pine Key (see Vicinity Map). Access to the park is from U.S. Highway 1, also known as the Overseas Highway, at Mile Marker 36 (see Reference Map).

Bahia Honda State Park was acquired on September 21, 1961 through a donation by Monroe County and later additions through the Save Our Coasts and Land Acquisition Trust Fund (LATF) programs. Currently, the park comprises 491.25 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park, and on January 23, 1968, the Trustees leased (Lease No. 2324) the property to the Division of Recreation and Parks (DRP) under a 99-year lease. The current lease will expire on January 22, 2067. In 1988, the Trustees assigned a new lease number, Lease No. 3609, to Bahia Honda State Park without making any changes to the terms and conditions of Lease No. 2324.

Bahia Honda State Park is designated single-use to provide public outdoor recreation and other park-related uses. There are no legislative or executive directives that constrain the use of this property (see Addendum 1).

Purpose and Significance of the Park

The purpose of Bahia Honda State Park is to protect and preserve Bahia Honda Key which includes rare natural communities and one of the most recognizable segments of the Old Keys Bridges.

Park Significance

- The natural break in the offshore coral reef allows for the establishment of some of the largest segments of sandy and accessible beaches in the Florida Keys at the park.

- The park is home to the largest stand of silver palm (Coccothrinax argentata) in the continental United States and 43 other listed plant and animal species including the dune lilly thorn (Catesbaea parviflora), least tern (Sternulla antillarum), Atlantic green turtle (Chelonia mydas), and hawksbill turtle (Eretmochelys imbricata).

- The unique environment on Bahia Honda Key allows for a wider variety of recreational activities than on most other keys in the area. Park visitors can enjoy overnight accommodations in cabins or in one of the several campgrounds, fishing, swimming, paddling, snorkeling, wildlife viewing, hiking, and picnicking among many other activities. Boat tours are also provided to visitors to the Looe Key National Marine Sanctuary.

- Segments of Henry Flagler's railroad bridges built in the early 1900s are still important parts of the local landscape providing remarkable panoramic views of the key and surrounding waters.

Unit Classification

Bahia Honda State Park is classified as a State Park in the DRP's unit classification system. In the management of a State Park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic, and educational attributes.

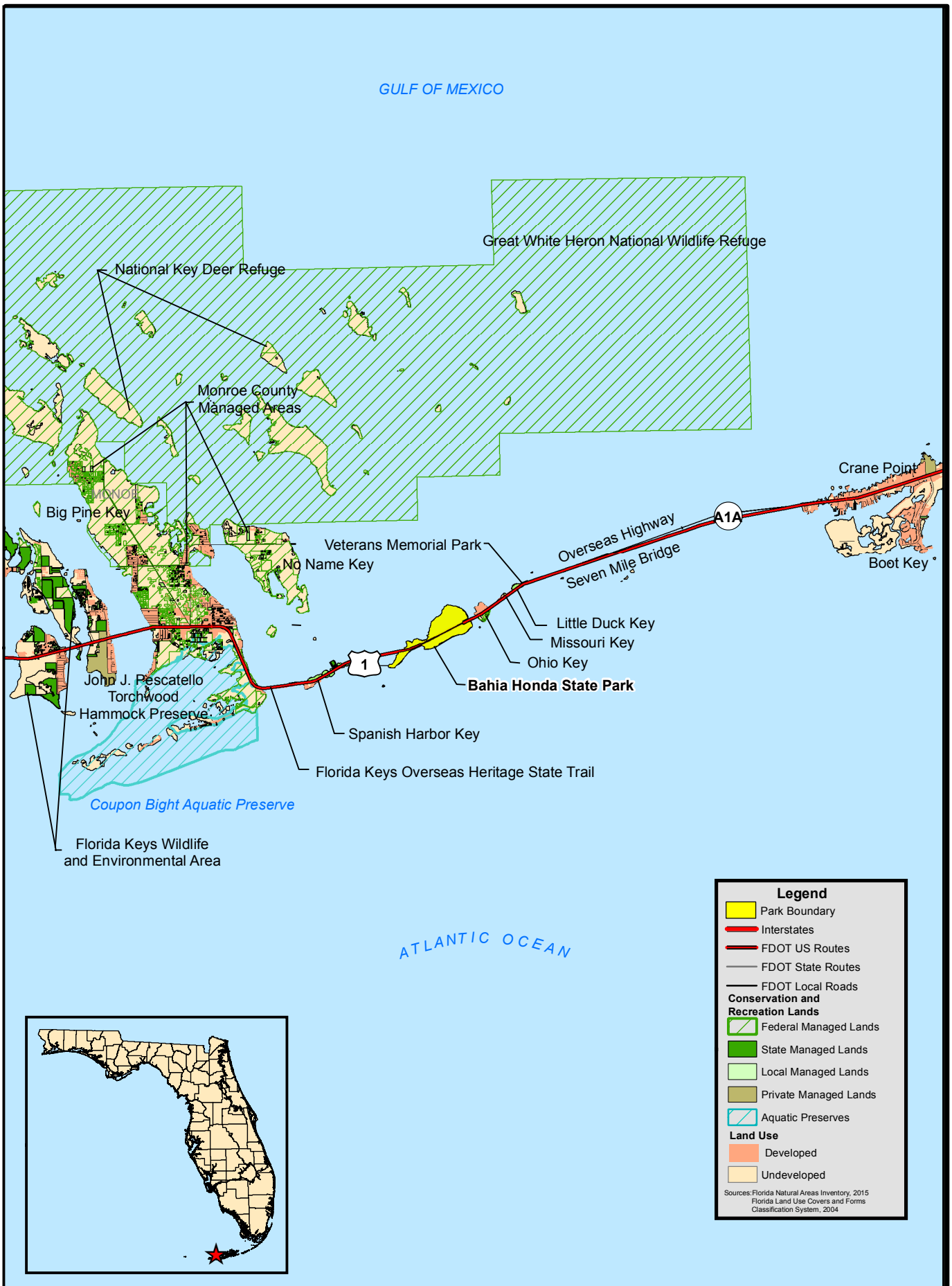
Purpose and Scope of the Plan

This plan serves as the basic statement of policy and direction for the management of Bahia Honda State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2003 approved plan.

The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and issues are identified, and measurable management objectives are established for each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, the natural and cultural resources of the park, current public uses and existing development. Measurable objectives are set to achieve the desired allocation of the physical space of the park. These objectives identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.

The Implementation Component consolidates the measurable objectives and actions for each of the park's management goals. An implementation schedule and cost estimates are included for each objective and action. Included in this table are (1) measures that will be used to evaluate the DRP's implementation progress, (2) timeframes for completing actions and objectives and (3) estimated costs to complete each action and objective.



BAHAI HONDA STATE PARK

N

0 1.25 2.5 5 Miles

Florida Department of Environmental Protection
Division of Recreation and Park

VICINITY MAP

BAHIA HONDA STATE PARK

N

0 0.5 1 2 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2011

REFERENCE MAP

Secondary and Incompatible Uses

All development and resource alteration proposed is subject to the appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

In the development of this plan, the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that accepting clean fill to assist with efforts to restore borrow pits could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. This compatible secondary management purpose is addressed in the Resource Management Component of the plan.

Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that accepting clean fill to assist with efforts to restore borrow pits would be appropriate at this park as an additional source of revenue for land management since it is compatible with the park's primary purpose of resource-based outdoor recreation and conservation.

Contract Services

DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a concessionaire may provide services to park visitors in order to enhance the visitor experience. For example, a concessionaire could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A concessionaire may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of concessionaires, etc. are made on a case-by-case basis in accordance with the policies set forth in DRP's Operations Manual (OM).

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the DRP is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

> *It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.*

The Trustees has granted management authority of certain sovereign submerged lands to the DRP under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely affect public recreational uses.

Many operating procedures are standardized and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

Park Management Goals

The following park goals are DRP's long-term intent in managing the state park:

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park.
- Restore hydrology to the extent feasible and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve or restore imperiled species populations and habitats.
- Remove exotic and invasive species and conduct needed maintenance-control.
- Protect, preserve and maintain the cultural resources of the park.
- Provide public access and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure.

Management Coordination

The park is managed in accordance with all applicable laws and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, marine fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection (DEP), Florida Coastal Office (FCO) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Coastal Systems aids staff in planning and construction activities seaward of the Coastal Construction Control Line (CCCL). In addition, the Bureau of Beaches and Coastal Systems aid the staff in the development of erosion control projects.

Public Participation

DRP provided an opportunity for public input by conducting a public hearing and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on June 9th and 10th, 2016, respectively. Meeting notices were published in the Florida Administrative Register, June 1, 2016, Volume 42/Issue 106, included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the Advisory Group meeting is to provide the Advisory Group members an opportunity to discuss the draft management plan (see Addendum 2).

Other Designations

Bahia Honda State Park is within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes. The park was designated as a component of the Florida Greenways and Trails System in 2002, a program administered by the Department's Office of Greenways and Trails as defined by Section 260, Florida Statute.

All waters within the park are designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. The Department also classifies surface waters in this park as Class III waters. This park is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes). However, the park is within the Florida Keys National Marine Sanctuary.

Resource Management Component

The DRP has implemented resource management programs for the perpetual preservation of representative examples of the state's significant natural and cultural resources. This component of the plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. Management measures expressed in this plan are consistent with the DRP's overall mission in natural systems management.

The DRP's resource management philosophy is guided by the principles of natural systems management. Primary emphasis is placed on restoring and maintaining the natural processes that shaped the structure, function, and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species can be accommodated on a case-by-case basis and should be compatible with the maintenance and restoration of natural processes.

The DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events, or persons contributing to the history of Florida. This goal often entails active measures to stabilize, reconstruct, restore, or rehabilitate cultural resources. Appropriate public use of cultural resources will be considered according to the park's unit classification and the sensitivity of the resources.

Park units are often components of larger ecosystems, and their proper management can be affected by conditions that occur beyond park boundaries. Ecosystem management is implemented through an evaluation program that assesses resource conditions, refines management activities, and reviews local and regional development permit applications for park impacts.

The entire park is divided into management zones that delineate areas on the ground that are used to coordinate management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and fire breaks. Table 1 reflects the management zones with the acres of each zone.

Management Goals, Objectives, and Actions

Measurable objectives, and actions have been identified for each of the DRP's management goals for Atlantic Ridge Preserve State Park. The goals, objectives, and actions identified in this management plan will serve as the basis for developing annual work plans for the park. The ten-year management plan is based on conditions that exist at the time the plan is developed. The annual work plans provide the flexibility needed to adapt to future conditions as they change during the ten-year management planning cycle. As the park's annual work plans are implemented through the ten-year cycle, it may become necessary to adjust the management plan's priority schedules and cost estimates to reflect these changing conditions.

Table 1. Bahia Honda State Park Management Zones			
Management Zone	**Acreage**	**Managed with Prescribed Fire**	**Contains Known Cultural Resources**
BH-01	0.54 acres	N	N
BH-02	221.24 acres	N	N
BH-03	36.35 acres	N	N
BH-04	49.89 acres	N	N
BH-05	44.56 acres	N	Y
BH-06	52.28 acres	N	N
BH-07	52.53 acres	N	Y
BH-08	33.76 acres	N	N

Topography

Bahia Honda is part of the physiographic region of high coral keys with maximum elevation of eight to ten feet, and less than two feet on Little Bahia Honda Key. The edge of the continental shelf parallels the Keys approximately seven miles offshore. Much of the park's total area is submerged land or intertidal, with depths that do not exceed ten feet.

Human activity has altered the natural topography of both the uplands and the submerged communities in the park. Dredging in the 1930s was conducted for construction of the Overseas Highway, excavating two borrow pits on the north side of the island. One of the borrow pits functions as a marina and boat basin while the second is located adjacent to the cabin and primitive camping area of the park. On either side of this second borrow pit are two spits of land that were created as a result of the dredging operation.

During development in the 1960s, a third borrow pit was dredged to develop land at the west end of the park. This borrow pit is connected to the marina and boat basin via a small mangrove channel and is utilized as a boat basin for campers and marina for the Florida Keys National Marine Sanctuary Law Enforcement.

Geology

The upper layer geologic formation of the Florida Keys from soldier Key to Bahia Honda Key is Key Largo limestone. Built by the coral polyps of ancient coral reef formations, these fossilized remains are similar to the present living coral reefs offshore. As sea level has fluctuated over time, the land mass of South Florida has alternately been submerged and exposed above the level of the water. Approximately 120,000 years ago, sea level dropped close to its present level exposing the coral and allowing for the formation of the islands of the Florida Keys. When the area of the Keys is submerged, the limestone from ancient coral reefs provides the necessary substrate for new growth of coral formations and coral reefs. Subsequently, the Key Largo limestone is quite thick, as much as 145 feet in some areas of the Upper Keys (Hoffmeister, 1974).

BAHIA HONDA STATE PARK

N

0 900 1,800 3,600 Feet

Department of Environmental Protection
Division of Recreation and Parks

MANAGEMENT ZONES MAP

Soils

Information published in the U.S. Department of Agriculture's Classification and Correlation of the Soils of Monroe County Keys Area Florida identifies eight soil types at Bahia Honda State Park (see Soils Map). They are Matecumbe muck, Keylargo muck, Udorthents-Urban land complex, Rock outcrop-Cudjoe complex, Lignumvitae marl, Bahiahonda fine sand, Key West marl and Beaches.

Matecumbe muck can be found at the lower elevations that are subject to occasional flooding. It is moderately well drained and can be found in association with the poorly drained Cudjoe, Lignumvitae and Key West soils, Keylargo muck, Rock outcrop-Cudjoe complex, Lignumvitae and Key West marl are associated with mangrove tidal swamps. Bahiahonda fine sand is associated with the upland habitats at Bahia Honda. It is subject to flooding only during tropical storm events. Beaches are areas that are constantly being reworked by wind and tides. They consist of about 16 inches of sand underlain by approximately 44 inches of fine sand. Soils here are poorly drained. Udorthents-Urban land complex includes constructed upland areas where land has been altered by dredging and filling for development (United States Department of Agriculture, Natural Resources Conservation Service, 1995). Addendum 4 contains detailed soil descriptions for the park.

Management activities will comply with those practices that will best prevent erosion in order to conserve the soil resources of the park and the offshore water resources of the Florida Keys National Marine Sanctuary. These include protecting beach dune vegetation and augmenting planting of beach dune vegetation when necessary.

Minerals

Key Largo limestone is the major mineral deposit at Bahia Honda State Park. Minor mineral deposits include calcite and halite.

Hydrology

The primary natural source of freshwater in the Florida Keys is rain. Historically, early settlers collected rainwater in cisterns or used water from wells and solution holes that tapped the small, shallow freshwater lenses. These lenses form in the limestone above sea level during the rainy season. Until recently, nearshore freshwater upwelling, an extension of the Biscayne Aquifer, occurred in at least one location on northern Key Largo. Drainage of the Everglades and the subsequent canalization of southeast Florida (including canals in the Florida Keys) resulted in saltwater intrusion into the Biscayne Aquifer and changed the regional hydrology. Only on the larger islands such as Key Largo and Big Pine Key is rainwater retained for any length of time.

The major hydrological alteration in the park is a result of the development of U.S. Highway 1 after the destruction of the railroad. Both the railroad construction and the subsequent construction of the highway bisected the island's interior lagoon into two separate lagoons located in Management Zones BH-02 and BH-04. Because there are no culverts or other natural connections between these lagoons, they have operated independently of each other for close to a century.

There is minimal tidal movement on either side, but less so on the south side of U.S. 1 in zone BH-04 due to the location of the tidal creek at the south end of the zone. Sand accretion at the entrance to the tidal creek often times blocks water flow into this lagoon. The mangrove tidal creek leading into BH-03 and BH-02 has become overgrown and no longer allows an adequate flow of water to flush out the lagoon on the north side of U.S. 1 in zone BH-02. This alteration has adversely affected the quality of the lagoons and they no longer function as suitable habitat for fish or as feeding grounds for wading birds. Salinity levels in both lagoons are higher than in the surrounding nearshore waters.

Hydrological studies have been conducted with the possibility of using recent technology, direction boring, to reconnect the two lagoons. However, it was determined that this process would not accomplish restoration goals due to the other dynamics of the water flow into the lagoons.

Hydrological alteration has also occurred in zone BH-08 due to development of the ranger residence particularly the development of the dirt road that leads to the residence area. Culverts were installed under this road, but they have never been large enough to allow for functional flow, which would have maintained connectivity between the mangrove habitats. Hydrological restoration in this management zone was completed in 2019 using funding from the Keys Restoration Fund.

The last area of hydrological alteration is in zone BH-07 on the road from the Buttonwood campground towards the bridge underpass. This area was dredged but the elevation is higher as the mangrove creek heads towards the bay on the north then it is further into the mangroves to the east. A small culvert is located under the bridge, but due to years of poor drainage and sediment accumulation, was no longer operational. Hydrological restoration at this site was completed in 2018 using funding from the Keys Restoration Fund.

Hydrological Management

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

BAHIA HONDA STATE PARK

N

0 900 1,800 3,600 Feet

Department of Environmental Protection
Division of Recreation and Parks

SOILS MAP

Objective: Conduct/obtain an assessment of the park's hydrological restoration needs. The hydrology at Bahia Honda has been altered in six areas of the park in zones BH-02, BH-04, BH-07 and BH-08. Two restoration projects were completed in Management Zone BH-08 in 2018 and 2019.

Action 1.	Completed hydrological assessment of interior lagoons
Action 2.	Develop restoration plan for filling borrow pits
Action 3.	Implement restoration of borrow pits to functional seagrass habitat
Action 4.	Completed two restoration projects within mangrove habitat

The interior lagoons in BH-02 and BH-04, once a single ecosystem, were bisected during the construction of U.S. Highway 1 in the early 1930s. Due to decreased tidal flow, the lagoons are no longer as productive or functional as they once were. The absence of adequate flushing has resulted in higher salinities, decreased productivity as juvenile fish habitat and decreased productivity as feeding grounds. The most efficient and productive way to reconnect the lagoons and increase tidal flow is to install culverts under U.S. Highway 1. In the late 1990s a project was undertaken to measure and compare the tidal flow at key locations on the oceanside and bayside of the island. However, despite several days of data collection, the principle surveyor determined that there were too many variables, and he deemed the data to be invalid. Within the last two years, communication has opened again with the Florida Department of Transportation and other entities to address the restoration of these lagoons. A hydrological study has been conducted and determined that installing culverts under U.S. Highway 1 will not aid in the restoration of the interior lagoons due to the decrease in tidal flow from the two mangrove creeks into the northern and southern lagoons.

There are three borrow pits in the park that are at a depth of approximately 32 feet. The first in zone BH-08 is located between the cabins and the primitive camping area and was dredged for fill material for the construction of U.S. Highway 1. Two spits were created on either side of this borrow pit altering the natural mangrove shoreline. District staff have been working with the Keys Environmental Trust Fund to obtain permits necessary to fill this borrow pit in order to restore seagrass beds. The plan is to fill in the pit to a depth of six to eight feet. Although this is deeper than the adjacent seagrass beds, it will allow for the reestablishment of seagrass while still providing recreational use of the site.

The two borrow pits in zone BH-07 were dredged for fill material for the construction of U.S. Highway 1 and later for the development of the park. The first is utilized as a concession and public use marina and the second, which is connected to the first by a small mangrove creek, is used as a marina for the Florida Keys National Marine Sanctuary Law Enforcement and as a dockage for campers. Inadequate water flow in and out of this second marina has resulted in anoxic conditions as sediment has continued to settle without the ability for proper flushing. The Florida Keys Water Quality Committee is looking at sites throughout the Keys where similar conditions persist. There are no plans yet to improve water quality in this marina.

Hydrological alteration in zone BH-07 had adversely affected the health of a mangrove ecosystem. This site is located at the bridge that leads from the Buttonwood campground to the cabins. There are two issues that have impacted proper water flow; the end of the creek that flows into the water is at a

higher elevation than the rest of the creek, and the culvert under the bridge is not functional. Restoration at this site was completed in 2018 through funding from the Keys Restoration Fund. Monitoring continues within the mangrove ecosystem to evaluate health and recovery of the wetland. Staff manage excess debris that washes in during extreme high tides.

The second area of wetland alteration is in zone BH-08 on the road that leads to the ranger residences. This road was installed between two mangrove habitats, and fill material was dumped to the northeast of the road creating a berm and further affecting the tidal flow. Culverts that were placed under the dirt road have never been adequate to handle water flow. Historically the spring tides at the new and full moon did not create any issues, but the extreme high tides of the spring and fall associated with the new and full moon are so great that the road flooded for several day making access to and from the residences difficult. Restoration of this site was completed in 2019 through funding from the Keys Restoration Fund and monitoring will continue to evaluate health and recovery of the wetland.

Objective: Restore natural hydrological conditions and functions to approximately eight acres of Seagrass and Mangrove Salt marsh natural communities.

Action 1. Install approximately 219,000 cubic yards of material to restore seagrass habitat in the borrow pit

Once permits from the South Florida Water Management District and the Army Corp of Engineers are secured, filling the borrow pit in zone BH-08 can begin. This project will consist of working with contractors who are in need of disposing clean fill material, selecting a site near the project site for mobilization of the fill material, then once inspected, installing the material into the borrow pit. Typically, this material is large pieces of concrete from demolished buildings or bridges. Once the elevation is close to the desired depth, smaller sized fill material will be installed. The borrow pit is approximately 4.39 acres with a depth of approximately 32 feet, consistent with other borrow pits throughout the Keys. This will require approximately 218,715 cubic yards of fill material similar projects have been completed or are underway in Dagny Johnson Key Largo Hammock Botanical State Park with great success.

Four acres of mangrove salt marsh were restored in 2019 by installing culverts at the bridge and under the road to the ranger residences, dredging the end of the tidal creek by the bridge to an elevation that is lower than the creek, and removing the berm to the northeast of the road to increase tidal flow.

Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes of the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its desired future condition. Specific management objectives and actions for natural community management, exotic species management, imperiled species management [and population restoration] are discussed in the Resource Management Program section of this component.

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, however, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.

When a natural community within a park reaches the desired future condition, it is considered to be in a "maintenance condition." Required actions for sustaining a community's maintenance condition may include, maintaining optimal fire return intervals for fire dependent communities, ongoing control of non-native plant and animal species, maintaining natural hydrological functions (including historic water flows and water quality), preserving a community's biodiversity and vegetative structure, protecting viable populations of plant and animal species (including those that are imperiled or endemic), and preserving intact ecotones linking natural communities across the landscape.

The park contains nine distinct natural communities as well as altered landcover types. A list of known plants and animals occurring in the park is contained in Addendum 5.

Table 2. Natural Communities and Altered Landcover Types

Landcovers	Acreage	Percentage
Marine Tidal Swamp	146.38	30%
Marine Substrate	135.15	27%
Developed	72.38	15%
Marine Tidal Marsh	52.64	11%
Beach Dune	36.73	7%
Coastal Berm	27.61	6%
Marine Seagrass Bed	18.20	4%
Spoil Area	0.96	0.1%
Key Tidal Rock Barren	0.54	0.1%
Total	**490.59**	**100%**

Beach Dune – 36.73 acres

Desired future condition: A coastal mound or ridge of unconsolidated sediments found along shorelines with moderate to high energy waves. Vegetation will consist of herbaceous dune forming grass species such as sea oats (*Uniola paniculata*) and beach panicum (*Panicum amarum*). Other typical species may include sea rocket (*Cakile lanceolata*.), railroad vine (*Ipomea pes-caprae*), blue paspalum (*Paspalum caespitosum*), beach morning glory (*Ipomea imperati*), bay bean (*Canavalia rosea*), and sea purslane (Sesuvium portulacastrum). Occasionally shrubs such as beach elder (*Iva imbricata*), inkberry (*Scaevola plumieri*), bay cedar (*Suriana maritima*), and sea lavender (*Heliotropium gnaphalodes*) may be scattered within the herbaceous vegetation.

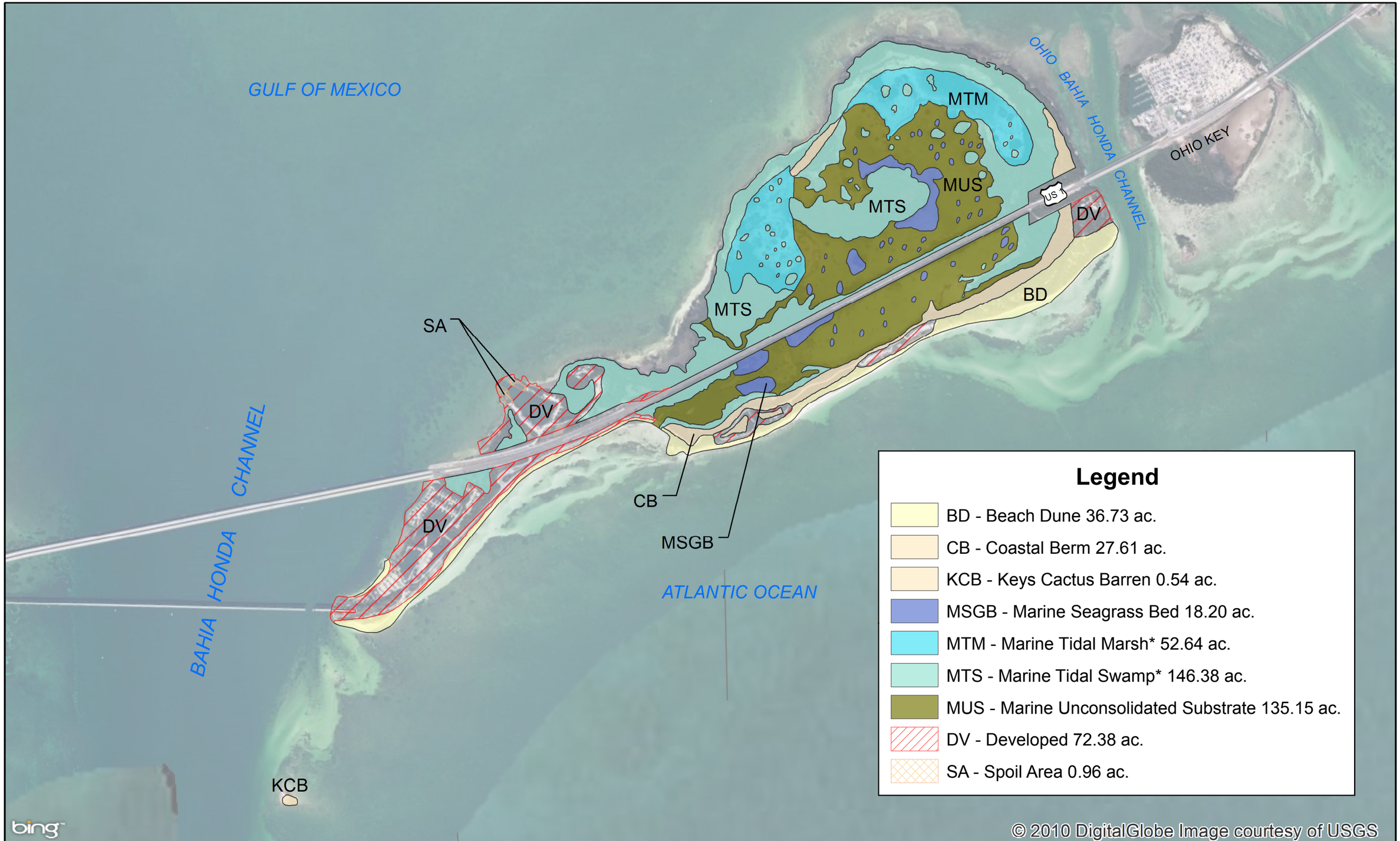
Description and assessment: The beach dune at Bahia Honda occurs along the south side of U.S. Highway 1 in zones BH-05, BH-06 and BH-07; and on the north side of U.S. Highway 1 in zone BH-07. The sand is organic in nature, composed of calcium carbonate particles derived mostly from calcareous algae, with minor additions from corals and mollusks.

Prior to Hurricane Irma, the beach dune in zones BH-05 and BH-06 was in excellent condition comprised of a naturally occurring beach and a well-developed primary and secondary dune system. Species common in the primary dune included sea oats, beach panicum, beach elder, wild poinsettia (*Euphorbia cyathophora*) southern sea rocket, railroad vine, bay cedar (*Suriana maritima*), Cuban clustervine (*Jacquemontia havanensis*) and inkberry. In addition, there is a significant population of the imperiled sea lavender, which has increased in abundance and distribution since Hurricane George impacted the island in 1998.

Fluctuations on sand accumulation occur and some beach erosion has taken place in zone BH-05 but minimal impacts were experienced in these two zones during the active 2004/2005 hurricane season.

When Hurricane Irma made landfall on Cudjoe Key in 2017, the impact at Bahia Honda State Park was substantial. The oceanside shoreline in Management Zones BH-05, BH-06, and BH-07 was severely impacted including vegetative damage/destruction and infrastructure damage. The storm surge flowed into the secondary dune, and a deep wrack line was deposited approximately 180 feet from the shoreline. Sandspur Campground and day use area were destroyed, the park road was damaged or destroyed, and Loggerhead Beach, at the western end of BH-07, was severely damaged. Additional impacts to the natural resources were inadvertently impacted from the construction clean-up, resulting in a significant loss of native species.

Bahia Honda State Park was closed for two months to enable clean-up and debris removal. Because of the issue of safety, and the absence of facilities in the Sandspur day use and Sandspur Campground, when the park opened again in November 2017, only the area west of the Ranger Station/entrance road was open to the public. Over time, native vegetation slowly recruited along the shoreline in all three management zones including sea lavender, bay cedar, railroad vine, sea oats, southern sea rocket and inkberry. The population of sea lavender is once again abundant in all three management zones.



BAHIA HONDA STATE PARK

N

0 900 1,800 3,600 Feet

Department of Environmental Protection
Division of Recreation and Parks

NATURAL COMMUNITIES MAP

During this time, non-native invasive species also recruited in including beach naupaka (*Scaevolea taccada*), Australian pine (*Casuarina equesitifolia*), portia (*Thespesia populnea*), and latherleaf (*Colubrina asiatica*). Regular efforts at exotic removal were conducted by park and District staff.

In 2018 least terns (*Sterna antillarum*) nested on the beach in Management Zone BH-06, adjacent to the Sandspur day use area. Fifteen nests were documented, and this colony was included in the Florida Fish and Wildlife's Florida Shorebird database. It is believed that a number of least tern individuals moved from the historic nest sites on the Old Bahia Honda Bridge to the beach as it provided more suitable habitat. Towards the end of the nesting season, over 140 least tern adults and juveniles were observed in the vicinity of the nesting colony.

Sea turtle nesting is documented in all beach areas in zones BH-05, BH-06, and BH-07, although activity on the bayside in zone BH-07 is limited and the primary nesting habitat occurs on the Atlantic side of the island. In zone BH-07, sea turtles have nested in remote areas along the edges of the parking lot. The majority of nesting sea turtles are loggerhead turtles (*Caretta caretta*), with hawksbill turtles (*Eretmochelys imbricata*) nesting more consistently on a bi-annual cycle. In 2009, a green turtle (*Chelonia mydas*) was observed in the early morning by park visitors and park staff. This was the first documentation of this species at Bahia Honda. A second green nest was documented in 2015. In 2016, a leatherback turtle (*Dermochelys coriacea*) nested at the park, the first documented leatherback in the Florida Keys. Although the nest contained 65 eggs, only 7 hatched, likely due to saltwater inundation from high tides which affected other sea turtle nests.

The beach dune habitat supports over thirty-nine species of shorebirds that forage on the amphipods found in the wrack line or in the nearshore waters along the beach. Quarterly shorebird surveys have been conducted in the park since the early 1990s, nesting shorebird surveys are conducted monthly from March – August, non-breeding surveys are conducted quarterly, and winter shorebird surveys are conducted annually. Species documented at the park include semipalmated plover (*Charadrius semipalmatus*), Wilson's plover, piping plover (*Charadrius melodus*), reddish egret (*Dichromanassa rufescens*), willet (*Tringa semipalmata*), ruddy turnstone (*Arenaria interpres*), laughing gull (*Leucophaeus atricilla*), least tern (*Sternulla antillarum*), semipalmated sandpiper (*Calidris pusilla*), and sanderling (*Calidris alba*). A sooty tern (*Onychoprion fuscatus*) and a glaucous gull (*Larus hyperboreus*) were observed, both of which stayed in the park for only a short period of time.

Ghost crabs (*Ocypode quadrata*) or their burrows are commonly found along the beach and southeastern five-lined skink (*Eumeces inexpectuatus*) can be observed in the primary dune.

A narrow freshwater marsh is located between the primary and secondary dune in zone BH-05. This freshwater interdunal swale is a unique component of the beach dune and is not known to occur anywhere else in the Florida Keys. Although this marsh has been adversely impacted by Hurricane Georges in 1998, the 2004/2005 Hurricane seasons, and by Hurricane Irma in 2017, the habitat has recovered and freshwater flora including saw grass (*Cladium jamaicensis*) persists. Freshwater levels fluctuate depending upon the season, being particularly low or dry during the winter months.

The beach in zone BH-07 has recovered from the impacts from Hurricane Irma, although there was beach loss at the western most end of the management zone. However, native vegetation including sea lavender, beach elder and inkberry have recruited in, helping to stabilize the shoreline. This area is narrower than the beach/dune habitat in Management Zone BH-05 because it has a less well-developed primary dune and no secondary dune. This management zone is known as Loggerhead Beach and required restoration and stabilization post-Hurricane Irma. Large boulders were installed to prevent erosion and protect the park road. Over 500 native plants, donated by the Dagny Johnson Key Largo Hammock Nursery have been planted in this management zone to aid in natural resource protection.

The small beach on the bayside of zone BH-07 is adjacent to the parking lot. This area was also impacted by Hurricane Irma, but to a lesser degree than the oceanside of the island. Although the small beach is subject to erosion particularly around several coconut palm (*Cocus nucifera*) trees.

Although the beach/dune habitat suffered impacts from Hurricane Irma, recovery continues and the natural community is in good condition.

General management measures: Most of the beach dune at Bahia Honda is in the desired future condition particularly in zone BH-05 where the secondary dune persists. In order to maintain this condition, non-native plant species particularly beach naupaka, portia, and other invasive species need to continue to be removed when found. Beach naupaka is a popular coastal landscape plant whose seeds float so the beach will always need consistent monitoring to eliminate recruits germinating on the beach/dune.

In the narrower sections of the beach dune in zone BH-07, it may not be possible to achieve the desired future condition. The area that is reinforced by large boulders has little to no dune vegetation and little to no beach even at low tide. In other areas of zone BH-07 where the beach is wider and natural dune vegetation is persisting, the beach has achieved its desired future condition.

The freshwater interdunal swale is in its desired future condition. Regular surveys for exotic infestation and unauthorized access are the management measures that can ensure that this unique habitat is maintained in this condition. However, it is subject to storm surges, saltwater inundation and drought, which are outside of the park's ability to manage.

Coastal Berm – 27.61 acres

Desired future condition: Coastal berm habitat is found on the seaward edge or landward edge of the mangroves or further inland depending on the height of the storm surge that formed them. They range in height from 1 to 10 feet. Structure and composition of the vegetation is variable depending on height and time since the last storm event. Coastal berm will consist of a mixture of tropical herbs, shrubs and trees and is defined by its substrate of coarse, calcareous, storm-deposited sediment forming long narrow ridges that parallel the shore. The most stable berms may share some tree species with rockland hammocks, but generally have a greater proportion of shrubs and herbs. Tree species may include blolly (*Guapira discolor*), gumbo limbo (*Bursera simaruba*), and poisonwood

(*Metopium toxiferum*). Characteristic tall shrub and short tree species include Spanish stopper (*Eugenia foetida*), hog plum (*Ximenia americana*), white indigo berry (*Randia aculeata*), seven-year apple (*Genipa clusiifolia*), blackbead (*Pithecellobium keyense*), and saffron plum (*Sideroxylon celastrinum*). Short shrubs and herbs include perfumed spiderlily (*Hymenocallis latifolia*), limber caper (*Capparis flexuosa*), wild lantana (*Lantana involucrata*), and rougeplant (*Rivina humilis*). More seaward berms or those more recently affected by storm deposition may support a suite of plants similar to beaches, including shoreline seapurslane (*Sesuvium portulacastrum*), saltgrass (*Distichlis spicata*), and seashore dropseed (*Sporobolus virginicus*), or dense shrub thickets with buttonwood (*Conocarpus erectus*), black, red, and white mangroves (*Avicennia germinans, Rhizophora mangle, and Laguncularia racemosa*), joewood (*Jacquinia keyensis*), and bushy seaside oxeye (*Borrichia frutescens*).

Description and assessment: The coastal berm at Bahia Honda is found in Management Zone BH-02 on the eastern side between the mangrove swamp and the salt marsh, in Management Zone BH-03 in a narrow fringe on the north side behind the mangrove swamp, in Management Zone BH-05 on the secondary dune, and in Management Zone BH-06 fragmented by the Sandspur campground. All of the coastal berm habitats provide critical habitat for wildlife particularly migrating birds and the white-crowned pigeon (*Patogioenas leucocephala*).

The coastal berm in zone BH-02 is in excellent condition and was not impacted by Hurricane Irma in 2017. There is minimal exotic infestation mainly portia and latherleaf, and regular exotic removal has been conducted in this management zone. Follow-up treatment needs to continue to ensure that recruits are treated and or removed. The coastal berm is orientated in a north-south direction grading into salt marsh to the west and mangrove swamp to the east. Vegetation includes hammock species such as poisonwood, blackbead, milkbark, darling plum (*Reynosia septentrionalis*), and silver palm (*Cocothrinax argentata*). The park was developed in the early 1960s except for the eastern end of the island that had remained in private ownership until the 1980s. Once the land was acquired, restoration was conducted to remove an entrance road and restore the original wetland elevations.

The coastal berm in zone BH-03 is located towards the northwest section of the zone on a narrow ridge just behind the fringing mangrove swamp. This habitat is in excellent condition. Although it is impacted by debris washed ashore during high tide or storm events, it was not adversely impacted by Hurricane Irma in 2017. Species found here include Spanish stopper (*Eugenia foetida*), blackbead, poisonwood, pigeon plum (*Coccoloba diversifolia*), and gumbo limbo.

The coastal berm in zone BH-05 was in excellent condition prior to the impacts from Hurricane Irma. The coastal berm is in the secondary dune on the southeast end of the island and was impacted by downed vegetation and a storm surge that washed to the edge of the habitat. Unauthorized spur trails were a problem in the past but many of these were covered over by debris washed ashore during storm events since 1998. Several trails persist but access on these trails appears to have decreased. This is the largest coastal berm habitat in the park and prior to Hurricane Irma, supported a host of imperiled species including two naturally occurring yellow wood (*Zanthoxylum flavum*) trees, Cuban clustervine, Garber's spurge (*Chamaesyce garberii*), dune lily thorn (*Catesbaea parviflora*), and the largest silver palm hammock in the Florida Keys. Other more common species found here include

poisonwood, gumbo limbo, seagrape (*Coccoloba uvifera*), red ironwood, blackbead, lantana, and black torch (*Erithalis fruticosa*). This site is one of the outplanting locations for the ongoing yellow wood augmentation project initiated in 1996. This management zone was also the location of the Silver Palm Nature Trail, which was destroyed in Hurricane Irma.

This habitat suffered a significant amount of damage during Hurricane Irma in 2017, although it has since recovered. Management Zone BH-05 is considered a protected area, so it is an area of the park that was not targeted for contractor cleanup after the storm. Despite the amount of damage, several of the imperiled species have recruited in including dune lily thorn and Cuban clustervine. Unfortunately, none of the outplanted or naturally occurring yellow wood trees survived the storm.

A portion of the coastal berm in zone BH-06 is fragmented by the Sandspur campground. Most of the habitat was in good condition prior to Hurricane Irma, although impacts were evident in the vegetation adjacent to the campsites. When the campground was open, garbage, trampling and habitat encroachment were the most obvious signs of use although certain areas also contain spur trails leading from the campsites to the main park drive. This area was a more mature coastal berm than that found in zone BH-05 as the main canopy species consisted of pigeon plum, milkbark, poisonwood and gumbo limbo with silver palm as an understory component. Hurricane Irma destroyed the campground and impacted much of the vegetation. Post storm cleanup also impacted native vegetation.

Prior to Hurricane Irma, the National Champion yellow wood persisted in this coastal berm along with one other naturally occurring individual. The majority of outplanted individuals that are part of the yellow wood conservation project were located in this management zone. In May of 2017, flowers were observed for the first time since the inception of this augmentation project on one of the outplanted yellow wood. Unfortunately, this plant did not survive the storm/cleanup. The National Champion is still persisting, but only two of the twenty-five outplanted individuals survived.

The coastal berm in Management Zone BH-06 also supports the only known manchineel trees (*Hippomane mancinella*) that occur in the park. This is a rare species that is known from only a few locations in the Florida Keys. Individuals had persisted on the south side of the park drive in the Sandspur campground, and survived Hurricane Irma. However, with the new construction of the Sandspur campground, it is unclear as to whether they persist. Prior to Hurricane Georges in 1998, there was a large individual adjacent to the bathhouse in the Sandspur campground.

The coastal berm in this zone also supports a host of wildlife including white-crowned pigeon, white-eyed vireo (*Vireo griseus*), palm warbler, prairie warbler (*Dendroica discolor*), northern mockingbird (*Mimus polyglottos*), great crested flycatcher (*Myiarchus crinitus*), peanut snail (*Cerion incanum*), green anole (*Anolis carolinensis*), six-lined racerunner (*Cnemidopherus sexlineatus*), land crab (*Cardisoma guanhumi*), golden orb weaver (*Nephila clavipes*), spinybacked orb weaver (*Gasteracantha cancriformis*), silver argiope (*Argiope argentata*), land crab, many species of resident and migrating birds, and a suite of butterfly and moth species.

The Miami Blue butterfly (*Cyclargus thomasi bethunebakeri*), once common throughout the Florida Keys, was believed to be extirpated from the Keys until a population was discovered in Bahia Honda in 1999. The University of Florida's Maguire Lab, under the direction of Dr. Jaret Daniels, established monitoring protocols and regularly surveyed for individuals in the park. Unfortunately, due to several factors, including the residual impacts from the cold snap in January 2010, the Miami blue was once again extirpated. The Maguire Lab has continued to work with the US Fish and Wildlife Service and the Florida Park Service on a captive breeding program. In an effort to conserve this species, it has been reintroduced at Bahia Honda and at Long Key State Park.

General management measures: In order to maintain or achieve the desired future condition of the coastal berm habitats in the park, continual exotic plant and animal species need to be addressed. Exotic plant species in the park are at a maintenance level so periodic follow-up treatment is necessary to treat or remove species that recruit in from outside sources. In areas where tides wash debris ashore, particularly in zone BH-03, regular shoreline clean-ups should be conducted. Unauthorized access needs to be prevented in order to maintain the integrity of the plant community and the protection of the imperiled species found in this habitat.

Keys Tidal Rock Barren – 0.54 acres

Desired Future Condition: Keys tidal rock barren is a flat rockland in the supratidal zone with much exposed and eroded limestone and a sparse cover of stunted halophytic herbs and shrubs, and it is inundated by salt water only during the extreme spring high tides. Patches of low, salt-tolerant herbaceous species will include bushy seaside oxeye (*Borrichia frutescens*), perennial glasswort (*Sarcocornia perennis*), saltwort (*Batis maritima*), saltgrass (*Distichlis spicata*) and seashore dropseed. Buttonwood (*Conocarpus erectus*) will be the dominant woody plant. It varies from stunted, sprawling, multi-stemmed shrubs to tree size. Other typical woody species are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and christmasberry (*Lycium carolinianum*). At the transition to upland vegetation, buttonwood may be joined by a variety of shrubs and stunted trees of inland woody species, including saffron plum (*Sideroxylon celastrinum*), wild cotton (*Gossypium hirsutum*), blackbead, wild dilly (*Manilkara jaimiqui*), poisonwood and joewood. Keys tidal rock barren occurs above the daily tidal range but is subject to flooding by seawater during extreme tides and storm events. Salt spray from coastal winds, as well as shallow soils, may limit height growth of woody plants. Aside from bare rock substrate, discontinuous patches of thin marl soils may be present. Depressions with deeper peat and mud soils support mangrove swamp and salt marsh communities, dominated respectively by mangroves or Gulf cordgrass.

Description and assessment: Keys tidal rock barren occurs in Management Zone BH-01 on Little Bahia Honda Key approximately ¼ mile southwest of Bahia Honda. This island was scarified during Hurricane Georges in 1998 and only a few black mangrove trees had recruited onto the island. It was again impacted in 2017 by Hurricane Irma. The island is low in elevation so it is exposed to more frequent tidal influences and saltwater inundation than typical Keys tidal rock barren habitats and small mollusks including bleeding tooth nerite (*Nerita peloronta*), checkered nerite (*Nerita tessellata*), and black horn shell (*Batillaria minima*) are common in the tidal pools.

Little Bahia Honda Key was historically utilized by nesting least terns and a proactive program was in place in the 1990s to encourage their use of the island for nesting. However, due to unauthorized access during the nesting season and lack of regular patrol, nesting success decreased. As a result, the island has ceased to be part of the park's nesting enhancement efforts and because of the impacts of Hurricane Georges, it is no longer considered suitable to support bird nesting.

General management measures: Sediment accumulation and establishment of herbaceous vegetation will restore this island to its former conditions. Ensuring that exotic species do not become established on Little Bahia Honda Key will be necessary in order to maintain the desired future condition of this habitat.

Mangrove Swamp – 146.38 acres

Desired Future Condition: Typically a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant overstory includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood. These four species can occur either in mixed stands or often in differentiated, monospecific zones based on varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangroves typically dominate the deepest water, followed by black mangroves in the intermediate zone, and white mangroves and buttonwood in the highest, least tidally influenced zone. Mangroves typically occur in dense stands (with little to no understory) but may be sparse, particularly in the upper tidal reaches where salt marsh species predominate. When present, shrub species can include seaside oxeye (*Borrichia arborescens, B. frutescens*) and gray nickerbean (*Caesalpinia bonduc*), and vines including coinvine (*Dalbergia ecastaphyllum*), and rubbervine (*Rhabdadenia biflora*), and herbaceous species such as saltwort (*Batis maritima*), shoregrass (*Monanthocloe littoralis*), perennial glasswort (*Sarcocornia perennis*), and giant leather fern (*Acrostichum danaeifolium*) can be found along the edges of the mangrove swamp. Soils are generally anaerobic and are saturated with brackish water at all times, becoming inundated at high tides. Mangrove swamps occur on a wide variety of soils, ranging from sands and mud to solid limestone rock. Soils in South Florida are primarily calcareous marl muds or calcareous sands and along Central Florida coastlines, siliceous sands. In older mangrove swamps containing red mangroves, a layer of peat can build up over the soil from decaying plant material (primarily red and black mangrove roots).

Description and assessment: Mangrove swamp is found throughout the park. It is the shoreline habitat on the north side of the island; occurs within the lagoon in zones BH-02 and BH-04; on the backside of zone BH-05; in zone BH-06 on either side of the entrance channel to the lagoon; in zone BH-03 to the west of the lagoon; throughout zone BH-08 and on the fringe of the upland area where the cabins are located; and in zone BH-07 in the Buttonwood campground and the habitat surrounding the smaller marina. Most of these areas were impacted during Hurricane Irma and there has been a major die-off due to both wind damage and the deposition of wrack on the mangrove roots. However, red mangrove new propagule recruitment has been observed.

In the early 1990s, an old road on the southeast side of BH-02 was removed and the topography restored to its historic elevation. This area has recruited in with red mangroves and black mangrove

pneumatophores and although the footprint of the old road is obvious in that the adjacent habitat is denser, this has become part of the overall functional mangrove swamp. The mangrove swamp in BH-05 occurs on either side of the road that leads to two residences. Culverts under the road allow for connectivity of water flow, but the culverts will need to be maintained in order for the habitats to remain in good condition.

Two areas of mangrove swamp had been in fair condition due to the disruption of tidal movement. The first is in BH-08 on the road leading to the ranger residence. The fill material that was installed in order to provide access to the residence area had never had adequate culverts, so the tidal flow has been disrupted since the road installation. There was also a berm to the northwest of the road past a sparsely vegetated salt pan that had added to the disruption of tidal flow. Restoration of this mangrove swamp was completed in 2019 with funding from the Keys Restoration Fund and will be monitored for success and recovery of the habitat.

The second area is on the bayside leading from the Buttonwood camping to the bridge underpass in zone BH-07. This site consisted of a mangrove creek that led from the bayside through a mangrove habitat ending behind the Assistance Park Managers residence. When this creek was dredged, the elevation at the end leading into the Gulf of Mexico was excavated at a higher elevation than the rest of the mangrove creek preventing adequate tidal movement. The culvert under the bridge was not an adequate size when installed so over time there had been a decrease in tidal movement and an increase in sediment accumulation. Restoration of this mangrove swamp was completed in 2018 with funding from the Keys Restoration Fund and will be monitored for success and recovery of the habitat. Water flow through this mangrove creek has improved but will require maintenance when extreme high tides wash in wrack or other debris.

General management measures: In order to achieve or maintain the condition of the mangrove swamp along the shoreline, debris washed in by the tides needs to continually be removed. In the area adjacent to the ranger residence and in the Buttonwood campground, exotic species particularly portia and Brazilian pepper (Schinus terebinthifolia) need to be managed.

Salt Marsh – 52.64 acres

Desired Future Condition: Expanses of grasses, rushes and sedges along coastlines of low wave-energy and river mouths. Smooth cordgrass (*Spartina alterniflora*) and black needlerush (*Juncus roemerianus*) are indicator species that typically form dense stands and will be delineated by elevation. Smooth cordgrass can tolerate daily inundation and dominates at lower elevations while black needlerush is found where the marsh floods less frequently. Other common plants will include saltwort (*Batis maritima*), glassworts (*Salicornia bigelovii* and *S. perennis*), bushy seaside oxeye (*Borrichia frutescens*), saltgrass (*Distichlis spicata*), and seashore paspalum (*Paspalum vaginatum*). Soils will range from saturated to inundated and vary considerably from deep mucks to fine sands but always contain a high salt content limiting biodiversity of plants

Description and assessment: Salt marsh is found on the east side of zone BH-02, and on the west side of the lagoon in zone BH-03. Persisting on slightly higher elevation than the adjacent mangrove

swamp and slightly lower elevations than the adjacent coastal berm, the salt marsh habitat is in excellent condition and was not adversely impacted by Hurricane Irma in 2017. The salt marsh in zone BH-02 was part of a restoration project in the early 1990s when an old road and surrounding fill were removed once that section of the island came into state ownership. Species found in both locations include Christmas berry (*Lycium carolinianum*), sea purslane (*Sesuvium portulacastrum*), sea ox-eye daisy, chaff flower (*Alternanthera flavescens*), saltwort and buttonwood. A variety of insects include silver argiope, spinybacked orb weaver, Cassius blue butterfly (*Leptotes cassius theonus*), West Indian buckeye (*Junonia evarete*), and mangrove skipper (*Phocides igmalion*) as well as fiddler crab (*Uca pugilator*) and marsh rabbit (*Sylvilagus palustris*).

General management measures: The salt marsh has achieved its desired future condition. However, to maintain this status, it will be necessary to continue to conduct exotic plant species removal.

Composite Substrate

Desired Future Condition: Marine composite substrate will consist of a combination of natural communities including seagrass beds, consolidated substrate and unconsolidated substrate. Because composite substrate is a combination of community types, floral and faunal components from any of these communities may be found in the composite substrate habitat, so species diversity is often times greater than the surrounding habitats.

Description and assessment: The composite substrate community forms a mosaic with associated submerged communities dependent upon depth, substrate composition and floral and faunal species composition. Therefore, the composite substrate community represents an ecotonal community where plant and animal species diversity is high. At Bahia Honda, the composite substrate community is in excellent condition and extends along the north side of the park. It is a mixture of seagrass, macroalgae and open, sandy substrate and includes species such as thorny starfish (*Echinaster sentus*), variegated urchin (*Lytechinus variegates*), West Indian sea biscuit (*Meoma ventricosa*), mantis shrimp (*Pseudosquilla ciliata*), shrimp (*Palaemonetes spp.*), blue crab (*Callinectes sapidus*), chicken liver sponge (*Chondrilla nucula*), vase sponge (*Ircinia campana*), upside down jellyfish (*Cassiopeia xamachana*), golfball coral (*Favia fragum*), finger coral (*Porites furcata*), turtle grass (*Thalassia tedtudinum*), shoal grass (*Halodule wrightii*), and fern algae (*Caulerpa sertularioides*).

General management measures: The habitat needs to be protected from the physical damage of boat grounding events.

Consolidated Substrate

Desired Future Condition: Consolidated substrate is characterized by Key Largo limestone substrate with minimal sediment accumulation. This habitat is also known as hardbottom and often times consist of a combination of macroalgae, octocoral and stony coral species. Because there is minimal sediment accumulation, seagrass does not thrive in this environment.

Description and assessment: The consolidated substrate at Bahia Honda is found in the submerged land southwest of zone BH-01. This is an important community because it provides a foundation for the development of other marine communities. Since seagrass does not thrive in this habitat, it is dominated by macroalgae including *Penicillus spp*., *Halimeda spp*. and *Acetabularia sp*. Other species found in this habitat include golfball coral, finger coral, pink-tipped anemone (*Condylactis gigantean*), massive starlet coral (*Siderastrea siderea*), and Queen conch (*Strombus gigas*) as well as a variety of fish species common in the shallow waters off the Florida Keys.

General management measures: The consolidated substrate at Bahia Honda is in good condition. However, there is the potential for impact particularly to the stony coral species in this habitat. Such impacts would be a result of physical damage from boat vessels, canoes or kayaks accessing the island, or by park visitors walking on or touching the corals. In order to achieve the desired future condition, regular surveys will be necessary to monitor the condition of the coral species including monitoring for disease, coral bleaching and damage from physical impacts. Noting changes in water quality and long-term sea surface temperature shifts will add to protection of the species found in the consolidated substrate.

Seagrass Bed – 18.20 acres

Desired Future Condition: Seagrass beds are typically characterized as expansive stands of vascular plants and are one of the most productive communities in the world. Seagrass beds will occur in clear, coastal waters where wave energy is moderate. The three most common species of seagrasses in Florida are turtle grass, manatee grass (*Syringodium filiforme*), and shoal grass. Other seagrasses of the genus Halophila may be intermingled, but species of this genus are considerably less common. Seagrass beds require unconsolidated substrate in order to establish their underground biomass root structure. They will typically be found in waters ranging from 20° to 30°C (68° to 86°F) and require clear water for photosynthesis. Seagrass beds will not thrive where nutrient levels are high because of increased turbidity and competition of undesirable algal species.

Seagrass beds provide important habitat for a host of commercially and recreationally important species. Most species spend part or all of their life cycle in the seagrass, which provides food, oxygen and shelter. Seagrass blades trap suspended sediment in the water allowing clear water to be transported to the offshore coral reefs during tidal movement.

Most species migrate between the coral reef, seagrass beds and mangrove communities on a diurnal, seasonal, or life cycle pattern, which provides food, oxygen and shelter. Seagrass stabilize sediment in the water allowing clear water to be transported to the offshore coral reefs during tidal movement.

Description and assessment: The majority of the seagrass bed at Bahia Honda is in good condition with most of this habitat located on the outer edge of the unconsolidated substrate in a clear delineation where park visitors have not waded into the nearshore, shallow waters. Here there have been impacts from propeller scars where vessels travel too close to the shoreline in water that is too shallow for the draft of the vessel. The other site where seagrass is found is in the interior of the lagoon mixed with unconsolidated substrate.

The three species of seagrass found in the park are turtle grass, shoal grass, and manatee grass. Turtle grass is the climax species while shoal grass and manatee grass are the pioneer species and first to colonize into open and/or disturbed sites. Shoal grass has a greater tolerance for salinity and temperature fluctuations and is therefore typically found in areas where extreme conditions occur nearshore and in areas of minimal water depth. The morphology of its root structure enables shoal grass to colonize open or disturbed areas stabilizing the sediment for the heavier rooted turtle grass. Manatee grass can be found in association with the other two species but is less common in the park.

Macroalgae are found in association with the seagrass community although they are not as abundant in a climax seagrass bed that is predominantly a monoculture of turtle grass. These include *Penicillus spp*., *Halimeda spp*., *Udotea spp*., *Acetabularia sp*., *Caulerpa spp*. and *Batophora sp*. Several non-reef building species of coral are found in this habitat including golfball coral, rose coral (*Manicina areolata*), and finger coral. Massive starlet coral is also found in the seagrass beds in the park, but it is considered a major reef building coral in the offshore coral reef habitat. These coral species are adapted to the higher salinity and temperature conditions of a seagrass bed, and are able to survive in water with higher suspended sediment than is typical of the offshore coral species. Other animals found in the seagrass include echinoderms, crustaceans, fish, worms, sponges, and epiphytic species that attach themselves to the turtle grass blades.

General management measures: In order to achieve the desired future conditions, the seagrass habitat needs to be protected from boat grounding events. Keeping motorized vessels out of shallow water will ensure that no physical impact occurs to this habitat. The seagrass bed in the interior of the lagoons will achieve its desired future condition by improved flushing by currents and tides on both sides of U.S. Highway 1. Because the alteration of this lagoon system neither side is able to successfully flush out providing an adequate exchange of water. This leads to an increase in salinity and sea surface temperatures that has compromised the functionality of these ecosystems.

Unconsolidated Substrate – 135.15 acres

Desired Future Condition: Unconsolidated substrates are characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones that lack dense populations of sessile plant species. Unconsolidated substrates are unsolidified material and include coral, algae, marl, mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can be quite numerous, making this habitat an important feeding ground for many bottom feeding fish. Unconsolidated substrates are important because they form the foundation for the development of other marine communities.

Description and assessment: The unconsolidated substrate occurs in zones BH-02 and BH-04 and in the nearshore waters on the Atlantic side of the island that are not included in the natural communities map. The unconsolidated substrate in zones BH-02- and BH-04 are part of the interior lagoon system. Prior to the development of U.S. Highway 1 in the early 1930s, this lagoon was one large ecosystem. Road construction bisected the lagoon into two smaller ecosystems. This has had an impact on the health of these two areas as the tidal movement on each side has been compromised. In zone BH-02

on the north side of U.S. 1, the mangrove creek that tidally connected to the lagoon has become overgrown so water flow has decreased. On the south side of U.S. 1 in zone BH-04, the only area of tidal exchange is through a small creek that flows underneath the bridge leading to the east end of the island. Due to sediment movement, the entrance to this creek is often times blocked not only with sandy substrate, but also with large amount of wrack material. This wrack line eventually disperses with changes in currents and tides.

The unconsolidated substrate is also found in the channels on the east and west side of the island and in the nearshore waters because of use by park visitors enjoying the subtropical marine environment. Snorkeling in the seagrass beds is a favorite activity along with enjoying the warm waters by the beach. Because of physical impact, the seagrass beds that once occurred close to the shoreline have been replaced by the sandy unconsolidated substrate.

General management measures: The unconsolidated substrate at Bahia Honda has achieved is desired future condition; however, the lagoon ecosystem has been comprised due to the decreased tidal flow. The lagoons used to be productive ecosystems that supported a diversity of wading birds, fish and other organisms that moved in with the tides. In order to restore the habitats to their desired future conditions the two lagoons need to be reconnected to improved tidal flow.

Clearing – 0.96 acres

Desired Future Condition: The cleared areas within the park will be managed to remove priority invasive plant species (FLEPPC Category I and II species). Other management measures include limited restoration efforts designed to minimize the effect of the cleared areas on adjacent natural areas. Cost-effectiveness return on investment and consideration of other higher priority restoration projects within the park will determine the extent of restoration measures in cleared areas.

Description and assessment: The only cleared area in the park is behind the residences at the east end of the island. This area has been disturbed and was historically utilized as a deposition site for coconut palm fruits and fronds. As a result, a monoculture of coconut palms has become established, however park staff have been conducting exotic removal projects at this site in order to restore the coastal berm habitat. The surrounding coastal berm habitat includes many imperiled species including Cuban clustervine, small flowered lily thorn, silver palm and Garber's spurge.

General management measures: Coconut palms and associated debris will need to be removed. This will enhance the coastal berm habitat that supports several imperiled plant species that are limited in their range throughout the Florida Keys and the mainland U.S.

Developed – 72.38 acres

Desired Future Condition: The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas.

Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

Description and assessment: The developed areas of the park include the Sandspur camping area and Sandspur day use in zones BH-05 and BH-06; the west end of the park in zone BH-07 which includes the Administration Building, Nature Center, Concession and two marina facilities, Buttonwood campground, shop, two residences and the bridge embankment to the Old Bahia Bridge, zone BH-08 which includes the cabins and primitive camping including a borrow pit, and the ranger residences and two residences at the west end of the island in zone BH-05.

When Hurricane Irma made landfall in September 2017, much of the infrastructure in the park was damaged or destroyed including:

- A Park Ranger resident at the east end of the island
- The Sandspur Campground
- The Sandspur day use area
- The bathhouse in the Buttonwood Campground
- The bathroom facility by the Administration Building
- The Nature Center and residence
- The Administration Building
- The Concession

As of 2020, the Sandspur day use and Sandspur Campground are being redeveloped, the Park Ranger residence at the east of the island has been replaced by a recreational vehicle, the bathhouse in the Buttonwood Campground has been rebuilt, the bathroom facility the Administration Building has been rebuilt, the Nature Center has been repaired, the Concession has been repaired, and the residence above the Nature Center is being repaired.

General management measures: Maintenance of exotic plant and animal species will be necessary in order to achieve the desired future condition of the developed areas in the park. It will also be necessary to evaluate the water quality and sediment accumulation in the second marina where the Florida Keys National Marine Sanctuary vessels are maintained. The poor water flow into this marina has resulted in increased sedimentation and anoxic conditions on the marina floor.

Natural Communities Management

Goal: Restore and maintain the natural communities/habitats of the park.

The DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural communities' improvements.

Prescribed Fire Management: Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels. Bahia Honda State Park does not contain any fire adapted communities so prescribed fire is not a resource management tool utilized at this park.

Natural Communities Restoration: In some cases, the reintroduction and maintenance of natural processes is not enough to reach the natural community desired future conditions in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural functioning of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure and physical characters.

Examples that would qualify as natural community restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, small-scale vegetation management.

Other than the hydrologic restoration mentioned above to restore seagrass and mangrove tidal swamp, there are currently no natural communities restoration projects necessary at Bahia Honda.

Natural Community Improvement: Improvements are similar to restoration but on a smaller, less intense scale. This typically includes small-scale vegetative management activities or minor habitat manipulation. Following are the natural community/habitat improvement actions recommended at the park.

Objective: Conduct natural community/habitat improvement activities on 10 acres of coastal berm, beach/dune and mangrove communities.

Action 1. Continue exotic plant and animal species removal programs.
Action 2. Continue to monitor visitor activity in natural communities surrounding public use areas.

Natural community improvement at Bahia Honda State Park will be achieved through continued exotic plant and animal species removal program discussed below. Maintenance of these communities also entails monitoring and managing public activities on the trails, and natural communities adjacent to public use areas particularly the Sandspur campground.

Imperiled Species

Imperiled species are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by USFWS, FWC, or FDACS as endangered, threatened or of special concern.

Bahia Honda supports a host of imperiled plant species several of which are found in only a few other locations in the Florida Keys including small-flowered lilythorn, manchineel, Cuban jacquemontia and yellow wood. Protecting the habitat from exotic species encroachment and unauthorized access will protect most of the imperiled species in the park, however, specific measures have been taken to enhance, augment or reintroduce imperiled species in the park.

In 1996 a conservation project to augment the population of yellow wood in the coastal berm hammock was initiated in partnership with Fairchild Tropical Botanic Garden. Historically the population of yellow wood on the island was abundant, but only four trees remained. Park development in the 1960s, including the construction of park roads, resulted in the destruction of most of the yellow wood trees. Yellow wood is historically native to the lower Florida Keys including the Marquesas, the West Indies, the Bahamas, Cuba, Puerto Rico, St. Lucia, the Greater Antilles and Bermuda. Due to habitat destruction throughout its limited range and the use of the wood for furniture production, yellow wood is now a rare tree and persists in the wild only at Bahia Honda State Park and in the Key West National Wildlife Refuge. This species is dioecious, meaning that male and female flowers are borne on separate trees. The four remaining trees at Bahia Honda were female, flowers were not being pollinated so the fruits were sterile. The conservation project was initiated to augment the population from fruits collected from the Key West National Wildlife Refuge and from a tree on the Key West Golf Course on Stock Island. The goal of the project was to establish a self-sustaining population, as well as to understand the biology, morphology, phenology and seed storage capabilities of yellow wood. Seeds were collected over several collecting trips to both islands, maintained in the nursery at Fairchild Tropical Botanic Garden, and outplanted in 1999, 2001 and 2002. The individuals were monitored every quarter for growth rate, reproductive status and overall condition. Of the fifty-seven that were outplanted twenty-nine were persisting in August 2017.

According to the literature, yellow wood reaches reproductive maturity at seven years, however the first flowers did not develop until May 2017 on an individual in close proximity to the National Champion. This tree produced male flowers, so there was a high likelihood for pollination of the National Champion tree.

When Hurricane Irma made landfall in September 2017, eleven of the twenty-five outplanted individuals survived. Unfortunately, post Irma clean-up removed all but two of these individuals. The National Champion is the only one of the four original wild individuals that survived the storm.
Prior to 1998 when Hurricane Georges hit the Florida Keys, one sea lavender plant persisted on the west end of the island near the Administration Building. Nine months post Hurricane Georges, the population spread throughout the island particularly on the beach on the oceanside. Prior to Hurricane Irma, there were over 400 individuals in the park, but many were destroyed by the storm. As of 2020, many sea lavender have recruited in along the length of the shoreline and it is once again, an abundant species.

Cuban jacquemontia was found along the outer edge of the dune in zone BH-06, in the coastal berm in zone BH-05 and BH-06, and along the park drive in zone BH-06. The only other population of this species in the Florida Keys is in north Key Largo in Dagny Johnson Key Largo Hammock Botanical State Park. Both populations were mapped using a Trimble GPS unit.

When Hurricane Irma made landfall, it altered the habitat where Cuban jacquemontia was thriving. Surveys conducted in the coastal berm habitat in Management Zone BH-05 documented a resurgence of this population.

Bahia Honda supports the largest silver palm hammock in the Florida Keys. The primary and secondary dunes that support the coastal berm habitat are rare for the Florida Keys since very few naturally occurring beaches are found along the shoreline. Mangroves are the dominant shoreline habitat due to the protection of the offshore coral reefs resulting in low energy wave action from the coral reef to the water's edge.

Although the coastal berm habitat was impacted during Hurricane Irma, and many silver palm trees were knocked over, the silver palm population remains in good condition.

West Indian mahogany (*Swietenia mahagoni*) and lignum vitae (*Guajacum sanctum*) are outside their historic range of the upper Florida Keys and are therefore considered cultivated in the park. Efforts should be made to remove the mahogany trees since they have the potential to adversely impact the natural communities in the park. The lignum vitae is a specimen tree by the entrance.

All naturally occurring imperiled plant species have been mapped using a Trimble GPS unit. These were recorded as either individual occurrences, or as polygons occurring within a natural community where population size is significant. This information will be updated when significant alterations to the habitat occur such as tropical storm or hurricane events, or when impacts to individual populations from other sources are observed such as disease or damage from human impacts.

A population of the Miami blue butterfly (*Cyclargus thomasi bethunebakeri*) was discovered at Bahia Honda in 1999 and later expanded to several distinct colonies. Except for a few records from the Bahamas, the Miami blue butterfly is endemic to South Florida. Though occasionally found further north and further inland, this species was once abundant in coastal areas from Hillsborough and Volusia Counties south through the Florida Keys. It is believed that habitat destruction and fragmentation as well as application of mosquito spraying have resulted in the extirpation of the Miami blue throughout most of its range, so the discovery of the population in the park was very significant. Once discovered, researchers from the University of Florida, park staff, and Florida Fish and Wildlife Conservation Commission regularly monitored the population. However, the cold weather event of early 2010 severely impacted many populations of butterflies and the Miami blue had not been documented since July 2010.

The Florida Park Service took on a more active role in the protection of this species including establishing interagency partnerships and hiring a short-term Miami blue butterfly biologist. The role of the Miami blue biologist was to manage the habitat where the butterfly had persisted, remove exotic

plant and animal species, draft a Miami Blue Butterfly Management Plan and to conduct regular surveys for the Miami Blue as well as other butterfly species that were once more common in the park. The Miami Blue Butterfly Management Plan can be found in Addendum 9. The Maguire Lab at the University of Florida continued to partner with these agencies as well as with the US Fish and Wildlife Service on the conservation of the Miami blue butterfly. The Lab received funding for and established a captive breeding program. In 2019, there was enough genetic stock to reintroduce the Miami blue at Bahia Honda State Park and at Long Key State Park.

The imperiled massive starlet coral and other coral species are found in the hardbottom communities particularly around Little Bahia Honda Key in zone BH-01. Regular monitoring should be conducted to evaluate colony condition, presence of coral bleaching, coral disease or physical impacts.
Park staff survey the beach daily from March through October for nesting sea turtle activity. Each successful nest is marked and screened against predators. False crawls are flagged and monitored for potential activity. Post hatchling evaluations are conducted to determine clutch size, rate of successful hatchlings and number of unhatched eggs.

Although sea turtle nest numbers are not high due to the length and width of the beach at Bahia Honda, loggerhead sea turtles account for most of the nests. Hawksbill turtles have been documented for the park in 2000, 2002, 2004, 2006, 2009, 2014 and 2016 and typically nest on the bayside. It is important to note that Bahia Honda has been documented for having the most frequent nesting occurrences of hawksbill turtles in the continental United States. The principle nesting sites for hawksbill are in Mexico, Puerto Rico, Barbados and Panama.

In April 2009, a green sea turtle was discovered nesting at the park. This was the first documentation of this species for Bahia Honda. A second nest was documented in 2015. In 2016, a leatherback sea turtle was discovered as having nested only as the young were emerging. Of the 65 eggs, only 7 hatched, likely due to saltwater inundation from abnormal high tides.

Quarterly shorebird surveys have been conducted since 1990 to document presence, species abundance and activity. Other shorebird surveys include the annual winter surveys, quarterly non-breeding surveys and monthly nesting shorebird surveys conducted between March and August. Least terns and Wilson's plovers once nested at Bahia Honda at Little Bahia Honda Key and on the spits located adjacent to the cabins. Little Bahia Honda Key is no longer suitable for nesting. Unauthorized access and predation were issues on the spits by the cabins in zone BH-08 so a fence was erected, and the area was closed during nesting season. In the late 2000s the substrate was enhancement in an effort to provide suitable habitat. Due to the continual problem of unauthorized access, predators, and mangrove recruitment, this site no longer supports suitable habitat.

In 2018, 15 least tern nests were documented in Management Zone BH-06 when that section of the park was closed post Hurricane Irma. By the August 2018 Florida Shorebird Alliance survey, over 140 adults and juveniles were documented in this management zone.

An American crocodile (*Crocodylus acutus*) was observed in 2006 and is only occasionally documented in the park.

A Key deer (*Odocoileus virginiamus clavium*) was observed post Hurricane Irene in 1999 but only for a short period. No Key deer have been observed since this occurrence.

Table 3 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 7.

Table 3. Imperiled Species Inventory

Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
PLANTS						
Locustberry *Byrsonima lucida*			LT	G4G5, S3	2,10	Tier 3
Small-flowered lilythorn *Catesbaea parviflora*			LE	G3?, S1	2,10	Tier 3
Garber's spurge *Chamaesyce garberi*		LT	LE	G1,S1	2,10	Tier3
Silver palm *Coccothrinax argentata*			LT	G4,S3	2,10	Tier 3
Rhacoma *Crossopetalum rhacoma*			LT	G5,S3	2,10	Tier 3
Milkbark *Drypetes diversifolia*			LE	G4,S2	2,10	Tier 3
Lignum vitae - cultivated *Guajacum sanctum*			LE	G2,S1		Tier 1
Sea lavender *Heliotropium gnaphalodes*			LE	G4,S3	2,10	Tier 4
Manchineel *Hippomane mancinella*			LE	G5.S2	2,10, 13	Tier 3
Cuban jacquemontia *Jacquemontia havanensis*			LE	G5,S1	2,10	Tier 3
Sky blue morning glory *Jacquemontia pentanthos*			LE	G4G4, S2	2,10	Tier 3
Joewood *Jacquinia keyensis*			LT	G4,S3	2,10	Tier 3
Key thatch *Leucothrinax morrisii*			LE	G4G5,S 2	2,10	Tier 3
West Indian mahogany - cultivated *Swietenia mahagoni*			LT	G3G4, S3		Tier 1
Florida thatch palm *Thrinax radiata*			LE	G4G5, S2	2,10	Tier 3
Yellow wood *Zanthoxylum flavum*			LE	G4?, S1	2, 3, 10,13	Tier 4

Table 3. Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
INVERTEBRATES						
Massive starlet coral *Siderastrea siderea*				G4,S2	10, 13	Tier 1
Spottail goby *Ctenogobius stigmaturus*				G2,S2	10	Tier 2
Florida white *Appias drusilla*				G5, S2S3	10	Tier 2
Miami Blue butterfly *Cyclargus thomasi bethunebakeri*	ST			G3G4, T1	2,10, 12,13, 14	Tier 3
Malachite *Siporeta stelenes*				G5,S2	2,10	Tier 2
REPTILES						
American crocodile *Crocodylus acutus*	FT	LT		G2,S2	10, 13	Tier 1
Atlantic loggerhead *Caretta caretta*	FT	LT		G3,S3	8,10, 13	Tier 2
Green turtle *Chelonia mydas*	FT	LT		G3,S3	8,10, 13	Tier 2
Leatherback turtle *Dermochelys coriacea*	E	FE		G2S2	10, 13	Tier 2
Hawksbill turtle *Eretmochelys imbricata*	FE	LE		G3,S1	8,10, 13	Tier 2
BIRDS						
Great White Heron *Ardea herodias occidentalis*				G5T2, S2	10, 13	Tier 2
Piping Plover *Charadrius melodus*	FT	LT		G3,S2	10, 13	Tier 2
Little Blue Heron *Egretta caerulea*	ST			G5,S4	10, 13	Tier 2
Reddish Egret *Egretta rufescens*	ST			G5,S2	10, 13	Tier 2
Tricolored Heron *Egretta tricolor*	ST			G5,S4	10, 13	Tier 2
Merlin *Falco columbarius*				G5,S2	10, 13	Tier 2
Peregrine Falcon *Falco peregrinus*				G4,S2	10, 13	Tier 2
American Kestrel *Falco sparverius*	ST			G5T4, S3	10, 13	Tier 2
Magnificant Frigatebird *Fregeta magnificans*				G5,S1	10, 13	Tier 2
Caspian Tern *Hydroprogne caspia*				G5,S2	10, 13	Tier 2

Table 3. Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Woodstork *Mycteria americana*	ST	FT		G4,S2	10, 13	Tier 2
Sooty Tern *Onychoprion fuscatus*				G5,S1	10, 13	Tier 2
White-crowned Pigeon *Patagioenas leucocephala*	ST			G3,S3	10, 13	Tier 2
Roseate spoonbill *Platalea ajaja*	ST			G5,S2	10, 13	Tier 2
Least tern *Sternulla antillarum*	ST			G4,S3	10, 13	Tier 2
Sandwich tern *Thalasseus sandvicensis*				G5,S2	10, 13	Tier 2
MAMMALS						
Key Deer (accidental) *Odocoileus virginianus clavium*	FE	LE		G5T1, S1	10, 13	Tier 1
West Indian Manatee *Trichechus manatus latirostris*	FT	LT		G2,S2	10, 13	Tier 1

Management Actions

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

Monitoring Level

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches).

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

Imperiled Species Management

Goal: Maintain, improve or restore imperiled species populations and habitats in the park.

The DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FWC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FWC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

Objective A: Update baseline imperiled species occurrence inventory lists for plants and animals.

Objective B: Monitor and document six selected imperiled animal species in the park.

Action 1. Continue to implement monitoring for six imperiled animal species

The Miami blue butterfly was reintroduced to the park in 2019 and monitoring is conducted by staff from the University of Florida Maguire Lab. Park and District staff will continue to work cooperatively on an interagency level to protect this species in the park. A Florida Fish and Wildlife Conservation Commission Imperiled Species Management Plan has been drafted. In addition, a Florida Park Service Miami Blue Butterfly Management Plan can be found in Addendum 9.

Continue to monitor nesting sea turtle nesting and evaluate nests post emergence. Continue to conduct nesting shorebird surveys to monitor for presence of focal species in the park. Continue to conduct non-breeding shorebird surveys. Continue to conduct quarterly shorebird surveys. Continue to conduct U.S. Fish and Wildlife Service annual census for piping plovers. Annually monitor the stony coral species particularly around Little Bahia Honda Key in zone BH-01 for adverse impacts from physical contact, disease and bleaching.

Objective C: Monitor and document fifteen selected imperiled plant species in the park.

Action 1. Continue yellow wood conservation project
Action 2. Monitor imperiled plant species

Continue the long-term yellow wood conservation project. Of the fifty-seven that were outplanted in 1999, 2001 and 2002, twenty-five were persisting prior to Hurricane Irma. One flower in May 2017 and was a male plant. However, this individual was destroyed in Irma. Of the eleven that survived the Hurricane, all but two were destroyed by contractor cleanup. Quarterly monitoring is conducted to measure growth, reproductive status and overall condition. The goal of this project is to establish a self-sustaining population within the park.

All imperiled species have been mapped using a Trimble GPS unit. This project will be updated as needed, particularly after major events like tropical storms or hurricanes, which may significantly alter the population size and distribution.

Exotic and Nuisance Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

Exotic animal species include non-native wildlife species, free ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage.

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons, venomous snakes and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with DRP's Nuisance and Exotic Animal Removal Standard.

The threat of exotic plant infestations at Bahia Honda comes from species found on the island in the ranger residence area and the DOT right-of-way, and from those spread by birds, mammals, wind and

water. The most serious threats to the park are beach naupaka, Brazilian pepper, portia, latherleaf, coconut palm (*Cocos nucifera*) and lead tree (*Leucaena leucocephala*). The seeds of beach naupaka and latherleaf float so they drift in with tides and storm events and will always require follow-up surveys particularly on the beach in zones BH- 04, BH-05, BH-06 and BH-07. Lead tree is an Exotic Pest Plant Council Category II species that is especially problematic in the Florida Keys and ranks as a Category I with the Florida Keys Invasive Exotic Task Force. It is difficult to kill, and the seeds can persist in the seed bank for at least seven years. Numerous exotic removal projects have been conducted at Bahia Honda including Bureau of Invasive Plant Management contractor projects, Resource Management Team projects, exotic removal technicians and park and district staff projects. Since the approval of the last UMP for the park in 2003, over 176 acres have been treated.

The population of green iguanas throughout the Florida Keys has significantly increased in the last five years. The concern with this population explosion is the potential impacts on the native plant recruitment if iguanas eat flowers, thus preventing fruits from forming. This is especially critical for the imperiled species within the park. Feral and domestic cats are also prevalent in the Florida Keys and adversely impact songbirds and nesting birds. Black rats are abundant throughout the Keys and are found in the park. Northern curly tailed lizards (*Leiocephalus carinatus armouri*) have also been expanding throughout the Florida Keys, and are found at Bahia Honda. This exotic reptile is fast moving and difficult to capture. Lionfish have also become abundant throughout the Florida Keys. Several workdays have been organized to eradicate this species, but it will be an ongoing effort. When exotic animals are observed in the park, they are removed according to the protocols established in the Operations Manual. Over 1,000 exotic animals have been removed since 2003.

Table 4 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive and exotic plant species found within the park. The table identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes follows the table. For an inventory of all exotic species found within the park, see Addendum 5.

Table 4. Inventory of FLEPPC Category I and II Exotic Plant Species

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone(s)
PLANTS			
Sisal hemp *Agave sisalana*	II	0	BH-07
Green shrimp plant *Blechum pyramidatum*	II	2	BH-07
Coconut palm *Cocos nucifera*	II	2	BH-05, BH-06, BH-07, BH-08
Latherleaf *Colubrina asiatica*	I	2	BH-02, BH-04, BH-05, BH-06
Egyptian grass *Dactyloctenium aegyptium*	II	3	BH-05, BH-06, BH-07, BH-08
Pothos *Epipremnum pinnatum*	II	2	BH-08
Laurel fig *Ficus microcarpa*	I	2	BH-08

Table 4. Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	**FLEPPC Category**	**Distribution**	**Management Zone(s)**
Life plant *Kalanchoe pinnata*	II	2	BH-08
Lead tree *Leucaena leucocephala*	II	2	BH-06, BH-07, BH-08
Guinea grass *Panicum maximum*	II	2	BH-02
Bowstring hemp *Sansevieria hyacinthoides*	II	2	BH-05
Beach naupaka *Scaevola sericea*	I	2	BH-05, BH-06, BH-07
Brazilian pepper *Schinus terebinthifolia*	I	2	BH-05, BH-07, BH-08
Porterweed *Stachytarpheta cayennensis*	II	0	BH-05, BH-06, BH-08
Tropical almond *Terminalia catappa*	II	0	BH-05
Portia *Thespesia populnea*	I	2	BH-02, BH-08
Oyster plant *Tradescantia spathacea*	II	2	BH-08
Puncture vine *Tribulus cistoides*	II	2	BH-07, BH-08
Washington palm *Washingtonia robusta*	II	0	BH-08
ANIMALS			
Brown anole *Anolis sagrei*			All upland
Rock dove *Columba livia*			All upland
Domestic cat *Felix dometicus*			Developed
Green iguana *Iguana iguana*			All upland
Northern curly-tailed lizard *Leiocephalus carinatus armouri*			Developed
Cuban tree frog *Osteopilus septentrionalis*			All upland
Lionfish *Pterois volitans*			Submerged
Black rat *Rattus rattus*			All upland
Norway rat *Rattus norvegicus*			Developed
Eurasian collared dove *Streptopelia decaocto*			All upland
Ringed turtle dove *Streptopelia risoria*			Developed

Distribution Categories

0 No current infestation: All known sites have been treated and no plants are currently evident.
1 Single plant or clump: One individual plant or one small clump of a single species.
2 Scattered plants or clumps: Multiple plants or small clumps of a single species within the gross area infested.
3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.
4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.
5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.
6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature.

Exotic Species Management

Goal: Remove exotic and invasive species and conduct needed maintenance control.

DRP actively removes invasive exotic species from state parks, with priority being given to those causing the ecological damage. Removal techniques may include mechanical treatment, herbicides, or biocontrol agents.

Objective A: Annually treat 0.2 acres of exotic plant species in the park.

Action 1. Continue to conduct exotic plant removal in the park.

Park staff, district staff and Resource Management Team projects will conduct exotic removal treatment for Category I and II species. The goal will be to treat exotic species that either have re-sprouted or have recruited into the site following previous exotic removal treatments. The park will treat approximately 0.2 acres of invasive exotic plants annually. Hand pulling target species is the desired method of exotic control and is attainable at Bahia Honda with follow-up treatment. Regular patrols along the beach in zones BH-05, BH-06 and BH-07 will control any invasive species that are brought in by tides or storms, particularly beach naupaka. All invasive exotic species need to be removed from the ranger residence area.

Objective B: Implement control measures on five exotic animal species in the park.

Action 1. Actively remove iguanas and other exotic animal species in the park.

Staff and volunteers will continue to remove iguanas from the park according to the approved protocols found in the Operations Manual. Feral and free roaming cats must be removed from the park to prevent adverse impacts to native wildlife including imperiled bird species. Nuisance raccoons are removed from the park as needed. Regular surveys and removal of lionfish are conducted. Staff is encouraged to report sighting by park visitors. Black rats are removed from residence areas.

Cultural Resources

This section addresses the cultural resources present in Bahia Honda State Park that may include archaeological sites, historic buildings and structures, cultural landscapes, and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 8 contains the management procedures for archaeological and historical sites and properties on state-owned or controlled properties, the criteria used for evaluating eligibility for listing in the National Register of Historic Places and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Evaluating the condition of cultural resources is accomplished using a three-part evaluation scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair assessment is usually a cause for concern. Poor describes an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action is needed to reestablish physical stability.

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for use in determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high-quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

Pre-Historic and Historic Archaeological Sites

Desired future condition: All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events, or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: The Florida Master Site File lists one archaeological site (MO02117) at Bahia Honda. This site is listed as a Natural Spring with a few historic artifacts including pottery and a railroad mechanic's button.

In 2013 a predictive model was completed for the upland portions of Bahia Honda State Park excluding the submerged resources of the park. A digital elevation model (DEM) was incorporated from aerial LiDAR data in order to determine the potential for additional cultural resources. Ground-truthing surveys were then conducted using GPS and camera equipment in order to determine prospective cultural resources.

An archaeological sensitivity model was developed for Bahia Honda State Park. This model included factors that took in a variety of environmental and cultural variables that account for the presence of sites through time and space and account for the variability of site types known to occur within the park as demonstrated through previous surveys or recordation of sites within the park vicinity. Matrix variables present in the park included coastal relationship, soils, and negative factors that are associated with drainage. Cultural factors included the presence of NRHP eligible sites and resource travel corridors.

In Bahia Honda State park, the previously recorded sites both within the park boundaries and those that are associated with the Florida Keys Overseas Heritage Trail, are captured in the high sensitivity areas of the park's models. The sensitivity model found that of the 341.21 upland acres within Bahia Honda, 110.47 acres or 32.24% were considered to be high sensitive areas for cultural resources. Zero acres were considered to be medium sensitive areas for cultural resources, and 230.75 acres or 67.76% were considered to be low sensitive areas for cultural resources (Collins, et.al 2013).

Condition Assessment: The Natural Spring, site 8MO02117 is no longer believed to be functional. Artifacts associated with this spring, the noted button and the pottery, had been collected and sent to Division of Historic Resources. Any additional artifacts, if discovered, should be left in place.

General management measures: Protection of the coastal berm habitat will potentially protect any additional artifacts discovered at this site. Since the function of the Natural Spring has been altered by the alteration of the Biscayne Aquifer, little can be done to restore the site.

Historic Structures

Desired future condition: All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition, protected from physical threats and interpreted to the public.

Description: The historic bridge known as the Old Bahia Honda Bridge (8MO1311), is part of a resource group known as the Overseas Highway Railway Bridges and is managed by the DEP Florida Keys Overseas Heritage Trail. However, the section of the old bridge that is connected to the rest of the island, is within the boundary of Bahia Honda State Park. A trail enables park visitors to view the Old Bahia Honda Bridge and the surrounding waters.

Condition Assessment: The section of Site 8 MO1311 that is within the park's boundary is in fair condition. A recent survey found that there was a compromise to the structural integrity, particularly towards the terminus, and the bridge has been cordoned until repairs can be conducted.

General management measures: Bridge repairs will be necessary in order to maintain the structural integrity of the Old Bahia Honda Bridge that is within the park's boundary.

Collections

Desired future condition: All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons, or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and appropriately interpreted to the public.

Description: Collections associated with the natural history of the park include bird displays, specimen shells, display shells, marine mollusk egg casings, sea beans and an aquarium all located in the Sand and Sea Nature Center. Most of the specimens were obtained from within the park boundaries including the fish that were collected from the nearshore waters. The overall square footage of the Sand and Sea Nature Center is approximately 400ft² and the collections are maintained within this square footage.

Condition Assessment: The collections in the Sand and Sea Nature Center are in good condition. Materials such as shells and other items that are easily collected from the park and are replaced when the existing ones become damaged. The Nature Center building is old and in need of repair. It is also subjected to impacts from storm events more so from flooding than from potential wind damage. The birds are displayed in Plexiglas cases, and most of the specimen shells and sea beans are displayed behind two glass cases. The educational and hands on shells are displayed for public access.

Level of Significance: The collections in the Sand and Sea Nature Center interpret various aspects of the natural resources of the park. There is also interpretive information about the Flagler Railroad including brochures and a place where park visitors can view movies related to the natural and cultural resources of the park and the Florida Keys. There is a live video camera mounted on the old Bahia Honda Bridge that transmits sea life activity on a monitor in the Nature Center.

General management measures: The collections are maintained in a climate-controlled environment. Several of the collections are contained within Plexiglas providing them with further protection. The biggest threat to the collections in the park comes from damage to the building in the event of a tropical storm or hurricane.

Table 5 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Table 5. Cultural Sites Listed in the Florida Master Site File

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
8MO02117 Bahia Honda 1	American, 20th Century	Natural Spring, minimal artifacts	NE	NE	N/A
8MO1131	Old Bahia Honda Bridge	Bridge	NR	F	ST

Significance

NRL	National Register listed
NR	National Register eligible
NE	Not Evaluated
NS	Not Significant

Condition

G	Good
F	Fair
P	Poor
NA	Not accessible
NE	Not evaluated

Recommended Treatment

RS	Restoration
RH	Rehabilitation
ST	Stabilization
P	Preservation
R	Removal
N/A	Not applicable

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. DRP is implementing the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Bahia Honda State Park.

Goal: Protect, preserve and maintain the cultural resources of the park.

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places and collections care must be submitted to the FDOS, Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to concurrence with the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to DHR for consultation and DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource.

Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of DHR.

Objective A: Assess and evaluate zero of two-recorded cultural resources in the park.

The Natural Spring is no longer functional. Any artifacts that are found in the vicinity of this cultural site will be recorded and buried at the location.

Objective B: Compile reliable documentation for all recorded historic and archaeological resources.

There are no known sites at Bahia Honda that need to be added to the Florida Master Site File

Objective C: Bring one of two-recorded cultural resources into good condition.
The Natural Spring is no longer functional.

The section of the Old Bahia Honda Bridge that is managed by the park needs to be stabilized so that its structural integrity enables park visitors to access the terminus.
Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of DRP's statutory responsibilities and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of those communities specifically managed as early successional.

A timber management analysis was not conducted for this park since its total acreage is below the 1,000-acre threshold established by statute. Timber management will be re-evaluated during the next revision of this management plan.

Coastal/Beach Management

DRP manages over 100 miles of sandy beach, which represents one-eighth of Florida's total sandy beach shoreline. Approximately one-quarter of Florida's state parks are beach-oriented parks and account for more than 60 percent of statewide park visitation. The management and maintenance of beaches and their associated systems and processes is complicated by the presence of inlets and various structures (jetties, groins, breakwaters) all along the coast. As a result, beach restoration and

nourishment have become increasingly necessary and costly procedures for protecting valuable infrastructure. All of these practices affect beaches for long distances on either side of a particular project. DRP staff needs to be aware of and participate in the planning, design and implementation of these projects to ensure that park resources and recreational use are adequately considered and protected. Bahia Honda supports three miles of beach on the Atlantic Ocean and approximately 1/8 mile on the Gulf of Mexico side of the park. A narrow section of beach on the west side of zone BH-07 has been reinforced by large boulders.

Erosion is not a problem for most of the east side of the island in zones BH-05 and BH-06 since there is a functional dune system. However, there has historically been an erosion problem in several areas in zone BH-07. The narrow beach along the park drive where it is reinforced by boulders, is subject to major erosion in storm events. Damage to the park road has been an issue during several hurricanes since 1998.

The beaches at Bahia Honda support nesting sea turtles and shorebirds. Because the wrack line is maintained, there is a significant food source for shorebirds and many species are found foraging through the natural debris that washes ashore.

The beach at Bahia Honda is one of the few naturally occurring beaches in the Florida Keys. Due to the minimal wave action, a result of the coral reefs offshore, the natural shoreline is predominantly mangroves. The three miles of beach provides a popular tourist destination and visitor use can be heavy during the summer or holiday weekends, and during the winter months when the population of the Keys increases due to the influx of seasonal residents. This heavy use impacts natural resources including dune vegetation, damage to seagrass beds, shorebird disturbance and unauthorized collection of marine organisms. Offshore issues include incompatible visitor use such as boating and kite surfing that can impact the park visitors' ability to safely enjoy the nearshore waters.

In addition to management of the beach at Bahia Honda, the park also manages the 400ft of submerged land from the mean high water mark. This is most important on the oceanside where impacts from boat access has the potential to damage the submerged resources of the park, particularly the seagrass beds in the nearshore waters and the coral in the vicinity of Little Bahia Honda Key. Establishing "No Motor Zone" areas would minimize the potential damage.

Sea Level Rise

Potential sea level rise is now under study and will be addressed by Florida's residents and governments in the future. The DRP will stay current on existing research and predictive models, in coordination with other DEP programs and federal, state, and local agencies. The DRP will continue to observe and document the changes that occur to the park's shorelines, natural features, imperiled species populations, and cultural resources. This ongoing data collection and analysis will inform the Division's adaptive management response to future conditions, including the effects of sea level rise, as they develop.

Additional Considerations

Due to the population of Miami Blue butterfly at Bahia Honda, the Florida Park Service entered into an agreement with the Florida Fish and Wildlife Conservation Commission to allow ground mosquito spraying at Bahia Honda only at the discretion of the park manager, and only in certain areas of the park. Spraying is limited to the shop and the ranger residence area. It is the responsibility of the park staff to ensure that the Monroe County Mosquito Control follow the established protocols for spraying within the park.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan (see Addendum 8).

Bahia Honda State Park was subject to a land management review on January 25, 2000. The review team made the following determinations:

- The land is being managed for the purpose for which it was acquired.
- The actual management practices, including public access, complied with the management plan for this site.

Land Use Component

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP). These responsibilities are to preserve representative examples of original Florida and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management. Additional input is received through public workshops, and through environmental and recreational-user groups. With this approach, the DRP objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park.

External Conditions

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and park interaction with other facilities

Bahia Honda State Park is located in Monroe County, about 9.5 miles southwest of Marathon and about 5.5 miles east of Big Pine Key in the Florida Keys. Approximately 31,250 people live within 30 miles of the park (Census 2013). The population of Monroe County is relatively diverse in terms of demographic characteristics. According to the U.S. Census Data (Census 2013), approximately 32% of residents in the county identify as black, Hispanic or Latino, or another minority group. Over one-third (39%) of residents can be described as youth or seniors (Census 2013). 71% of the population is of working age (16 to 65) (Census 2013). Monroe County ranked 3rd statewide in per capita personal income at $57,829 (above the statewide average of $41,497) (U.S. BEA 2014).

The park is located in the Southeast Vacation Region, which includes Broward, Miami-Dade, Monroe, and Palm Beach counties (Visit Florida 2013). According to the 2013 Florida Visitor Survey, approximately 17.3% of domestic visitors to Florida visited this region. Roughly 87% visitors to the region traveled to the Southeast for leisure purposes. The top activities for domestic visitors were beach/waterfront and culinary/dining experiences. Summer was the most popular travel season, but visitation was generally spread throughout the year. Most visitors traveled by air (60%), reporting an average of 4.4 nights and spending an average of $186 per person per day (Visit Florida 2013).

The table below identifies significant resource-based recreation opportunities within 15 miles of Bahia Honda State Park.

Table 6. Resource-Based Recreational Opportunities Near Bahia Honda State Park

Name *(Manager)*	Biking	Hiking	Swimming/ Beach Access	Boating/ Paddling	Fishing	Wildlife Viewing	Overnight Stay
Coupon Bight Aquatic Preserve ***(FDEP)***			✓	✓	✓	✓	
Crane Point Museum and Nature Center ***(Private)***		✓		✓		✓	
Florida Keys National Marine Sanctuary ***(NOAA)***			✓	✓	✓	✓	
Florida Keys Overseas Heritage Trail ***(FDEP)***	✓				✓	✓	
Great White Heron National Wildlife Refuge ***(USFWS)***				✓	✓	✓	
National Key Deer Refuge ***(USFWS)***		✓				✓	
Pigeon Key ***(Monroe County)***			✓	✓	✓	✓	
Veteran's Memorial Park ***(Monroe County)***			✓		✓		✓

Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that participation rates in this region for saltwater beach activities, visiting archaeological and historic sites, nature study, picnicking, and bicycle riding are higher than the state average with demand for additional facilities increasing through 2020 (FDEP 2013).

Existing Use of Adjacent Lands

Bahia Honda State Park encompasses the entirety of Bahia Honda Key except for the FDOT right-of-way bisecting the park from the northeast to the southwest. Existing land uses near Bahia Honda Key include a commercial RV camping development to the northeast on Ohio Key. The islands immediately southwest of Bahia Honda Key, the Spanish Harbor Keys, are uninhabited. Big Pine Key lies further south, with residential and commercial developments alongside conservation lands.

Planned Use of Adjacent Lands

Monroe County is a relatively small county in terms of population in Florida with around 74,000 residents (BEBR). With the inherent environmental limitations on growth present in the Florida Keys, multiple environmental and social conflicts arise when increasing demand for development places a heavy burden on limited land. The vulnerability of the Florida Keys to tropical storm events has encouraged officials to address evacuation efforts throughout Monroe County. By managing growth in Monroe County and thereby preventing too much pressure on the Overseas Highway as the main means of evacuation, officials hope to ensure safe evacuation times for County residents and visitors when threatened by a tropical storm event. County officials have adopted a series of land use regulations that aim to focus growth in areas that are in a better position to support more development. In addition, these regulations deter future growth from occurring in sensitive natural areas that protect numerous listed plant and animal species. This approach also supports efforts to maintain and enhance water quality throughout the Florida Keys National Marine Sanctuary (Monroe County 2000).

In light of the unique balancing act between development and conservation that permeates daily life in the Florida Keys, future growth adjacent to Bahia Honda Key should be expected to meet maximum allowable densities within the near future, if they have not already. Land uses surrounding the park are not expected to change in the near future. The future land use designation for Bahia Honda Key is Recreation. On the keys to the northeast and southwest of Bahia Honda Key, Conservation, Institutional, Residential Conservation, and Mixed Use/Commercial are designated future land uses (Monroe County 2013).

Migration to, and tourism in, the Florida Keys is expected to remain popular, and the impacts of residential and resort development, including loss of wildlife habitat, water quality impacts, noise, and traffic congestion along U.S. Highway 1 will continue to affect the state park. Division staff should be involved in the development of Monroe County land use regulations and land development ordinances. Staff should also stay well informed about development plans in the surrounding area. Staff will request to be included by the local planning agency in the review of development proposals that may affect the natural, cultural, or recreational resources of the park.

Florida Greenways and Trails System

The Florida Greenways and Trails System (FGTS), administered by the Department's Office of Greenways and Trails, is made up of existing, planned and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network. The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use, and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers and laundry, providing valuable services for trail users while increasing state park visitation. Bahia Honda State Park was designated as a component of the Florida Greenways and Trails System in 2002.

Florida Keys Overseas Heritage Trail

The Florida Keys Overseas Heritage Trail (FKOHT) is a multi-use trail that extends from MM 106.5 in Key Largo to MM 0 in Key West parallel to the Overseas Highway. The majority of the trail is located in FDOT right-of-way while the trail is routed across the Florida Keys Historic Bridges, originally constructed by Henry Flagler as part of the East Coast Railroad in the early 1900s, when possible.

The FKOHT is the southernmost segment of the East Coast Greenway, with the northern terminus located in Calais, Maine and the southern terminus in Key West, Florida. The FKOHT passes by numerous exceptional and unique natural communities including rockland hammock, mangroves, Keys tidal rock barren and lagoons. The FKOHT is managed by the DRP in partnership with the FDOT and Monroe County, in addition to communities through which the trail passes (Florida Keys Overseas Heritage Trail Master Plan 2000).

The FKOHT is a critical component of local transportation infrastructure and is still in development. Additions, expansions, trail widening projects, and bridge rehabilitation efforts are currently underway. Where there is a gap in the trail, the trail then merges with the U.S. Highway 1 shoulder. Effort should be made by park management to coordinate trail improvements and management.

The park is an overnight stop along the Florida Circumnavigational Saltwater Paddling Trail that traverses the entire Florida coastline from Big Lagoon State Park in Escambia County on the Gulf coast to Fort Clinch State Park in Fernandina Beach on the Atlantic coast.

Property Analysis

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreational Resource Elements

This section assesses the park’s recreational resource elements, those physical qualities that, either singly or in certain combinations, can support various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support potential recreational activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

The state park contains nearly 500 acres of uplands, wetlands and submerged lands. The average elevation of the park is approximately 5 feet above the mean sea level, with scattered mounds to slightly higher elevations. The major portion of the interior of the island is tidal marsh, tidal swamp and a lagoon with several types of submerged communities, to which visitor access is not provided. US Highway 1 bisects the park along the long northeast to southwest axis.

Over 60 acres of coastal berm and beach dune communities and the surrounding submerged areas are the primary recreational attractions of Bahia Honda State Park. The park contains the largest of the few sandy beaches to be found in the Florida Keys, which provides important beach access for park visitors. The Florida Department of Transportation used the southwestern end of the island as a marina and staging area for construction of the new U.S. Highway 1 bridge across Bahia Honda Channel. Subsequently, the marina areas and the previously developed area at the foot of the old Bahia Honda Bridge were used for development of park facilities.

Water Area

The clear aquamarine waters of the Atlantic Ocean and Florida Bay are the primary recreational attraction for visitors to the park. Public access is provided at the park's three beach use areas, including an area providing rental kayaks and through the marina on the ocean side.

Shoreline

As mentioned above, over 8,000 feet of shoreline at the state park is sand beach providing a rare beach recreation opportunity in the Florida Keys. Mangroves inhabit the sheltered shorelines along Florida Bay and throughout the interior lagoon system of the island. Canoeing, kayaking and snorkeling recreation are available along the ocean and bayside shorelines of the state park.

Natural Scenery

The outstanding visual resource at Bahia Honda State Park is its view of the Atlantic Ocean, Florida Bay and the channels north and south of the island. Views of the historic Bahia Honda Bridge from the southwestern end of the island are attractive to park visitors and highway travelers alike. Most of the disturbed uplands of the island were once covered by Australian pines. An ongoing program of exotic removal, coupled with extensive planting of native species, has eradicated nearly all exotic plant species on the island and restored a natural landscape that contains unique and enjoyable viewing subjects for the park's visitors.

Significant Habitat

The beaches on Bahia Honda Key are important nesting areas for sea turtles. Birds that nest in the area rely on the important loafing and foraging habitat provided by the sandy beaches. Regular surveys are conducted throughout the year with more intensive monitoring during the nesting season.

Natural Features

The expanse of the Atlantic Ocean beach and dunes are the unit's most prominent natural features. Stands of native Silver palms located on the northern third of the island are also considered outstanding features of this park.

Archaeological and Historical Features

The history of the Flagler Railroad is a physical feature of the state park due to the presence of the Old Bahia Honda Bridge connecting the state park to the Spanish Harbor Keys. The bridge is listed on the National Register of Historic Places. Spanning approximately 6,700 feet with steel truss structures across widely spaced concrete piers, the Bahia Honda bridge is unlike any of the other railroad bridges constructed for Flagler's Overseas Railroad in its route from Miami to Key West. Adding to the unusual nature of the Bahia Honda Bridge, is the placement of the original US Highway 1 over the tops of the railroad trusses. Today, weathering and deterioration of the bridge structure, primarily that portion added to convert the bridge from railroad to highway uses, is causing hazards to fishermen, as pieces of the bridge frequently fall to the ocean below it and have caused the bridge and scenic overlook to be closed to the public. The Florida Department of Environmental Protection, the Florida Department of Transportation, and Monroe County are coordinating efforts to evaluate the structural deficiencies of the bridge to help determine the best course of action through the lens of public safety.

Assessment of Use

All legal boundaries, significant natural features, structures, facilities, roads and trails existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

Before state acquisition, Monroe County owned portions of Bahia Honda Key and developed a wayside park at the south end of the island.

Future Land Use and Zoning

The DRP works with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation.

The park has been designated as Tier I by Monroe County, which is a land use designation meant to discourage future development. Existing zoning designations at Bahia Honda State Park include Native Area (NA), Park and Refuge (PR), and Sparsely Settled (SS). The Native Area designation is meant for areas that are preserved in their natural state. Park and Refuge identifies areas that provide parks, recreation areas and wildlife refuges. The Sparsely Settled designation establishes areas of low-density residential development where the predominant character is native areas or open space.

The Future Land Use designation assigned to the park is Recreation (R). The Recreation (R) category is meant to provide for public and private activity-based and resource-based recreational facilities.

Current land use regulations discourage future development at Bahia Honda State Park, which prohibits the DRP from providing needed park support facilities for Bahia Honda State Park. The DRP is currently discussing issues related to permitting with Monroe County in an effort to provide needed support facilities for the park to continue to function efficiently.

Current Recreational Use and Visitor Programs

The primary recreational uses at the park include the use of the beaches on both the Gulf of Mexico and the Atlantic Ocean and camping. Fishing throughout the near-shore waters around the park is also a popular activity. Kayak rentals are available at the Ranger Station. Opportunities for recreation at the park include swimming, snorkeling, wildlife viewing, fishing, paddling, hiking, and picnicking. The nature trails at the park provide exceptional wildlife viewing opportunities and the park's status as part of the Great Florida Birding and Wildlife Trail attracts many visitors. The FKOHT passes through the park alongside U.S. Highway 1 and will continue to bring visitors to the park by bicycle as it is improved and connected to surrounding communities. The park concessionaire provides equipment rental and boat tours to Looe Key.

Bahia Honda State Park recorded 656,159 visitors in FY 2014/2015. By the DRP estimates, the FY 2014/2015 visitors contributed $56,885,922 in direct economic impact, the equivalent of adding 910 jobs to the local economy (FDEP 2015).

Other Uses

The right-of-way of U.S. Highway 1, which includes the FKOHT, bisects the boundary of the park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Bahia Honda State Park all wetlands and floodplain as well as coastal berms and known imperiled species habitat have been designated as protected zones. The park's current protected zone is delineated on the Conceptual Land Use Plan.

Recreation Facilities

The main day use areas at Bahia Honda State Park include the Sandspur Day Use Area, Calusa Beach Day Use Area, and the Loggerhead Beach Day Use Area. The Sandspur Day Use Area contains a bathhouse, parking lot, picnic pavilions, and the Silver Palms Nature Trail. Several small picnic pavilions are located in the Calusa Beach Day Use Area along with a large parking lot and interpretive building. The Loggerhead Beach Day Use Area is home to restrooms, an amphitheater, and the Butterfly Garden Trail.

In addition to the beach day use areas, the Bayside, Buttonwood, and Sandspur Family Camping Areas provide very popular RV and tent camping sites. Three duplex vacation cabins are located in the Cabin Area and a concession operates out of the Concession Area adjacent to the marina.

Support Facilities

Support facilities include a waste water treatment plant, plant nursery, storage, a shop, and residences in the Shop Area; several additional residences in the Bayside and North End Residence Areas; a dump station in the Concession Area; and additional storage in both the Calusa and Loggerhead Beach Day Use Areas (see Base Map).

Bayside Residence Area
Residences (8)

Bayside Family Camping Area
Bayside Campground (8)
Bathhouse

Cabin Area
Duplex Cabins (3)

North End Residence Area
Residences (2)

Calusa Beach Day Use Area
Storage
Restroom
Picnic Pavilions (9)
Interpretive Building

Loggerhead Beach Day Use Area
Amphitheater
Butterfly Garden Trail
Restroom (2)
Storage

Buttonwood Family Camping Area
Buttonwood Campground (48)
Dump Station
Bathhouse

Entrance Area
Entrance Station

Sandspur Family Camping Area
Sandspur Campground (24)
Bathhouse

Sandspur Beach Day Use Area
Picnic Pavilions (3)
Silver Palms Nature Trail
Bathhouse

Shop Area
Residence
Storage
Flammable Storage
Nursery
Shop
Wastewater Treatment Plant

Concession Area
Visitors Center
Marina
Office
Storage
Boat Dump Station
Improved Boat Ramp (2)
Fixed Dock (8 Slips)

BAHIA HONDA STATE PARK

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Florida Departmnet of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2012

BASE MAP PAGE 1 OF 2

BAHIA HONDA STATE PARK

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Florida Departmnet of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2012

BASE MAP PAGE 2 OF 2

Conceptual Land Use Plan

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting (see Conceptual Land Use Plan). The conceptual land use plan is modified or amended, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, in order to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state and local permit and regulatory requirements are addressed during facility development. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, park staff monitors conditions to ensure that impacts remain within acceptable levels.

Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities in the park.

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and should be continued. New and improved activities and programs are also recommended and discussed below.

Objective: Maintain the park's current recreational carrying capacity of 4,444 users per day.

The park will continue to provide opportunities for beach access, shoreline fishing, boating, paddling, camping, picnicking, hiking and nature observation. Interpretive exhibits and programs will continue to be offered at the park. The park's ability to accommodate current visitation levels will be enhanced.

Objective: Expand the park's recreational carrying capacity by 40 users per day.

Two additional picnic shelters in the Calusa Beach Day Use Area and two additional vacation cabins in the Cabin Area are proposed at the park. These improvements will expand the park's recreational opportunities and increase the estimated carrying capacity. As the FKOHT is continually improved, more cyclists will pass by the park and could use park facilities as a rest stop. Encouraging cyclists to visit the park will be an important part of developing a strong relationship between the FKOHT and state parks throughout Monroe County.

Objective: Continue to provide the current repertoire of 40 interpretive, educational and recreational programs on a regular basis.

A variety of ranger-guided programs allow visitors the opportunity to learn about the park and the natural and cultural resources present. Programs such as the Silver Palm Nature Trail Walk, Beach Walk, and History Walk highlight the unique environment of the park. Lectures at the Nature Center address a variety of topics related to park resources including Manatees, Key Deer, Habitats of Bahia Honda, and Sea Turtles.

Other activities include the Kayaking Program, Ranger-led Bicycle Ride, Sand Sculpting Lesson and Building, Sea Shell Craft, Paddleboard Yoga, and the Kid's Paddleboard Camp. Many other programs are offered to Park visitors throughout the year.

Objective: Develop two new interpretive, educational, and recreational programs.

New programs to be added to the park's repertoire of programs include Sunday Morning Story Time, meant to compliment Campers Coffee, and Hands-on Arts and Crafts, which will provide a unique recreational opportunity to park visitors.

Recreational Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high-quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 6).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 6.

Table 7. Recreational Carrying Capacity

Recreational Activities & Visitor Facilities	Existing Capacity*		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Nature Trail	10	40			10	40
Picnicking	84	168	8	16	92	184
Boat Camping	76	76			76	76
Standard Camping	576	576			576	576
Cabins	36	36	24	24	60	60
Visitor Center	242	484			242	484
Beach & Swimming	1,013	2,026			1,013	2,026
Shoreline Fishing	320	640			320	640
Jetty Fishing	30	60			30	60
Canoeing	25	50			25	50
Boating	4	288			4	288
TOTAL	**2,416**	**4,444**	**32**	**40**	**2,448**	**4,484**

*Existing capacity revised from approved plan according to DRP guidelines.

Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to implement the recommendations of the management plan.

Bahia Honda State Park is well developed and is one of the most popular state parks in the Florida Keys. Many park facilities are relatively old and will require improvements in order to ensure a quality experience for the parks' many visitors.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of improved or renovated and/or new facilities needed to implement the conceptual land use plan for Bahia Honda State Park.

Objective: Maintain all public and support facilities in the park.

All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help.

Objective: Improve/repair six existing use areas and 1.6 miles of road.

Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by DRP). The following discussion is organized by use area within the park.

Buttonwood Family Camping Area

Within the Buttonwood campground, a general redesign of the campground has been recommended to improve the flow of traffic, improve campsite conditions, and enhance the overall visitor experience.

Concession Area

In the marina adjacent to the park concession, a proposed ADA-compliant canoe/kayak launch will expand recreational opportunities for park visitors with limited mobility.

Calusa Beach Day Use Area

The popular Calusa Beach recreation area attracts a large number of visitors to the park. In order to continue to provide a quality recreation experience for park visitors, several improvements are planned for the area. These include the addition of two small picnic pavilions, replacing the existing restroom facility with an improved restroom facility that will accommodate beach goers, and redesigning the existing parking lot to maximize capacity and address congestion. Around the Old Bahia Honda Bridge, landscape improvements to the terraced slope, repairs to the Old Bahia Honda Bridge Overlook, and improving access to fishing opportunities along the Old Bahia Honda Bridge seawalls are all planned to improve the visitor experience.

Loggerhead Beach Day Use Area

Improvements within the Loggerhead Beach area are focused around providing facilities for wedding and/or memorial service reservations. Additional storage is also proposed for this area.

Cabin Area

Within the Cabin Area, two additional duplex cabins are proposed north of the existing cabins on the western side of the borrow pit. A floating dock adjacent to the existing cabins is also proposed with 10 boat slips to be installed after restoration efforts in the borrow pit are completed.

Parkwide

The main park road is planned to be improved from the Calusa Beach parking lot to the Sandspur Beach parking lot. Improvements will include the repaving and addition of road markings and signage to improve user safety.

Cabin Area
Add New Cabins (2)
Add New Floating Dock

Buttonwood Family Camping Area
Redesign Campground

Concession Area
Add New ADA Canoe/Kayak Launch

Calusa Beach Day Use Area
Add New Picnic Shelters (2)
Replace Restroom
Landscape Improvements
Redesign Parking Lot
Improve Fishing Platform
Repair Old Bahia Honda Bridge Overlook

Loggerhead Beach Day Use Area
Renovate Storage to Wedding Pavilion
Add New Storage

Legend

- Road Improvements
- Existing Trail
- Proposed Improvement
- Park Boundary
- Protected Zone

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BAHIA HONDA STATE PARK

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Florida Department of Environmental Protection
Division of Recreation & Parks
Office of Park Planning
Date of aerial 2011

CONCEPTUAL LAND USE PLAN

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist DRP in budgeting future park improvements and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include:

Cabin Area
Cabins (2)
Floating dock

Calusa Beach Day Use Area
Small picnic pavilions (2)
Replace restroom
Landscape improvements
Redesign parking lot
Improve fishing platform
Repair Old Bahia Honda Bridge overlook

Concession Area
ADA canoe/kayak launch

Loggerhead Beach Day Use Area
Renovate storage to wedding pavilion

Parkwide
Improve park road

Buttonwood Family Camping Area
Redesign campground

Optimum Boundary

The optimum boundary map reflects lands considered desirable for direct management by the DRP as part of the state park. These parcels may include public or privately owned land that would improve the continuity of existing parklands, provide the most efficient boundary configuration, improve access to the park, provide additional natural and cultural resource protection or allow for future expansion of recreational activities. Parklands that are potentially surplus to the management needs of DRP are also identified. As additional needs are identified through park use, development, and research, modification of the park's optimum boundary may be necessary.

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property's identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions.

Several parcels totaling around 40 acres on West Summerland Key, also known as Spanish Harbor Key, to the southwest of the park are identified within the optimum boundary. These parcels include the Spanish Harbor borrow pit and adjacent land to the north of U.S. Highway 1 between MM 34 and MM 35.3. Acquisition of these parcels would provide opportunities to expand recreational opportunities and allow park staff to manage these areas as part of the larger park property through continued exotic species management, natural resource protection and restoration, and monitoring of visitor activities and impacts within the park.

BAHIA HONDA STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial: 2011

OPTIMUM BOUNDARY MAP

Implementation Component

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems and recommend both short and long-term objectives and actions to meet those needs. The implementation component addresses the administrative goal for the park and reports on the Division of Recreation and Parks (DRP) progress toward achieving resource management, operational and capital improvement goals and objectives since approval of the previous management plan for this park. This component also compiles the management goals, objectives and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities.

Management Progress

Since the approval of the last management plan for Bahia Honda State Park in 2003, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the DRP.

Resource Management

- Park staff continues to monitor sea turtle nesting activity.
- A part-time biologist position was added to focus on the Miami Blue butterfly project. This includes regular surveys, exotic plant and animal removal, training volunteers, and controlling access to restricted areas.
- District staff continues to conduct Florida Fish and Wildlife Conservation Commission nesting shorebird surveys, non-breeding shorebird surveys, U.S. Fish and Wildlife Service annual winter shorebird surveys and piping plover surveys to document imperiled species utilizing the park.
- District staff continues to conduct quarterly shorebird surveys that have been ongoing since 1990.
- District staff continues to work with the augmentation project of the yellow wood (Zanthoxylum flavum), and imperiled species found in natural habitat only on Bahia Honda and on the Marquesas.
- Park staff continues to conduct exotic plant removal projects with assistance from District staff and AmeriCorps volunteers.
- District and park staff conducted inventory of submerged resources in the park.
- Funding has been approved for the restoration of two mangrove wetlands areas in the park.

Park Facilities

- An improved sewer treatment facility was installed.
- Interpretive signs along the Silver Palm Nature trail were upgraded with additional signage posted along the trail.

Management Plan Implementation

This management plan is written for a timeframe of ten years, as required by Section 253.034 Florida Statutes. The Ten-Year Implementation Schedule and Cost Estimates (Table 8) summarizes the management goals, objectives and actions that are recommended for implementation over this period, and beyond. Measures are identified for assessing progress toward completing each objective and action. A time frame for completing each objective and action is provided. Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following five standard land management categories: Resource Management, Administration and Support, Capital Improvements, Recreation Visitor Services and Law Enforcement.

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided. The plan's recommended actions, time frames and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Table 8 may need to be adjusted during the ten-year management planning cycle.

Table 8. Ten-Year Implementation Schedule and Cost Estimates				
Goal I: Provide administrative support for all park functions.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Continue administrative support at current levels	Administrative support ongoing	C	$1,610,000
Objective B	Expand administrative support	Administrative support expanded	C	$15,000
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.		**Measure**	**Planning Period**	**Estimated Costs**
Objective A	Obtain an assessment of the park's hydrological needs	Assessment conducted	LT	$1,350,000
Action 1	Conduct hydrological assessment of interior lagoon	Assessment conducted	LT	$50,000
Action 2	Develop restoration plan	Plan developed	LT	$25,000
Action 3	Implement restoration plan	Plan implemented	LT	$250,000
Action 4	Develop restoration plan for filling in borrow pits	Plan developed	LT	$25,000
Action 5	Implement restoration of borrow pits to functional seagrass	Plan implemented	LT	$1,000,000
Objective B	Restore natural hydrological conditions and function to approximately eight acres of seagrass, mangrove swamp, and salt marsh natural communities	# of acres restored	LT	$1,350,000
Action 1	Install approximately 219,000 cubic yards of material to restore seagrass habitat	# of yards restored	LT	$1,000,000
Action 2	Install four culverts to restore salt marsh and mangrove swamp	# of acres restored	ST	$350,000

Table 8. Ten-Year Implementation Schedule and Cost Estimates				
Goal III: Restore and maintain the natural communities.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Conduct habitat restoration activities on ten acres of coastal berm, beach/dune, and mangrove swamp natural communities	# of acres restored	C	$10,000
Action 1	Continue exotic plant and animal species removal programs	# of acres treated	C	$10,000
Goal IV: Maintain, improve, or restore imperiled species populations and habitats.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Monitor and document six selected imperiled animal species	# of species monitored	C	$5,000
Action 1	Implement monitoring protocols for six imperiled animal species	# of species monitored	C	$5,000
Objective B	Monitor and document fifteen selected imperiled plant species	# of species monitored	C	$3,000
Action 1	Continue yellow wood conservation project	Project completed	C	$1,500
Action 2	Monitor imperiled plant species	# of species monitored	C	$1,500
Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Annually treat 0.2 acres of exotic plant species	# of acres treated	C	$5,000
Action 1	Continue to conduct exotic removal	# of acres treated	C	$5,000
Objective B	Implement control measures on five exotic and nuisance animal species	# of species monitored	C	$8,000
Action 1	Actively remove iguanas and other exotic animals	# of species removed	C	$8,000

Table 8. Ten-Year Implementation Schedule and Cost Estimates				
Goal VI: Protect, preserve and maintain the cultural resources.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Bring one of two recorded cultural resources into good condition	# of sites improved	LT	$3,500,000
Goal VII: Provide public access and recreational opportunities.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Maintain the park's current recreational carrying capacity of 4,444 users per day	# of visitors per day	C	$2,150,000
Objective B	Expand the park's recreational carrying capacity by 40 users per day.	# of visitors per day	ST	$20,000
Objective C	Continue to provide the current repertoire of 40 interpretive programs	# of interpretive programs	C	$200,000
Objective D	Develop two new interpretive programs	# of interpretive programs	ST	$15,000
Goal VIII: Develop and maintain the capital facilities and infrastructure.		**Measure**	**Planning Period**	**Estimated Cost**
Objective A	Maintain all public and support facilities	Facilities maintained	C	$5,375,000
Objective B	Improve and repair six existing facilities and 1.6 miles of road	# of facilities, miles of trail, miles of road improved	LT	$8,000,000
Objective C	Expand maintenance activities	Facilities maintained	C	$50,000

Total Ten-Year Estimated Costs	
Administrative and Support	$1,625,000
Resource Management	$6,231,000
Recreational Visitor Services	$2,170,000
Infrastructure and Capital Improvements	$13,425,000
Total	**$23,451,000**

Addendum 1—Acquisition History

LAND ACQUISITION HISTORY REPORT

Park Name	Bahia Honda State Park
Date Updated	10/5/2015
County	Monroe
Trustees Lease Number	3609 (formerly)
Current Park Size	491 acres
Purpose of Acquisition	Initially the State of Florida acquired this property for the purposes of pubic fishing, camping and for other park and recreational purposes.

Acquisition History

Parcel Name or Parcel DM-ID	Date Acquired	Initial Seller	Initial Purchaser	Size in acres	Instrument Type
DMID366054	9/21/1961	Monroe County	State of Florida for the use and benefit of the Florida Board of Parks and Historic Memorials	16	Deed

Management Lease

Parcel Name or Lease Number	Date Leased	Initial Lessor	Initial Lessee	Term	Expiration Date
Initial (Original) Lease No. 2324	1/23/1968	Trustees of the Internal Improvement Fund	FBPHM	99	1/22/2067

Outstanding Issue	Type of Instrument	Brief Description of the Outstanding Issue	Term of the Outstanding Issue
Reverter	Deed	*If the subject property is not used for the intended purpose, title and all interests in the property shall revert back to Monroe County.*	Perpetuity

Addendum 2—Advisory Group Members and Report

Elected Officials

Mayor Norman Anderson
City of Layton

Mayor Mark Senmartin
City of Marathon

Mayor Heather Carruthers
Monroe County Board of County Commissioners

Agency Representatives

Mark Duncan, Park Manager
Long Key State Park

Kenneth Troisi, Park Manager
Curry Hammock State Park

Eric Kiefer, Park Manager
Bahia Honda State Park

Cooper McMillan, Chairman
South Dade Soil and Water Conservation District

Mark Torok, County Forester
Florida Forest Service

Jeanette Parker, Regional Biologist
Florida Fish and Wildlife Commission

Capt. David Dipre
Florida Fish and Wildlife Commission

Rebecca Jetton, Administrator
Florida Keys Area of Critical State Concern

Sean Morton, Superintendent
Florida Keys National Marine Sanctuary

Citizen Support Organizations

Karen Sunderland, President
Friends of the Islamorada Area State Parks

Tourism/Economic Development Representative

Harold Wheeler, Director
Monroe County Tourism Development Council

Environmental Representatives

Dr. Jerry Lorenz, Director
Audubon of Florida Everglades Science Center

Chris Bergh, Director
Nature Conservancy Coastal and Marine Resilience

Rita Irwin, President
Dolphin Research Center

Recreational Representatives

Rafael Gálvez, Coordinator
Florida Keys Hawkwatch

Jay Elliot, Coordinator
Florida Keys Astronomy Club

Duane Baker, Commodore
Florida Keys Fishing Guides Association

Cultural Resource Representative

Barbara Edgar, President
Matecumbe Historical Trust

Local Private Property Owners

John Fusco, Local Property Owner
Long Key State Park

John Morris, Local Property Owner
Curry Hammock State Park

Doug Sposito, Local Property Owner
Bahia Honda State Park

Citizen Support Organizations

Diane Rullen, Director
Friends of Bahia Honda State Park

The Advisory Group meeting to review the proposed unit management plan (UMP) for Long Key, Curry Hammock, and Bahia Honda State Parks was held in the city of Marathon in the Marathon Government Center on Friday, June 10, 2016 at 9:00 AM.

Skip Haring represented the City of Layton. Chuck Kean represented John Morris, a local property owner. Vicki Weagley represented the Friends of Bahia Honda State Park. Katherine Becker represented Dr. Jerry Lorenz. Beth Dieveney represented the Florida Keys National Marine Sanctuary. Heather Carruthers, Cooper McMillan, Capt. David Dipre, Rita Irwin, Rafael Gálvez, Duane Baker, and Harold Wheeler were not in attendance. All other appointed Advisory Group members were present.

Attending Division of Recreation and Parks (DRP) staff members were Janice Duquesnel, Kenneth Troisi, Mark Duncan, Meredith Kruse, Eric Kiefer, Martha Robinson, and Eric Pate.

Mr. Pate began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He provided a brief review of comments received the previous evening and an overview of the DRP's planning process. Mr. Pate then asked each member of the Advisory Group to express his or her comments on the draft plan. After all comments were shared, Mr. Pate described the next steps for drafting the plan and the meeting was adjourned.

Summary of Advisory Group Comments

Beth Dieveney (Representing Sean Morton with the Florida Keys National Marine Sanctuary) expressed that the time given to Advisory Group members to review the draft Unit Management Plans limited the ability of Advisory Group members to adequately review and address the plans at the meeting. Ms. Dieveney explained the management philosophy shared by the Florida Keys National Marine Sanctuary (FKNMS) managers, the prioritization of natural resource management while allowing for human access through recreational opportunities, and acknowledged the difference in management philosophies with the DRP, seeking an appropriate balance between resource protection and the provision of recreational opportunities. She then stressed the need for additional consideration of the impacts of sea level rise to be incorporated into the planning process for state parks in the Florida Keys. Ms. Dieveney stated that the FKNMS enjoys a great working relationship with the DRP and hopes to continue this relationship into the future. She also asked about the potential for collaboration with the U.S. Fish and Wildlife Service with prescribed burning efforts at Curry Hammock State Park.

Caitlin Lustic (Representing Chris Bergh with The Nature Conservancy) highlighted the extensive working relationship between The Nature Conservancy (TNC) and the DRP. Ms. Lustic brought to the attention of the Advisory Group her concern with the level of attention given to high-profile invasive plants through current resource management efforts and the lack of attention given to lower-profile invasive plants. Ms. Lustic cautioned the DRP to not focus solely on high-profile invasive plants at the expense of expending sufficient resources to control the spread of low-profile invasive plants.

Jay Elliot (Florida Keys Astronomy Club) emphasized the importance of acting to minimize the effects of light pollution whenever possible. Mr. Elliot identified the relatively low amount of light-pollution compared to the mainland as an important characteristic of the Florida Keys. He then elaborated on the economic benefits of efforts to reduce light pollution derived from the associated sustainable revenue generated from ecotourism. Mr. Elliot stressed the importance of aesthetic decisions when installing lighting on support facilities in state parks, he noted that harsh, bright lights can significantly increase light pollution and can often be easily addressed.

Rebecca Jetton (Florida Department of Economic Opportunity Florida Keys Area of Critical State Concern) referenced her extensive experience with conservation lands management throughout Monroe County. Ms. Jetton emphasized the need to work collaboratively to effectively control the alarming increase in the iguana population in the Florida Keys. She then noted that the DRP would face the same land use and development regulations that private developers work under in Monroe County, in particular working within the Rate-of-Growth Ordinance (ROGO) process. She did mention that DRP would be able to apply for affordable housing allowances. Ms. Jetton then stressed the importance of evacuation procedures and then inquired about how the DRP addresses the evacuation of overnight visitors and staff in the case of tropical storm events. She then inquired into how each park dealt with sewage. Ms. Jetton emphasized the negative impact of invasive animal species, such as iguanas and the Gambian pouched rat, and encouraged DRP staff to adequately address the issue.

Chuck Kean (Representing Local Property Owner, John Morris) acknowledged his role on the Advisory Group and stated that he didn't have comments but meant to observe the Group's discussion.

Mayor Mark Senmartin (Mayor of Marathon, FL) concurred with the comments and concerns brought by Rebecca Jetton. He went on to explain that the City of Marathon shares many concerns with Monroe County and have worked to responsibly manage development pressures through similar land use regulations. Mayor Senmartin brought attention to land administration issues that could potentially involve the expansion of the optimum boundary for Curry Hammock State Park. Mayor Senmartin also took the opportunity to bring up the possibility of an organized iguana "round-up" similar to efforts meant to control the spread of lionfish. He went on to inquire as to how state parks in Monroe County control the iguana population and identified the need to work collaboratively across municipal and county boundaries, and conservation lands in order to adequately address the spread of invasive animal species. Ms. Duquesnel commented on the proposed iguana "round-up" by stating that efforts should incorporate public education programs to inform residents of proper methods of exterminating iguanas, in a manner that does not harm natural communities in the process.

Mark Torok (Florida Forest Service) offered assistance to the DRP to conduct prescribed burning at Curry Hammock State Park. Mr. Torok then inquired into the processes followed when working to control and eradicate invasive species by park

staff. Mr. Torok also mentioned the state champion tree program and inquired into whether or not the parks could be eligible to collaborate in order to showcase important specimens.

Doug Sposito (Local Property Owner near Bahia Honda State Park) stated he believed that current natural resource management efforts were not accommodating to the large number of visitors to the parks. He expressed confusion over why park staff would seek to remove plants that are considered exotic on certain keys when they are considered native on other keys, such as lignumvitae at Bahia Honda State Park. In addition, Mr. Sposito noted that many visitors to the Florida Keys expect certain types of trees, such as coconut palms, and believed that the DRP should not remove these trees in order to accommodate visitor preferences. Ms. Duquesnel stressed the importance of acknowledging the historic role of island biogeography throughout the Florida Keys and the need for its incorporation into the natural resource management philosophy of conservation lands managers. Ms. Duquesnel also mentioned that efforts to manage natural resources are developed with political realities in mind. As an example, she stated that DRP staff did not intend to remove coconut palms in a beach day use area unless they posed a hazard to park visitors.

John Fusco (Local Property Owner near Long Key State Park) acknowledged his role on the Advisory Group as a representative local property owner in the City of Layton and deferred comments to the City of Layton representative, Skip Haring.

Skip Haring (Representing Mayor Norman Anderson of the City of Layton) acknowledged that he has been working with DRP staff regarding the Unit Management Plan updates over the past several months and thanked DRP staff for their work on the plans. Mr. Haring went on to mention that the City of Layton and the DRP will remain in conversation about the potential for the City of Layton to annex Long Key State Park. Mr. Haring also brought up the importance of public education on negative human impacts to the environment, as an example he mentioned the role that Long Key State Park played in educating residents of Layton on responsible mosquito population management.

Katharine Becker (Representing Dr. Jerry Lorenz with Audubon of Florida Everglades Science Center) stated that she has been studying conditions of the Florida Bay ecosystem and was pleased to see that the Seagrass Bed natural community at Bahia Honda State Park was considered in good condition. Ms. Becker also brought up the issue of crowding on the deck of the Curry Hammock State Park campground restroom when utilized by the Florida Keys Hawkwatch.

Vicki Weagley (Representing Diane Rullan with Friends of Bahia Honda State Park) mentioned that she was thankful for the opportunity to be included in the Advisory Group for the updates to the unit management plans and expressed support for the proposed improvements included in the draft plans.

Barbara Edgar (Matecumbe Historical Trust) expressed that she agreed with comments made by Mr. Doug Sposito regarding opposition to the removal of certain

species of exotic plants that visitors to Monroe County expect to find in a tropical setting, specifically the coconut palm. Ms. Edgar also commented that she did not have enough time to review the draft unit management plans. In addition, Ms. Edgar asked if DRP staff considers the timing on prescribed burns with bird migration patterns.

Karen Sunderland (Friends of Islamorada Area State Parks) took the opportunity to state her support for the draft unit management plans and, in particular, maintaining a focus on the preservation of natural communities and current resource management efforts. Ms. Sunderland cautioned the Advisory Group members that efforts to remove iguanas may prove to be politically sensitive because some area residents view them favorably. She also inquired into the relationship between DRP staff and the FDOT as it relates to landscaping in the U.S. right-of-way and working to exclude the introduction of exotic plant species. In response to Ms. Sunderland's question regarding the working relationship between DRP and FDOT when landscaping in the U.S. 1 right-of-way, Ms. Duquesnel mentioned that she has consulted with FDOT staff in regards to avoiding the introduction of exotic plant species and hopes to continue the relationship.

Kenneth Troisi (Park Manager, Curry Hammock State Park) acknowledged the role that efforts to facilitate the evacuation of overnight visitors play in the provision of overnight camping facilities in Monroe County. In regard to iguana population control, Mr. Troisi mentioned that proper disposal of iguanas once caught is necessary; he went on to state that he has taken iguanas to the Wild Bird Center. He expressed support for efforts to reduce the impacts of light pollution and for acting to accommodate the Florida Keys Hawkwatch group that utilizes the park. In regards to the removal of certain exotic plants, in particular the coconut palms, Mr. Troisi stated that there are no plans to remove the trees from the beach/day use areas that are heavily visited, but does intend to act to remove exotic plants from the protected areas of the park that see less visitor use. When conducting prescribed burning, Mr. Troisi said they will consider all impacts the fire may have on the surrounding environment, including potential impacts to bird migration.

Mark Duncan (Park Manager, Long Key State Park) stressed that DRP staff and park visitors are required to evacuate during Phase 1 evacuations or when called to by District 5 administration, whichever comes first. Mr. Duncan emphasized that the DRP does what it can to not increase evacuation times along U.S. 1. Mr. Duncan also mentioned the importance of public outreach and education about natural resource management throughout Monroe County.

Eric Kiefer (Park Manager, Bahia Honda State Park) referenced successful efforts of DRP staff to control the spread of iguanas in state parks when adding on to Mayor Senmartin's suggestion of a possible iguana "round-up." Mr. Kiefer also explained that he considers acting to reduce the impacts of light pollution an important task. In addition, he elaborated on the discussion surrounding the removal of exotic species, in particular the coconut palm, stating that coconut palms will remain in the beach areas and other day use area unless they pose a threat to visitor safety.

Staff Recommendations

Suggestions received from the Advisory Group meeting resulted in the following modifications to the draft management plan:

- DRP staff will act to reduce the impacts of light pollution on park facilities.
- In order to appropriately manage the park's natural communities, efforts to remove exotic plants, including the coconut palm, will continue in the protected areas of the parks away from heavy visitor use. Coconut palm trees in heavy use areas such as beaches or picnic areas may be kept unless the tree poses a risk to visitor safety or is diseased.
- Language will be incorporated to highlight the issue of Island Biogeography and its role in natural resource management in state parks.

Additional revisions were made throughout the document to address editorial corrections, consistency of spelling and notations, and other minor corrections.

Notes on Composition of the Advisory Group

Florida Statutes Chapter 259.032 Paragraph 10(b) establishes a requirement that all state land management plans for properties greater than 160 acres will be reviewed by an Advisory Group:

"Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an Advisory Group. Members of this Advisory Group shall include, at a minimum, representatives of the lead land managing agency, co-managing entities, local private property owners, the appropriate soil and water conservation district, a local conservation organization, and a local elected official."

Advisory Groups that are composed in compliance with these requirements complete the review of State park management plans. Additional members may be appointed to the groups, such as a representative of the park's Citizen Support Organization (if one exists), representatives of the recreational activities that exist in or are planned for the park, or representatives of any agency with an ownership interest in the property. Special issues or conditions that require a broader representation for adequate review of the management plan may require the appointment of additional members. The Division's intent in making these appointments is to create a group that represents a balanced cross-section of the park's stakeholders. Decisions on appointments are made on a case-by-case basis by Division of Recreation and Parks staff.

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Addendum 4—Soil Descriptions

(3) Matecumbe muck, occasionally flooded - The Matecumbe series consists of moderately well drained soils that are very shallow to rippable coral or oolitic limestone bedrock. The depth to limestone or coral limestone bedrock is 2 to 9 inches. These soils formed in organic material in varying stages of decomposition. Slopes are 0 to 1 percent. The taxonomic class is Euic, isohyperthemric Lithic Tropofolists.

This soil is on tropical hammocks in the uplands throughout the keys. Individual areas are subject to occasional flooding from hurricanes and other tropical storms. Elevations are less than 15 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean temperature ranges from 74 to 78 degrees F, and the mean annual precipitation ranges from 50 to 65 inches.

The Matecumbe soil is dominant in this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Matecumbe soil are the well-drained, mineral Keyvaca and Pennekamp soils in the higher positions on the landscape; the somewhat poorly drained, marly Saddlebunch soils in the landscape positions similar to those of the Matecumbe soil; and the poorly drained, marly Cudjoe, Keywest, and Lignumvitae soils and very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Matecumbe soil is moderately well drained. It has a seasonal high water table at a depth of 1.5 to 3.0 feet during the wet periods of most years. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for woodland wildlife. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey area include; poisonwood, wild tamarind, mahogany, tree cactus, crabwood, thatch palms, satinleaf, paradise tree, and stopper.

Depth to bedrock, the flooding, and an excessive amount of humus are severe limitation affecting most uses of this soil, including most kinds of building site and recreational development and sanitary facilities.

(6) Keylargo muck, tidal - The Keylargo series consists of very poorly drained soils that are deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is 50 to 90 inches. These soils formed in sapric material. Slopes are less than 1 percent. The taxonomic class is Euic, isohyperthermic Typic Troposaprists.

This soil is dominantly on the upper keys but can occur throughout the keys. It is in mangrove swamps. Individual areas are subject to daily flooding by tides. Elevations are dominantly at or below sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 50 inches.

The Key largo soil is dominant in the map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Keylargo soils are the very poorly drained, organic Islamorada and Tavernier soils in the landscape positions similar to those of the Keylargo soil; the poorly drained, marly Cudjoe, Lignumvitae and Keywest soils in the slightly higher position on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Keylargo soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for wetland wildlife. A few areas have been developed for residential or recreation use. Characteristic vegetation for the soils in the survey areas include; red and black mangrove.

The wetness, an excessive amount of humus, and the flooding are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

(7) Udorthents-Urban land complex - This map unit is constructed upland areas adjacent to areas of water throughout the keys. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations vary, depending on the thickness of the fill material, but they are dominantly 3 to 10 feet above sea level, according to National Geodetic Vertical Datum of 1929.

The Udorthents dominantly consist of crushed oolitic limestone or coral bedrock that has been spread over the original soil material. They commonly are about 32 inches of extremely gravelly sand underlain by about 40 inches of marl. The marl is underlain by coral bedrock. Other areas of soils are underlain by muck and other soil material. Houses and other urban structures cover up to 40 percent of most areas of the Udorthents; however, the soils can still be observed. Soils that are associated in this map unit are all of the other soils that are in the Keys.

The Udorthents are moderately well drained. They have a seasonal high water table at a depth of 2 to 4 feet during wet periods of most years. Permeability is variable.

This map unit generally supports no vegetation. The stones and droughtiness are severe limitations affecting any kind of landscaping activity. The Udorthents were developed for urban use, and many areas are being used for this purpose.

The stones, seepage, and the wetness are moderate or severe limitations affecting most uses of this map unit, including most kinds of building site and recreational development.

(8) Rock outcrop-Cudjoe complex, tidal - The Cudjoe series consists of poorly drained soils that are shallow to rippable coral or oolitic limestone bedrock. The depth to bedrock is 3 to 20 inches. These soils formed in calcareous marl. The taxonomic class in Loamy, carbonatic, isohyperthermic, shallow Tropic Fluvaquents.

This map unit is in mangrove swamps throughout the keys. Individual areas are frequently flooded by tides. Elevations are 0 to 1 foot above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 75 to 78 degrees F, and the mean annual precipitation ranges from 40 to 50 inches.

Approximately 60 percent of this map unit consists of areas of exposed bedrock. These areas are dominantly 1 to 4 inches above the surface of the surrounding soil and range from approximately 2 feet to more than 200 feet in diameter. The Cudjoe soil is dominant in about 40 percent of this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Cudjoe soil are the well-drained, mineral Keyvaca and Pennekamp soils, moderately well drained, organic Matecumbe soils, and somewhat poorly drained, marly Saddlebunch soils in the higher positions on the landscape; the poorly drained marly Keywest and Lignumvitae soils in the landscape positions similar to those of the Cudjoe soil; and the very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Cudjoe soil is poorly drained. The season high water table is within a depth of 6 inches during the wet periods of most years. Permeability is moderate or moderately rapid.

Most area of this map unit support native vegetation and are used as habitat for wetland wildlife. Some areas have been developed for residential, urban, or recreation use. Characteristic vegetation for the soils in the survey area include; red mangrove, black mangrove, saltwort and glasswort.

The flooding, the depth to bedrock, and the wetness are several limitation affecting most uses of this map unit, including most kinds of building site and recreational development and sanitary facilities.

(9) Lignumvitae marl, tidal - The Lignumvitae series consists of poorly drained soils that are moderately deep to rippable coral of oolitic limestone bedrock. Depth to bedrock is 20 to 35 inches but can range from 20 to 40 inches. These soils formed in calcareous marl. They are in tidal areas. Slopes are 0 to 1 percent. The taxonomic class is coarse-silty, carbonatic, isohyperthermic Tropic Fluvaquents.

This soil is dominantly on the middle and lower keys in mangrove swamps. Individual areas are frequently flooded by tides. Elevations are dominantly at sea level, according to National Geodetic Vertical Datum of 1929. The mean annual

temperature ranges from 75 to 78 degrees F., and the mean annual precipitation ranges from 40 to 50 inches.

The Lignumvitae soil is dominant in this map unit. Areas that have different uses and interpretation are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Lignumvitae soil are the well-drained, mineral Keyvaca and Pennekamp soils, moderately well drained, organic Matcumbe soils, and somewhat poorly drained, marly Saddlebunch soils in the higher positions on the landscape; the poorly drained, marly Cudjoe and Keywest soils in landscape positions similar to those of the Lignumvitae soil; and the very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Lignumvitae soil is poorly drained. The seasonal high water table is within a depth of 6 inches during wet periods of most years. Permeability is moderate or moderately rapid.

Most areas of this soil support native vegetation and are used s habitat for wetland wildlife. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey area include; red mangrove, black mangrove, white mangrove, buttonwood, and glasswort.

Depth to bedrock, the flooding, and the wetness are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development and sanitary facilities.

(16) Bahiahonda fine sand, 0 to 3 percent slopes - The Bahiahonda series consists of moderately well drained soils that are deep to rippable coral limestone bedrock. The depth to bedrock is 60 to 90 inches. These soils formed in sandy marine material and shells overlying the limestone bedrock. They are uplands. Slopes range from 0 to 3 percent. The taxonomic class is Isohyperthermic, uncoated Aquic Quartzipsamments.

The soil is on coastal strands and topical hammocks in the uplands on Bahia Honda Key and Long Key. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations are dominantly 4 to 7 feet above sea level, according to National Geodetic Vertical Datum of 1929.

The Bahiahonda soil is dominant in this map unit. Soils in areas on Long Key are wetter than the Bahiahonda soil and have slightly more limitations. They have a high water table at a depth of 1.5 to 2.5 feet. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of this map unit.

Soils that are associated with the Bahiahonda soil are moderately well drained, organic Matecumbe soils in landscape positions similar to those of the Bahiahonda

soil; the poorly drained, marly Cudjoe soils in the slightly lower positions on the landscape; and the very poorly drained, organic Islamorada and Keylargo soils and Beaches in the significantly lower position on the landscape.

The Bahiahonda soil is moderately well drained. It has a seasonal high water table at a depth of 2.5 to 3.5 feet during the wet periods of most years. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for woodland wildlife. A few areas have been developed for recreation use. Some areas support invader, or exotic species.

These invader species are dominantly Australian pine. Characteristic vegetation for the soils in this survey include; poisonwood, crabwood, wild tamarind, gumbo limbo, stopper, and Buccaneer palm.

The wetness, the flooding, and seepage are severe limitations affecting most uses of this soil, including most kinds of building site and recreation development and sanitary facilities.

(17) Keywest marl, tidal - The Keywest series consists of poorly drained soils that are deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is more than 50 inches. These soils formed in calcareous marl. They are in tidal area. Slopes are 0 to 1 percent. The taxonomic class is coarse-silty, carbonatic, isohyperthermic Thapto-Histic Tropic Fluvaquents.

The soil is dominantly on the lower keys in mangrove swamps. Individual areas are frequently flooded by tides. Elevations are dominantly 0 to 1 foot above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 75 to 78 degrees F, and the mean annual precipitation ranges from 40 to 50 inches.

The Keywest soil is dominant in this map unit. Soils in areas on Boot Key do not have a layer of muck; whereas, the Keywest soil generally has a layer of muck. The difference, however, does not affect the uses and interpretations of the soils. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of this map unit.

Soils that are associated with the Keywest soil are the well-drained, mineral Keyvaca and Pennekamp soils, moderately well drained, organic Matecumbe soils, and somewhat poorly drained, marly Saddlebunch soils in the higher positionso n the landscape and the very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Keywest soil is poorly drained. The seasonal high water table is within a depth of 6 inches during the wet periods of most years. Permeability is moderate or moderately rapid.

Most areas of this soils support native vegetation and are used as habitat for wetland wildlife. Some areas have been developed for residential, urban or recreational use. Characteristic vegetation for this soil survey include; black mangrove, red mangrove, white mangrove, buttonwood and glasswort.

The flooding and the wetness are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development and sanitary facilities.

(18) Beaches - This map unit consists of barren areas adjacent to the Atlantic Ocean on the lower keys. Individual areas are subject to shallow flooding by tides and to deep flooding from hurricanes and other tropical storms. Elevations are at or near sea level, according to National Geodetic Vertical Datum of 1929.

The Beaches are miscellaneous areas that have been reworked by the tides. They commonly consist of about 16 inches of sand underlain by about 44 inches of fine sand. The fine sand is underlain by muck and other soil or nonsoil material at a depth of about 60 inches. The width and shape of the Beaches can change during each major storm.

The Beaches are adjacent to Bahiahonda soils. They are also adjacent to Urban land and water. The Bahiahonda soils and the Urban land are in the higher positions on the landscape.

This map unit is poorly drained. It has a seasonal high water table at the surface. Permeability is rapid or very rapid. Most areas of this map unit are not vegetated. The Beaches are used for recreational activities, such as sunbathing and fishing, and as access areas for swimming and wading. Because of the unique location of the Beaches and their value for recreational activities, other uses are not practical and interpretations have not been provided.

Addendum 5—Plant and Animal List

Bahia Honda State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
	PTERIDOPHYTES	
Giant leather fern	*Acrostichum danaeifolium*	
	ANGIOSPERMS	
Flat spikerush	*Abildgaardia ovata*	
Agave	*Agave americana**	
False sisal	*Agave decipiens*	
Sisal hemp	*Agave sisalana**	
Bushy bluestem	*Andropogon glomeratus var. pumilus*	
Arrowfeather	*Aristida purpurascens*	
Saw grass	*Cladium jamaicensis*	
Southern sandbur	*Cenchrus echinatus*	
Coastal sandbur	*Cenchrus incertus*	
Silver palm	*Coccothrinax argentata*	CB
Coconut palm	*Cocos nucifera**	
Bermuda grass	*Cynodon dactylon**	
Umbrella sedge	*Cyperus croceus*	
Yellow nutgrass	*Cyperus esculentus**	
Umbrella sedge	*Cyperus involucratus**	
False saw grass	*Cyperus ligularis*	
Umbrella sedge	*Cyperus planifolius*	
Umbrella sedge	*Cyperus polystachy*os	
Nutgrass	*Cyperus rotundus**	
Egyptian grass	*Dactyloctenium aegyptium**	
Asia crabgrass	*Digitaria bicornis**	
Caribbean crabgrass	*Digitaria filiformis var. dolichophylla*	
Canada spike rush	*Eleocharis geniculata*	
Goose grass	*Eleusine indica**	
Pothos	*Epipremnum pinnatum**	
Lovegrass	*Eragrostis elliottii*	
Finger grass	*Eustachys petraea*	
Hurricane grass	*Fimbristylis cymosa**	
Chestnut sedge	*Fimbristylis spadicea*	
Spider lily	*Hymenocallis latifolia*	
Wild bamboo	*Lasiacis divaricata*	
Beach grass	*Panicum amarum*	
Guinea grass	*Panicum maximum**	
Blue paspalum	*Paspalum caespitosum*	
Salt joint grass	*Paspalum setaceum*	
Salt joint grass	*Paspalum vaginatum*	
Date palm	*Phoenix sp.**	
Wwhite-tops	*Rhynchospora colorata*	
Cabbage palm	*Sabal palmetto*	
Bowstring hemp	*Sansevieria hyacinthoides**	
Wire bluestem	*Schizachyrium gracile*	

* Non-native species

Bahia Honda State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Bluestem	*Schizachyrium sanguineum*	
Saw palmetto	*Serenoa repens*	
Foxtail grass	*Setaria parviflora*	
Greenbrier	*Smilax havanensis*	
Saltmeadow cordgrass	*Spartina patens*	
Prickly cordgrass	*Spartina spartinae*	
Coral dropseed grass	*Sporobolus domingensis*	
Dropseed	*Sporobolus indicus var. indicus**	
West Indian dropseed	*Sporobolus indicus var.pyramidalis**	
Coastal dropseed	*Sporobolus virginicus*	
St. Augustine grass	*Stenotaphrum secundatum**	
Key thatch	*Thrinax morrisii*	CB,DV
Florida thatch palm	*Thrinax radiata*	CB,DV
Sea oats	*Uniola paniculata*	
Dominican panicum	*Urochloa adspersa*	
Washington palm	*Washingtonia robusta**	
Spanish bayonet	*Yucca aloifolia*	
Turf grass	*Zoysia tenuifolia**	
Barb-wire cactus	*Acanthocereus tetragonus*	
False foxglove	*Agalinis maritima*	
Woman's tongue	*Albizia lebbeck**	
Notch-leaved amaranth	*Amaranthus blitum**	
Common ragweed	*Ambrosia artemisiifolia*	
Torchwood	*Amyris elemifera*	
Sea lavender	*Argusia gnaphalodes*	BD
Aster	*Aster subulatus*	
Sand atriplex	*Atriplex cristata*	
Black mangrove	*Avicennia germinans*	
Salt bush	*Baccharis halimifolia*	
Saltwort	*Batis maritima*	
Spanish needle	*Bidens alba var. radiata*	
Green shrimp plant	*Blechum pyramidatum**	
Samphire	*Blutaparon vermiculare*	
Red spiderling	*Boerhavia diffusa*	
Sea ox-eye daisy	*Borrichia arborescens*	
Sea oxeye	*Borrichia frutescens*	
Bougainvillea	*Bougainvillea glabra**	
Blueheart	*Buchnera americana*	
Gumbo limbo	*Bursera simaruba*	
Locustberry	*Byrsonima lucida*	CB
Gray nicker-bean	*Caesalpinia bonduc*	
Southern sea rocket	*Cakile lanceolata*	
Sea daisy	*Calyptocarpus vialis**	
Bay-bean	*Canavalia rosea*	
Limber caper	*Capparis flexuosa*	

* Non-native species

Bahia Honda State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Goatweed	*Capraria biflora*	
Love vine	*Cassytha filiformis*	
Small-flowered lilythorn	*Catesbaea parviflora*	CB
Madagascar periwinkle	*Catharanthus roseus**	
Butterfly pea	*Centrosema virginianum*	
Sensitive pea	*Chamaecrista nictitans var. aspera*	
Blodgett's spurge	*Chamaesyce blodgettii*	
Garber's spurge	*Chamaesyce garberi*	CB, DV
Hairy spurge	*Chamaesyce hirta*	
Graceful sandmat	*Chamaesyce hypericifolia*	
Seaside spurge	*Chamaesyce mesembryanthemifolia*	
Florida hammock sandmat	*Chamaesyce ophthalmica*	
Blackweed	*Chamaesyce prostrata**	
Cocoplum (cultivated)	*Chrysobalanus icaco*	
Pitch apple	*Clusia rosea**	
Pigeon plum	*Coccoloba diversifolia*	
Seagrape	*Coccoloba uvifera*	
Coffee colubrina	*Colubrina arborescens*	
Latherleaf	*Colubrina asiatica**	
Dayflower	*Commelina diffusa**	
Day flower	*Commelina erecta*	
Buttonwood	*Conocarpus erecta*	
Dwarf horseweed	*Conyza canadensis var. pusilla*	
Geiger tree	*Cordia sebestena*	
Rhacoma	*Crossopetalum rhacoma*	CB
Milkweed	*Cynanchum angustifolium*	
Fragrant milkweed	*Cynanchum northropiae*	
Coin vine	*Dalbergia ecastophyllum*	
Virgate mimosa	*Desmanthus virgatus*	
Beggarweed	*Desmodium incanum*	
Florida begger weed	*Desmodium tortuosum**	
Ponyfoot	*Dichondra carolinensis*	
False mint	*Dicliptera sexangularis*	
Annual wallrocket	*Diplotaxis muralis**	
Milkbark	*Drypetes diversifolia*	CB
False daisy	*Eclipta prostrata**	
Black torch	*Erithalis fruticosa*	
Beach creeper	*Ernodea littoralis*	
Spanish stopper	*Eugenia foetida*	
Dog fennel	*Eupatorium capillifolium*	
Grassleaf spurge	*Euphorbia graminea**	
Seaside gentian	*Eustoma exaltatum*	
Strangler fig	*Ficus aurea*	
Shortleaf fig	*Ficus citrifolia*	
Laurel fig	*Ficus microcarpa**	

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Yellowtop	*Flaveria linearis*	
Stalkless yellowtop	*Flaveria trinervia*	
Milk pea	*Galactia striata*	
Milk pea	*Galactia volubilis*	
Southern gaura	*Gaura angustifolia*	
Seven-year apple	*Genipa clusiifolia*	
Lignum vitae (cultivated)	*Guajacum sanctum*	DV
Blolly	*Guapira discolor*	
Crabwood	*Gymnanthes lucida*	
Flattop mille graines	*Hedyotis corymbosa**	
Scorpion tail	*Heliotropium angiospermun*	
Seaside heliotrope	*Heliotropium curassavicum*	
Bladder mallow	*Herissantia crispa*	
Hibiscus	*Hibiscus rosa-sinensis var. rosa-sinensis**	
Manchineel	*Hippomane mancinella*	CB
Wild indigo	*Indigofera spicata**	
Moon-flower	*Ipomoea alba*	
Morning glory	*Ipomoea imperati*	
Morning glory	*Ipomoea indica var. acuminata*	
Railroad vine	*Ipomoea pes-caprae ssp. Brasiliensis*	
Moonvine	*Ipomoea violaceae*	
Beach elder	*Iva imbricata*	
Cuban jacquemontia	*Jacquemontia havanensis*	BD, CB
Sky blue morning glory	*Jacquemontia pentanthos*	CB
Joewood	*Jacquinia keyensis*	CB
Devil's backbone	*Kalanchoe daigremontiana**	
Life plant	*Kalanchoe pinnata**	
Salt marsh mallow	*Kosteletzkya virginica*	
White mangrove	*Languncularia racemosa*	
Wild lantana	*Lantana involucrata*	
Peppergrass	*Lepidium virginicum*	
Lead tree	*Leucaena leucocephala**	
Christmas berry	*Lycium carolinianum*	
Purple bushbean	*Macroptilium atropurpureus**	
Red jumbie bean	*Macroptilium lathyroides**	
False mallow	*Malvastrum corchorifolium*	
Wild dilly	*Manilkara jaimiqui subsp. emarginata*	CB
Marsh elder	*Melanthera nivea*	
Poisonwood	*Metopium toxiferum*	
Cheeseweed	*Morinda royoc*	
Tex-Mex tobacco	*Nicotiana plumbaginifolia**	
Cochineal cactus	*Opuntia cochenillifera**	
Prickly-pear cactus	*Opuntia stricta*	
Lady's sorrel	*Oxalis corniculata*	
Corky-stemmed passionflower	*Passiflora suberosa*	

* Non-native species

Bahia Honda State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Chicken weed	*Pectis prostrata**	
Devil's backbone	*Pedilanthus tithymaloides**	
Wild allamanda	*Pentalinon luteum*	
Creeping charlie	*Phyla nodiflora*	
Gale of wind	*Phyllanthus amarus**	
Mascarene island leafflower	*Phyllanthus tenellus**	
Ground cherries	*Physalis walteri*	
Artillery plant	*Pilea microphylla*	
Jamaica dogwood	*Piscidia piscipula*	
Blackbead	*Pithecellobium keyense*	
Cat's claw	*Pithecellobium unguis-cati*	
Bushy fleabane	*Pluchea carolinensis**	
Marsh fleabane	*Pluchea odorata*	
Wild poinsettia	*Poinsettia cyathopho*ra	
Milkwort	*Polygala grandiflora*	
Purslane	*Portulaca oleracea*	
Pink purslane	*Portulaca pilosa*	
Purslane	*Portulaca rubricaulis*	
White indigo-berry	*Randia aculeata*	
Darling plum	*Reynosia septentrionalis*	
Red mangrove	*Rhizophora mangle*	
Least snoutbean	*Rhynchosia minima*	
Rougeberry	*Rivina humilis*	
Annual glasswort	*Salicornia bigelovii*	
Woody glasswort	*Salicornia perennis*	
Milkweed vine	*Sarcostemma clausum*	
Inkberry	*Scaevola plumieri*	
Beach naupaka	*Scaevola sericea**	
Brazilian pepper	*Schinus terebinthifolia**	
Coffeeweed	*Senna obtusifolia**	
Sea purslane	*Sesuvium portulacastrum*	
Broomweed	*Sida acuta*	
Fringed fanpetals	*Sida ciliaris*	
Saffron plum	*Sideroxylon celastrinum*	
American black nightshade	*Solanum americanum*	
Bahama nightshade	*Solanum bahamense*	
Mullein nightshade	*Solanum donianum*	
Necklace-pod	*Sophora tomentosa var. occidentalis**	
Necklace-pod	*Sophora tomentosa var. truncata*	
Large leaf buttonweed	*Spermacoce assurgens*	
Buttonweed	*Spermacoce verticillata**	
Porterweed	*Stachytarpheta cayennensis**	
Blue porterweed	*Stachytarpheta jamaicensis*	
Pencil flower	*Stylosanthes hamata*	
Sea blite	*Suaeda linearis*	

* Non-native species

Bahia Honda State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Bay cedar	*Suriana maritima*	
West Indian mahogany (cultivated)	*Swietenia mahagoni*	DV
Tropical almond	*Terminalia catappa**	
Portia	*Thespesia populnea**	
Soldier bush	*Tournefortia volubilis*	
Poison ivy	*Toxicodendron radicans*	
Oyster plant	*Tradescantia spathacea**	
Desert horsepurslane	*Trianthema portulacastrum*	
Puncture weed	*Tribulus cistoi*des*	
Mexican daisy	*Tridax procumbens**	
Yellow alder	*Turnera ulmifolia**	
Cow-pea	*Vigna luteola*	
Waltheria	*Waltheria indica*	
Hog-plum	*Ximenia americana*	
Yellow wood	*Zanthoxylum flavum*	CB

MARINE PLANTS

	Acetablularia calyculus
	Avrainvillea nigricans
	Avrainvillea longicaulis
	Batophora oerstedii
	Caulerpa sertularioides
	Caulerpa Mexicana
	Dasycladus vermicularis
	Dictyosphaeria cavernosa
	Halimeda incrassate
	Halimeda monile
	Halimeda opuntia
	Halodule wrightii
	Padina gymnospora
	Padina sanctae-crucis
	Penicillus capitatus
	Penicillus dumetosus
	Sargassum fluitans
	Sargassum natans
	Syringodium filiforme
	Thalassia tedtudinum
	Udotea flabellum
	Ulva fasciata
	Ventricaria ventricosa

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
	INVERTEBRATES	
Golfball coral	*Favia fragum*	MCPS,MCNS,MSGB
Rose coral	*Manicina areolata*	MCNS, MCPSMSGB
Finger coral	*Porites furcata*	MCPS,MCNS,MSGB
Finger coral	*Porites porites*	MCPS,MCNS,MSGB
Massive starlet coral	*Siderastrea siderea*	MCNS, MCPS,MSGB
Upside down jellyfish	*Cassiopeia xamachana*	MSGB,MS,MUS
Pink-tipped anemone	*Condylactis gigantean*	MCNS, MSGB
White encrusting zoanthid	*Palythoa caribaeorum*	MCNS
Portuguese man-of-war	*Physalia physalis*	MCNS,MUS,MCR,MSGB,MCPS
Tube sponge	*Aplysina cauliformis*	MCNS,MSGB
Chicken liver sponge	*Chondrilla nucula*	MCNS,MSGB
Vase sponge	*Ircinia campana*	MCPS,MCNS,MSGB
Loggerhead sponge	*Spheciospoingia vesparia*	MCNS,MSGB
Fire sponge	*Tedania iquis*	MCNS,MSGB
Tube worm moth	*Acrolophus* sp.	MTC
Leaf minor	*Tildenia* sp.	MTC
Lil' moth	*Lactura pupula*	MTC
	Yponomeuta calcarata	MTC
	Episimus augmentanus	MTC
	Strepsicrates smithiana	MTC
	Cydia palmetum	MTC
	Ecdytolopha desotana	MTC
	Pytcholoma peritana	MTC
Southern flannel moth	*Megalopyge opercularis*	MTC
Packard's white flannel moth	*Alarodia slossioniae*	MTC
Watermilfoil leafcutter moth	*Parapoynx allionealis*	MTC
Yellow-veined moth	Microtheoris ophionalis	MTC
Kemp's hellula moth	*Hellula kempae*	MTC
	Aethiophysa delicata	MTC
	Plumegesta largalis	MTC
	Dicymolomia metalophota	MTC
Wine-tinted Oenobotys moth	*Oenobotys vinotinctalis*	MTC
Garden webworm moth	*Achyra rantlis*	MTC
Genista broom moth	*Uresiphita reversalis*	MTC
Coffee-loving Pyrausta moth	*Pyrausta tyralis*	MTC
Eggplant leafroller	*Lineodes integra*	MTC
	Erecta vittata	MTC
Mopsalis diacme moth	*Diacme mopsalis*	MTC
Assembly moth	*Samea ecclesialis*	MTC
Deploring desmia moth	*Desmia divisalis*	MTC
Spotted beet webworm moth	*Hymenia perspectalis*	MTC
Yellow-spotted webworm moth	*Diasemiodes janassialis*	MTC
	Steniodes mendica	MTC

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Black penestola moth	*Penestola bufalis*	MTC
.....	*Blepharomastix acroalis*	MTC
.....	*Blepharomastix differentalis*	MTC
.....	*Blepharomastix hampsoni*	MTC
.....	*Synclera jarbusalis*	MTC
.....	*Glyphodes floridalis*	MTC
Melonworm moth	*Diaphania hyalinata*	MTC
Soybean leaffolder moth	*Omiodes indicata*	MTC
.....	*Omiodes rufescens*	MTC
.....	*Polygrammodes elevata*	MTC
.....	*Phedropsis stictigramma*	MTC
.....	*Microthyris anormalis*	MTC
Bouganvillea caterpillar moth	*Asciodes gordialis*	MTC
.....	*Psara obsuralis*	MTC
.....	*Bicilia iarchasalis*	MTC
Scraped pilocrocis moth	*Pilocrocis ramentalis*	MTC
.....	*Cryptobotys zoilusalis*	MTC
Red-waisted florella moth	*Syngama florella*	MTC
.....	*Marasmia cochrusalis*	MTC
Prionapteryx moth	*Prionapteryx serpentella*	MTC
.....	*Crambus satrapellus*	MTC
Graceful grass-veneer moth	*Parapediasia decorella*	MTC
Grass veneer moth	*Euchromius ocelleus*	MTC
Sedge moth	*Haimbachia floridalis*	MTC
Tropical meal moth	*Pyralis manihotalis*	MTC
Parachma moth	*Parachma ochracealis*	MTC
.....	*Macalla phaeobasalis*	MTC
.....	*Jocara trilinearis*	MTC
.....	*Tetralopha floridells*	MTC
.....	*Tetralophy sp.*	MTC
Honeycomb moth	*Galleria mellonella*	MTC
.....	*Thyridopyralis gallaerandialis*	MTC
.....	*Anypsipyla univetella*	MTC
.....	*Scorylus cubensis*	MTC
.....	*Undella pellucens*	MTC
.....	*Davara caricae*	MTC
.....	*Sarasota plumigerella*	MTC
Coconut moth	*Atheloca subrufella*	MTC
.....	*Zamagiria asutralella*	MTC
.....	*Zamagiria laidion*	MTC
Limabean pod borer	*Etiella zinckenella*	MTC
.....	*Ufa rubedinella*	MTC
Lesser cornstalk borer	*Elasmopalpus lignosellus*	MTC
.....	*Divitiaca ochrella*	MTC
.....	*Ocala dryadella*	MTC

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
.....	*Palatka nymphaeela*	MTC
.....	*Bema neuricella*	MTC
.....	*Unadilla erronella*	MTC
Cactoblastis moth.....	*Cactoblastis cactorum*	MTC
.....	*Lascelina canens*	MTC
.....	*Australephestiodes stictella*.....	MTC
.....	*Moodnodes plorella*.....	MTC
Leafroller moth	*Caudellia floridensis*.....	MTC
Legume pod borer	*Maruca testulalis*	MTC
Seagrape borer.....	*Hexeris enhydris*	MTC
.....	*Banisia furva fracta*	MTC
Teak defoliator	*Hyblaea puera*	MTC
.....	*Lioptilodes parvus*	MTC
.....	*Adaina buscki*	MTC
.....	*Almodes terraria*	MTC
.....	*Semiothisa punctolineata*.....	MTC
Lopper moth.....	*Sphacelodes vulneraria*	MTC
.....	*Oxydia cubana*.....	MTC
.....	*Sericoptera virginaria*.....	MTC
Virgin Islands emerald moth	*Synchlora herbaria*	MTC
.....	*Synchlora cupedinaria*.....	MTC
.....	*Eueana niveociliaria*.....	MTC
Angle-winged emeral moth	*Chloropteryx paularia*	MTC
Straight-lined wave moth	*Lobocleta plemyraria*	MTC
.....	*Idaea minuta*.....	MTC
.....	*Idaea insulensis*.....	MTC
.....	*Idaea pervertipennis*.....	MTC
Common tan wave moth	*Pleuroprucha insulsaria*	MTC
Waxmyrtle wave moth	*Cylcophora myrtaria*	MTC
.....	*Scopula aemulata*.....	MTC
Pink and gold moth.....	*Leptostales laevitaria*	MTC
.....	*Pterocypha floridata*.....	MTC
.....	*Camptogramma australata*	MTC
Bouganivllea looper	*Disclisioprocta stellata*.....	MTC
.....	*Antiplecta sp. nova*.....	MTC
Dot-lined white moth	*Artace cribraria*.....	MTC
IO moth.....	*Automeris io lilith*	MTC
Pink spotted hawk moth	*Agrius cingulata*	MTC
Tobacco hornworm moth	*Manduca sexta*.....	MTC
Carter's sphinx moth.....	*Protambulyx carteri*	MTC
Ello sphinx moth	*Erinnyis ello*	MTC
Obscure sphinx moth	*Errinyis obscura*	MTC
False-windowed sphinx moth....	*Madoryx pseudothyreus*	MTC
Tanalus sphinx moth.....	*Aellopos tantalus*.....	MTC
Mournful sphinx moth	*Enyo lugubris*	MTC

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Banded sphinx moth	*Eumorpha fasciata*	MTC
Grote's sphinx moth	*Cautethia grotei*	MTC
Tetro sphinx moth	*Pseudosphinx tetrio*	MTC
Pluto sphinx moth	*Xylophanes pluto*	MTC
Tersa sphinx moth	*Xylophanes tersa*	MTC
	Nystalea eutalanta	MTC
	Heterocampa cubana	MTC
	Heterocampa zayasi	MTC
Dyer's lichen moth	*Afrida ydatodes*	MTC
Fall webworm moth	*Hyphantria cunea*	MTC
Giant leopard moth	*Ecpantheria scribonia*	MTC
Little virgin tiger moth	*Grammia phalerata*	MTC
Florida tussock moth	*Halysidota cinctipes*	MTC
Long-streaked tussock moth	*Leucanopsis longa*	MTC
Yellow-collared scape moth	*Cisseps fulvicollis*	MTC
Edward's wasp moth	*Lymire edwardsii*	MTC
Texas wasp moth	*Horama panthalon texana*	MTC
Smoky tetanolita moth	*Tetanolita mynesalis*	MTC
	Bleptina inferior	MTC
	Bleptina hydrillalis	MTC
	Bleptina sp. nova	MTC
	Lascoria orneodalis	MTC
	Macristis geminipunctalis	MTC
Black-spotted schrankia moth	*Schrankia macula*	MTC
	Hypena subidalis	MTC
Sooty bomolocha moth	*Ophiuche minualis*	MTC
Flowing-line bomolocha moth	*Ophiuche degasalis*	MTC
	Ophiuche sp.	MTC
Variable tropic moth	*Hemeroplanis scopulepes*	MTC
Black-dotted hereoplanis	*Hemeroplanis habitalis*	MTC
Ernestine's moth	*Phytometra ernestinana*	MTC
Double-lined brown moth	*Hormoschista latipalpis*	MTC
	Ommatochila mundula	MTC
	Mursa subrufa	MTC
Yellow scallop moth	*Anomis erosa*	MTC
Okra leafworm moth	*Anomis illita*	MTC
Cabbage palm moth	*Litoprosopus futilis*	MTC
Bahamian palm moth	*Litoprosopus bahamensis*	MTC
	*Litoprosopus haitiens*is	MTC
Hieroglyphic moth	*Diphthera festiva*	MTC
	Eulepidotis metamorpha	MTC
Variable metallata moth	*Metallata absumens*	MTC
Velvetbean moth	*Anticarsia gemmatalis*	MTC
	Azeta repugnalis	MTC
	Antiblemma filaria	MTC

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
.....	*Antiblemma concinnula*	MTC
Erebid moth	*Ephyrodes cacata*	MTC
Ferguson's epidromia moth	*Epidromia fergusoni*.....	MTC
.....	*Epidromia pannosa*.....	MTC
.....	*Epidromia pyraliformis*	MTC
.....	*Melipotis januaris*	MTC
.....	*Melipotis famelica*.....	MTC
.....	*Melipotis contorta*.....	MTC
.....	*Melipotis prolata*	MTC
.....	*Melipotis jucunda*	MTC
.....	*Hypocala andremona*	MTC
.....	*Boryzops purissima*	MTC
Giant noctuid moth.....	*Ascalapha odorata*.....	MTC
.....	*Tyrissa multilinea*	MTC
Catocaline moth.....	*Lesmone hinna*	MTC
.....	*Lesmone formularis*	MTC
Pale-edged selenisa moth	*Selenisa sueroides*.....	MTC
.....	*Zale sp. nova Franc.*	MTC
Small mocis moth.....	*Mocis latipes*	MTC
Yellow mocis moth.....	*Mocis disserverans*	MTC
.....	*Mocis cubana*.....	MTC
Black-tipped ptichodes moth	*Ptichodis vinculum*.....	MTC
.....	*Ptichodis imunnis*	MTC
Golden looper moth	*Argyrogramma verruca*	MTC
Cabbage looper moth.....	*Trichoplusia ni*	MTC
Soybean looper moth.....	*Pseudoplusia includens*.....	MTC
.....	*Paectes burserae*.....	MTC
.....	*Paectes acutangula*.....	MTC
.....	*Paectes obrotunda*.....	MTC
Black olive moth	*Characoma nilotica*.....	MTC
.....	*Motya abseuzalis*.....	MTC
.....	*Collomena filifera*	MTC
.....	*Nola sp.*.....	MTC
.....	*Thioptera* sp.	MTC
Tiger moth	*Amyna bullula*	MTC
.....	*Amyna octo*.....	MTC
.....	*Eumestleta cinnamonea*	MTC
Straight-lined seed moth	*Eumestleta recta*.....	MTC
.....	*Fruva fasciatella*.....	MTC
Four spottedbird-dropping moth.	*Acontia tetragona*	MTC
Wavy-lined mallow moth	*Bagisara repanda*	MTC
.....	*Euscirrhopterus poeyi*	MTC
Pickerlweed borer moth.....	*Bellura densa*	MTC
.....	*Dypterygia patina*.....	MTC
.....	*Speocropia trichoma*.....	MTC

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Florida callopistria moth	*Callopistria floridensis*	MTC
Orbed narrow-wing moth	*Magusa orbifera*	MTC
Triplex cutworm moth	*Micrathetis triplex*	MTC
Beet armyworm moth	*Spodoptera exigua*	MTC
Fall armyworm moth	*Spodoptera frugiperda*	MTC
Yellow-striped armyworm moth	*Spodoptera ornithogalli*	MTC
Lateral-lined armyworm moth	*Spodoptera latifascia*	MTC
Dolichos armyworm moth	*Spodoptera dolichos*	MTC
Southern armyworm moth	*Spodoptera eridania*	MTC
Tropical armyworm moth	*Spodoptera albula*	MTC
	Elaphria nuciocolora	MTC
	Elaphria agrotina	MTC
Chalcedony midget moth	*Elaphria chalcedonia*	MTC
	Elaphria deltoides	MTC
	Playtsenta mobilis	MTC
	Playtsenta concisa	MTC
	Playtsenta sutor	MTC
Confederate moth	*Condica confederata*	MTC
Feeble grass moth	*Amolita fessa*	MTC
	Catabena vitrina	MTC
	Trichoclea florida	MTC
Armyworm moth	*Pseudaletia unipuncta*	MTC
Wheat armyworm moth	*Pseudaletia sequax*	MTC
	Leucania latiuscula	MTC
Scirpis wainscot moth	*Leucania scirpicola*	MTC
	Leucania infatuans	MTC
	Leucania dorsalis	MTC
	Leucania senescens	MTC
White-dotted wainsoct moth	*Leucania subpunctata*	MTC
Spanish moth	*Marilopteryx lutina*	MTC
	Zanthopastis timais	MTC
	Agrotis malefinda	MTC
	Agrotis ipsilon	MTC
	Agrotis subterranea	MTC
Green cutworm moth	*Anicla infecta*	MTC
	Anicla cemolia	MTC
Pearly underwingcutworm moth	*Peridroma saucia*	MTC
Corn earworm moth	*Heliothis zea*	MTC
	Schina trifascia	MTC
Gulf fritillary	*Agraulis vanillae*	CB,CL,DV
White peacock	*Anartia jatrophae*	MS,DV
Florida white	*Appias drusilla*	CB
Great southern white butterfly	*Ascia monuste phileta*	CB,CL,DV
Eastern pigmy blue	*Brephidium pseudofea*	CB
Canna skipper	*Calpodes ethlius*	CB,DV

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Miami Blue butterfly	*Cyclargus thomasi bethunebakeri*	CB,CL,DV
Queen	*Danaus gilippus*	CB,CL
Julia	*Dryas iulia*	CB,CL, DV
Zestos skipper	*Epargyreus zestos*	CB
Dusky wing	*Erynnis zarucco*	DV
Long bristle eunice	*Eunice longicerrata*	MS,MUS
Zebra longwing	*Heliconius charitonius*	CL,DV
Ceraneus blue butterfly	*Hemiargus ceraunus*	CB,CL,DV
West Indian buckeye	*Junonia evarete*	CB,CL,DV
Cassius blue	*Leptotes cassius theonus*	CB,CL,DB
Ruddy daggerwing	*Marpesia petreus*	CL,
Dwarf yellow	*Nathalis iole*	MS
Obscure skipper	*Panoquina panoquinoides*	MS
Giant swallowtail	*Papilio cresphontes*	CB,CL,DV
Mangrove skipper	*Phocides pigmalion*	MS,CL
Orange giant sulphur	*Phoebis agarithe*	CB,CL,DV
Cloudless giant sulphur	*Phoebis sennae*	CB,CL
Cuban crescentspot	*Phyciodes frisia*	CB,CL3,81
Phaon crescentspot	*Phyciodes phaon*	CL
Hammock skipper	*Polygonus lio savigny*	CB,CL
Ocola skipper	*Panoquina ocola ocola*	CB
Malachite	*Siporeta stelenes*	KTRB
Coumella hairstreak	*Strymor columella*	CL
Long-tailed hairstreak	*Strymor martialis*	CL
Gray hairstreak	*Strymor melinus*	CL
Lilac-banded longtail	*Urbanus dorantes*	CL
Long-tailed skipper	*Urbanus proteus*	KTRB,CL
Painted lady	*Vanessa cardui*	CB, CL

ARTHROPODS

Copepod	*Acartia* spp.	MSGB
Pistol shrimp	*Alpheus* spp.	MSGB
Mangrove tree crab	*Aratus pisonni*	MS
Blue crab	*Callinectes sapidus*	MSGB,MCPS,MS,MCNS,MUS
Land crab	*Cardisoma guanhumi*	CB,CL,DV
Barnacle	Chthamalus stellatus	MS
Land hermit crab	*Coenobita clypeatus*	KTRB,CB,CL,DV
Amphipod	*Cymadus compta*	MSGB,MS,MUS
Amphipod	*Gammarus mucronatus*	MSGB,MS,MUS
Sea roach	*Ligia* spp.	MS
Horseshoe crab	*Limulus polyphemus*	MSGB,MCNS,MUS,MCPS
Stone crab	*Menippe mercenaria*	MCNS,MS, MSGB
Shore crab	*Pachygrapsus* spp.	MSGB
Shrimp	*Palaemonetes* spp.	MSGB
Spiny lobster	*Panulirus argus*	MSGB,MCPS,MCNS,MS

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Pink shrimp	Penaeus duorarum	MSGB
Mantis shrimp	*Pseudosquilla ciliata*	MSGB,MCPS,MCNS,MS
Marsh crab	*Sesarma* sp.	MS
Shrimp	*Snalpheus fritzmuelleri*	MSGB,MS
Fiddler crab	*Uca pugilator*	MS
SPIDERS		
Silver argiope	*Argiope argentata*	CB,KTRB,CL
Junk spider	*Cyclosa* sp.	CB,KTRB,CL,
Spinybacked orb weaver	*Gasteracantha cancriformis*	CB,KTRB,MS,
Golden orb weaver	*Nephila clavipes*	CB,KTRB,MS,CL
FISH		
Sargeant major	*Abudefduf saxatilis*	MCPS,MCNS,MSGB,MUS,MS
Eagle ray	*Aetobatus narinari*	MCPS,MCNS,MSGB,MUS
Bonefish	*Albula vulpes*	MCPS,MCNS,MSGB,MUS,MS
Anchovies	*Anchoa* spp.	MCPS,MCNS,MSGB,MUS
Porkfish	Anisotremus virginicus	MCPS,MCNS,MSGB,MUS
Trumpetfish	*Aulostomus maculates*	MCPS,MCNS,MSGB,MUS
Porgies	*Archosargus* spp.	MCPS,MCNS,MSGB,MUS
Hardhead silverside	*Atherinomorus stipes*	MCPS,MCNS,MSGB,MUS
Silver perch	*Bairdiella chrysura*	MCPS,MCNS,MSGB,MUS
Gobies	*Bathygobius* sp.	MCPS,MCNS,MSGB,MUS
Dragonet	*Callionymus paraciradiatus*	MCPS,MCNS,MSGB,MUS
Blue runner	*Caranx crysos*	MCPS,MCNS,MSGB,MUS
Bar jack	*Caranx ruber*	MCPS,MCNS,MSGB,MUS
Reef shark	*Carcharhinus springeru*	MCPS,MCNS,MSGB,MUS
Snook	Centropomus undecimalis	MCPS,MCNS,MSGB,MUS,MS
Atlantic spadefish	*Chaetodiperus faber*	MCPS,MCNS,MSGB,MUS
Pikeblenny	*Chaetodipterus faber*	MCPS,MCNS,MSGB,MUS
Four-eyed butterflyfish	*Chaetondon capistratus*	MCPS,MCNS,MSGB,MUS
Spotfin butterflyfish	*Chaetodon ocellatus*	MCPS,MCNS,MSGB,MUS
Banded butterflyfish	*Chaetodon striatus*	MCPS,MCNS,MSGB,MUS
Hardhead halfbeak	*Chridorus atherinoides*	MCPS,MCNS,MSGB,MUS
Dolphin	*Coryphaena hippurus*	MCPS,MCNS,MSGB,MUS,MS
Spotted seatrout	*Cynoscion nibulosu*	MCPS,MCNS,MSGB,MUS
Sheepshead minnow	*Cyprinodon variegates*	MCPS,MCNS,MSGB,MUS
Southern stingray	*Dasyatis americana*	MCPS,MCNS,MSGB,MUS,MS
Ladyfish	*Elops saurus*	MCPS,MCNS,MSGB,MUS,MS
Porcupinefish	*Diodon hystris*	MCPS,MCNS,MSGB,MUS
Goliath grouper	*Epinephalus itajara*	MCPS,MCNS,MSGB,MUS
Spotted drum	*Equetus punctatus*	MCPS,MCNS,MSGB,MUS
Spotted blenny	*Eucinostomus gula*	MCPS,MCNS,MSGB,MUS,MS
Goldspotted killifish	*Ginglymostoma curratum*	MCPS,MCNS,MSGB,MUS

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Yellowfin mojarra	*Gerres cinereus*	MCPS,MCNS,MSGB,MUS,MS
Nurse shark	*Ginglymostoma cirratum*	MCPS,MCNS,MSGB,MUS,MS
Skilletfish	*Gobiesox strumosus*	MCPS,MCNS,MSGB,MUS
White grunt	*Haemulon plumieri*	MCPS,MCNS,MSGB,MUS,MS
Bluestriped grunt	*Haemulon sciurus*	MCPS,MCNS,MSGB,MUS,MS
Slippery dick	*Halichoeres bivittatus*	MCPS,MCNS,MSGB,MUS
Scaled sardine	*Harengula pensacolae*	MCPS,MCNS,MSGB,MUS
Dwarf seahorses	*Hippocampus zosterae*	MCNS,MSGB,MUS
Blue angelfish	*Holacanthus bermudensis*	MCPS,MCNS,MSGB,MUS
Queen angelfish	*Holacanthus ciliaris*	MCPS,MCNS,MSGB,MUS
Needlefish	Hyporhamphus unfasciatus	MCPS,MCNS,MSGB,MUS,MS
Bermuda chub	*Kyphosus sectartrix*	MCPS,MCNS,MSGB,MUS
Hogfish	*Lachnolaimus maximus*	MCPS,MCNS,MSGB,MUS
Spotted trunkfish	*Lactophrys bicaudalis*	MCPS,MCNS,MSGB,MUS
Honeycomb cowfish	*Lactophrys polygonia*	MCPS,MCNS,MSGB,MUS
Pinfish	*Lagodon rhomboids*	MCPS,MCNS,MSGB,MUS,MS
Rainwater killifish	*Lacania parva*	MCPS,MCNS,MSGB,MUS
Mutton snapper	*Lutjanus analis*	MCPS,MCNS,MSGB,MUS,MS
Schoolmaster	*Lutjanus apodus*	MCPS,MCNS,MSGB,MUS,MS
Gray snapper	*Lutjanus griseus*	MCPS,MCNS,MSGB,MUS,MS
Dog snapper	*Lutjanus jocu*	MCPS,MCNS,MSGB,MUS,MS
Lane snapper	*Lutjanus synagris*	MCPS,MCNS,MSGB,MUS,MS
Tarpon	*Megalops atlanticus*	MCPS,MCNS,MSGB,MUS,MS
Southern kingfish	*Menticirrhus americanus*	MCPS,MCNS,MSGB,MUS
Fringed pipefish	*Micrognathus crinigerus*	MCPS,MCNS,MSGB,MUS,MS
Filefish	Monocanthus cilatus	MCPS,MCNS,MSGB,MUS
Mullet	*Mugil* spp.	MCPS,MCNS,MSGB,MUS,MS
Gag grouper	*Mycteroperca microlepis*	MCPS,MCNS,MSGB,MUS
Lemon shark	*Negeprion brevirostris*	MCPS,MCNS,MSGB,MUS
Yellowtail snapper	*Ocyrurs chrysurus*	MCPS,MCNS,MSGB,MUS,MS
Leatherjack	*Oligoplites zaurus*	MCNS,MSGB,MUS
Atlantic red herring	*Opisthonema oglinum*	MCNS,MSGB,MUS
Gulf toadfish	*Opsanus beta*	MCNS,MSGB,MUS
Pigfish	*Orthopristis chrysoptera*	MCNS,MSGB,MUS
Sailfin molly	*Poecilia latipinna*	MCPS,MCNS,MSGB,MUS,MS
Gray angelfish	*Pomacanthus arcuatus*	MCPS,MCNS,MSGB,MUS
French angelfish	*Pomacanthus paru*	MCPS,MCNS,MSGB,MUS
Dusky damselfish	*Pomacentrus fuscus*	MCPS,MCNS,MSGB,MUS
Beaugregory	*Pomacentrus leucostictus*	MCPS,MCNS,MSGB,MUS
Bicolor damselfish	*Pomacentrus partitus*	MCPS,MCNS,MSGB,MUS
Cocoa damselfish	Pomacentrus variabilis	MCPS,MCNS,MSGB,MUS
Searobin	*Prionotus* spp.	MCPS,MCNS,MSGB,MUS

* Non-native species

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Spotted goatfish	*Pseudupeneus maculates*	MCPS,MCNS,MSGB,MUS,MS
Lionfish	*Pterois volitans* *	MCPS,MCNS,MSGB,MUS,MS
Stoplight parrotfish	*Sparisoma viride*	MCPS,MCNS,MSGB,MUS,MS
Southern puffer	*Sphoeroides nephalus*	MCPS,MCNS,MSGB,MUS
Great barracuda	*Sphyraena barracuda*	MCPS,MCNS,MSGB,MUS,MS
Bonnethead	*Sphyrina tiburo*	MCPS,MCNS,MSGB,MUS,MS
Bluehead	*Thalassoma bifasciatum*	MCPS,MCNS,MSGB,MUS
Permit	*Trachinotus falcatus*	MCPS,MCNS,MSGB,MUS,MS
Yellow stingray	*Urolophus jamaicensis*	MCPS,MCNS,MSGB,MUS,MS
MOLLUSKS		
Chiton	*Acanthopleura granulata*	KTRB
Atlantic strawberry cockle	*Americardia media*	MCNS,MSGB,MUS
Dove shells	*Anachis* sp.	MCPS,MCNS,MSGB,MUS
Ark shells	*Anadara* sp	MCPS,MCNS,MSGB,MUS
Sea hare	Aplysia dactylomela	MCPS,MCNS,MSGB,MUS,MS
Star shell	*Astraea* sp.	MCPS,MCNS,MSGB,MUS
Stiff pen shell	*Atrina rigida*	MCPS,MCNS,MSGB,MUS
Black horn shell	*Batillaria minima*	MCPS,MCNS,MSGB,MUS
Bittium	*Bittium varium*	MCPS,MCNS,MSGB,MUS
Broad-ribbed cardita	*Carditamera floridana*	MCPS,MCNS,MSGB,MUS
Peanut snail	*Cerion incanum*	BD, CB
Ladderhorn snail	Cerithidea scalariformis	MCNS,MSGB,MUS Ceriths
	Cerithium sp	MCNS,MSGB,MUS
Cross-barred venus	*Chione cancellata*	MCNS,MSGB,MUS
Tiger lucene	*Codakia orbicularis*	MCNS,MSGB,MUS
Slipper shell	*Crepidula* sp.	MCNS,MSGB,MUS
Triton	*Cymatum* sp	MCNS,MSGB,MUS
Tulip snail	*Fasciolaria tulipa*	MCPS,MCNS,MSGB,MUS,MS
Common egg cockle	*Laevicardium laevigatum*	MCPS,MCNS,MSGB,MUS
Florida tree snail	*Liguus fasciatus*	CB
Periwinkle	*Littorina* spp.	MCPS,MCNS,MSGB,MUS
Pennsylvania lucine	*Lucina pennsylvanica*	MCPS,MCNS,MSGB,MUS
Saltmarsh snail	*Melampus coffeus*	MCPS,MCNS,MSGB,MUS,MS
Northern mussel	*Modulus modulus*	MCPS,MCNS,MSGB,MUS,MS
Bleeding tooth nerite	*Nerita peloronta*	KTRB
Checkered nerite	*Nerita tessellata*	KTRB
Octopus	Octopus briareus	MCPS,MCNS,MSGB,MS
Predatory snail	*Pisania tincta*	MCPS,MCNS,MSGB,MUS
Florida horse conch	*Pleuroploca gigantean*	MCPS,MCNS,MSGB,MUS,MS
Rissoina	*Rissoina* sp	MCPS,MCNS,MSGB,MUS
Caribbean reef squid	*Sepioteuthis sepioidea*	MCPS,MCNS,MSGB,MUS,MS
Queen conch	*Strombus gigas*	MCPS,MCNS,MSGB,MUS
Sunrise telling	*Tellina radiata*	MCPS,MCNS,MSGB,MUS

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Vase shell	*Vasum* sp	MCPS,MCNS,MSGB,MUS
ECHINODERMS		
Agassiz' sea cucumber	*Actinopyga agassizi*	MCPS,MCNS,MSGB,MUS
Long-spined urchin	*Diadema antillarium*	MCPS,MCNS,MSGB,MUS
Thorny starfish	*Echinaster sentus*	MCPS,MCNS,MSGB,MUS,MS
Rock-boring urchin	*Echinometra lucunter*	MCPS,MCNS,MSGB,MUS
Florida sea cucumber	*Holothuria floridana*	MCPS,MCNS,MSGB,MUS
Variegated urchin	*Lytechinus variegates*	MCPS,MCNS,MSGB,MUS
West Indian sea biscuit	*Meoma ventricosa*	MCPS,MCNS,MSGB,MUS
Sea egg	*Tripneustes ventricosus*	MCPS,MCNS,MSGB,MUS
AMPHIBIANS		
Green tree frog	*Hyla cinerea*	CB
Cuban tree frog	*Hyla septentrionalis* *	CB,CL,DV
REPTILES		
Atlantic loggerhead	*Caretta caretta*	BD, MCPS,MCNS,MSGB,MUS
Atlantic green turtle	*Chelonia mydas*	BD, MCPS,MCNS,MSGB,MUS
Hawksbill turtle	*Eretmochelys imbricata*	BD, MCPS,MCNS,MSGB,MUS
Florida box turtle	*Terrapene carolina bauri*	CB
Green anole	*Anolis carolinensis*	CB,CL,DV
Lower Keys green anole	*Anolis carolinensis seminolus*	CB,CL,DV
Cuban anole	*Anolis sagrei* *	BD,CL,CB, DV,KTRB
Basilisk	*Basilicus basiliscus*	DV
Six-lined racerunner	*Cnemidopherus sexlineatus*	CB
American crocodile	*Crocodylus acutus*	MS
Southeastern five-lined skink	*Eumeces inexpectatus*	CB,KTRB
Florida Keys mole skink	*Eumeces e. ergregius*	CB
Green iguana	*Iguana iguana* *	CB,CL,DV
Northern curly-tailed lizard	*Lerocephalus carinatus armouri* *	CL,DV
Ground skink	*Leiolopisma laterale*	CB
Ashy gecko	*Sphaerodactylus cinereus*	CB,CL
Reef gecko	*Sphaerodactylus n. aotatus*	CB,CL,DV
Southern black racer	*Coluber constrictor priapus*	BD,CB,CL
Red rat snake	*Elaphe guttata guttata*	CB,CL
Mangrove water snake	*Natrix fasciata compressicauda*	MSGB,MS
BIRDS		
Common Loon	*Gavia immer*	OF
Double-crested Cormorant	*Phalocrocorax auritus*	MTC
Blue-winged teal	*Anas discors*	MTC.
Lersser scaup	*Aythya affinis*	MTC.
Red-breasted merganser	*Mergus serrator*	MTC.
Brown pelican	*Pelecanus occidentalis*	MTC

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Caspian tern	*Hydroprogne caspia*	MTC
Herring gull	*Larus argentatus*	MTC
Ring-billed gull	*Larus delawarensis*	MTC
Glaucous gull	*Larus hyperboreus*	MTC
Laughing gull	*Leucophaeus atricilla*	MTC
Forster tern	*Sterna forsteri*	MTC
Common tern	*Sterna hirundo*	MTC
Least tern	*Sternullla antillarum*	MTC
Royal tern	*Thalasseus maximus*	MTC
Sandwich tern	*Thalasseus sandvicensis*	MTC
Magnificent frigatebird	*Fregata magnificens*	OF
Great egret	*Ardea alba*	KTRB,MSGB,MS
Great blue heron	*Ardea herodias*	KTRB,MSGB,MS
Great white heron	*Ardea herodias occidentalis*	KTRB,MSGB,MS
Wurdemann's heron	*Ardea wurdemanni*	KTRB,MSGB,MS
Cattle egret	*Bubulcus ibis*	CL,KTRB,MS
Green heron	*Butorides virescens*	KTRB,MS
Little blue heron	*Egretta caerulea*	KTRB,MSGB,MS
Reddish egret	*Egretta rufescens*	BD,KTRB,MSGB,MS
Snowy egret	*Egretta thula*	BD,MSGB,MS
Tricolored heron	*Egretta tricolor*	KTRB,MSGB,MS
Black-crowned night heron	*Nycticorax nycticorax*	KTRB,MS
Yellow-crowned night heron	*Nycticorax violaceus*	BD,KTRB,MS,3,76
White Ibis	*Eudocimus albus*	BD,MS,CL
Roseate spoonbill	*Platalea ajaja*	MSGB,MS
Ruddy turnstone	*Arenaria interpres*	BD
Piping plover	*Charadrius melodus*	BD
Semi-palmated plover	*Charadrius semipalmatus*	BD
Killdeer	*Charadrius vociferus*	BD
Wilson's plover	*Charadrius wilsonia*	BD,KTRB
Black-bellied plover	*Pluvialis squatarola*	BD
Spotted sandpiper	*Actitis macularia*	BD
Sanderling	*Calidris alba*	BD
Western sandpiper	*Calidris mauri*	BD
Least sandpiper	*Calidris minutilla*	BD
Semi-palmated sandpiper	*Calidris pusilla*	BD
Killdeer	*Charadrius vociferous*	BD
Black-necked stilt	*Himantopus mexicanus*	MS,MUS
Short-billed dowitcher	*Limnodromus griseus*	BD
Lesser yellowlegs	*Tringa flavipes*	BD
Greater yellowlegs	*Tringa melanoleuca*	BD
Willet	*Tringa semipalmata*	BD
Solitary sandpiper	*Tringa solitaria*	BD
Sharp-shinned hawk	*Accipiter striatus*	OF.
Red-tailed hawk	*Buteo jamaicensis*	OF

* Non-native species

Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Red-shouldered hawk	*Buteo lineatus*	OF,CB
Broad-winged hawk	*Buteo platyerus*	OF.
Turkey vulture	*Cathartes aura*	OF
Northern harrier	*Circus cyaneus*	OF
Black vulture	*Coragyps atratus*	OF
Merlin	*Falco columbarius*	OF.
Peregrine falcon	*Falco peregrinus*	OF.
American Kestrel	*Falco sparverius*	CB,OF
Bald Eagle	*Haliaeetus leucocephalus*	OF
Osprey	*Pandion haliaetus*	OF
Rock pigeon	*Columba livia**	BD,CB,CL,DV
Common Ground-Dove	*Columbina passerina*	CB,CL
White-crowned pigeon	*Patagioenas leucocephala*	CB
Eurasian collared dove	*Streptopelia decaocto**	CL,DV
Mourning dove	*Zenaida macroura*	CB,CL
Belted Kingfisher	*Megaceryle alcyon*	MS
Red-bellied woodpecker	*Melanerpes carolinus*	CB
Great-crested flycatcher	*Myiarchus crinitus*	CB
Eastern kingbird	*Tyrannus tyrannus*	CB,CL
Gray kingbird	*Tyrannus dominicensis*	CB,CL
Barn swallow	*Hirundo rustica*	OF
Tree swallow	*Iridoprocne bicolor*	OF
Purple martin	*Progne subis*	OF
Rough-winged swallow	*Stelgidopteryx ruficollis*	OF
Blue-gray gnatcatcher	*Polioptila caerulea*	CB,CL
Gray catbird	*Dumetella carolinensis*	CB,CL
Northern Mockingbird	*Mimus polyglottos*	CB,CL,DV
Brown thrasher	*Toxostoma rufum*	BD,CB
White-eyed vireo	*Vireo griseus*	CB
Black and white warbler	*Mniotilta varia*	CB,MS
Northern waterthrush	*Parkesia noveboracensis*	CB, MS
Louisiana waterthrush	*Parkesia motacilla*	BD, CB
Prothonotary warbler	*Protonotaria citrea*	CB,CL
Northern parula	*Setophaga Americana*	CB
Black-throated blue warbler	*Setophaga caerulescens*	CB
Yellow-rumped warbler	*Setophaga coronata*	CB,MS
Prairie warbler	*Setophaga discolor*	BD,CB,MS,CL
Yellow-throated warbler	*Setophaga dominica*	CB,MS
Kirtland's warbler	*Setophaga kirtlandii*	CB
Palm warbler	*Setophaga palmarum*	BD,CB, CL
American redstart	*Setophaga ruticilla*	CB,CL
Cape May warbler	*Setophaga tigrina*	CB
Red-winged Blackbird	*Agelaius phoeniceus*	BD,CB,MS,CL
Common Grackle	*Quiscalus quiscula*	BD,CB,CL
Bobolink	*Dolichonyx oryzivorus*	CL

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Bahia Honda State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Northern Cardinal	*Cardinalis cardinalis*	CB,CL
Savannah Sparrow	*Passerculus sandwichensis*	CB,CL
Common Mynah	*Acridotheres tristis**	CL,DV
MAMMALS		
Domestic cat	*Felis catus* *	CB,CL,DV
Seminole Bat	*Lasiurus seminolus*	CB
Key Deer (accidental)	*Odocoileus virginianus clavium*	CB
Raccoon	*Procyon lotor*	CB,CL,DV,MS
Black rat	*Rattus rattus* *	CB,CL,DV,MS
Norway rat	*Rattus norvegicus* *	CB,CL,DV,MS
Marsh rabbit	*Sylvilagus palustris*	SAM
West Indian Manatee	*Trichechus manatus latirostris*	MCPS,MCNS,MSGB,MUS,MS
Atlantic bottlenose dolphin	*Tursiops truncatus*	MCPS,MCNS,MSGB,MUS,MS

* Non-native species

TERRESTRIAL

Beach Dune	BD
Coastal Berm	CB
Coastal Grassland	CG
Coastal Strand	CS
Keys Cactus Barren	KCB
Limestone Outcrop	LO
Maritime Hammock	MAH
Mesic Flatwoods	MF
Mesic Hammock	MEH
Pine Rockland	PR
Rockland Hammock	RH
Sandhill	SH
Scrub	SC
Scrubby Flatwoods	SCF
Shell Mound	SHM
Sinkhole	SK
Slope Forest	SPF
Upland Glade	UG
Upland Hardwood Forest	UHF
Upland Mixed Woodland	UMW
Upland Pine	UP
Wet Flatwoods	WF
Xeric Hammock	XH

PALUSTRINE

Alluvial Forest	AF
Basin Marsh	BM
Basin Swamp	BS
Baygall	BG
Bottomland Forest	BF
Coastal Interdunal Swale	CIS
Depression Marsh	DM
Dome Swamp	DS
Floodplain Marsh	FM
Floodplain Swamp	FS
Glades Marsh	GM
Hydric Hammock	HH
Keys Tidal Rock Barren	KTRB
Mangrove Swamp	MS
Marl Prairie	MP
Salt Marsh	SAM
Seepage Slope	SSL
Shrub Bog	SHB
Slough	SLO
Slough Marsh	SLM
Strand Swamp	STS
Wet Prairie	WP

* Non-native species

LACUSTRINE

Clastic Upland Lake ---------- CULK
Coastal Dune Lake ---------- CDLK
Coastal Rockland Lake ---------- CRLK
Flatwoods/Prairie ---------- FPLK
Marsh Lake ---------- MLK
River Floodplain Lake ---------- RFLK
Sandhill Upland Lake ---------- SULK
Sinkhole Lake ---------- SKLK
Swamp Lake ---------- SWLK

RIVERINE

Alluvial Stream ---------- AST
Blackwater Stream ---------- BST
Seepage Stream ---------- SST
Spring-run Stream ---------- SRST

SUBTERRANEAN

Aquatic Cave ---------- ACV
Terrestrial Cave ---------- TCV

ESTUARINE

Algal Bed ---------- EAB
Composite Substrate ---------- ECPS
Consolidated Substrate ---------- ECNS
Coral Reef ---------- ECR
Mollusk Reef ---------- EMR
Octocoral Bed ---------- EOB
Seagrass Bed ---------- ESGB
Sponge Bed ---------- ESPB
Unconsolidated Substrate ---------- EUS
Worm Reef ---------- EWR

MARINE

Algal Bed ---------- MAB
Composite Substrate ---------- MCPS
Consolidated Substrate ---------- MCNS
Coral Reef ---------- MCR
Mollusk Reef ---------- MMR
Octocoral Bed ---------- MOB
Seagrass Bed ---------- MSGB
Sponge Bed ---------- MSPB
Unconsolidated Substrate ---------- MUS
Worm Reef ---------- MWR

* Non-native species

ALTERED LANDCOVER TYPES

Abandoned field---------- ABF
Abandoned pasture ---------- ABP
Agriculture ---------- AG
Canal/ditch ---------- CD
Clearcut pine plantation ---------- CPP
Clearing ----------CL
Developed---------- DV
Impoundment/artificial pond ----------IAP
Invasive exotic monoculture ---------- IEM
Pasture - improved ---------- PI
Pasture - semi-improved ----------PSI
Pine plantation ----------PP
Road---------- RD
Spoil area ---------- SA
Successional hardwood forest---------- SHF
Utility corridor---------- UC

MISCELLANEOUS

Many Types of Communities ----------MTC
Overflying ---------- OF

* Non-native species

Addendum 6—Imperiled Species Ranking Definitions

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Fish and Wildlife Conservation Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

FNAI GLOBAL RANK DEFINITIONS

G1 ..... Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or fabricated factor.

G2 ..... Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

G3 ..... Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.

G4 ..... apparently secure globally (may be rare in parts of range)

G5 ..... demonstrably secure globally

GH ..... of historical occurrence throughout its range may be rediscovered (e.g., ivory-billed woodpecker)

GX ..... believed to be extinct throughout range

GXC ..... extirpated from the wild but still known from captivity or cultivation

G#? ..... Tentative rank (e.g.,G2?)

G#G# ..... range of rank; insufficient data to assign specific global rank (e.g., G2G3)

G#T# ..... rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)

G#Q ..... rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)

G#T#Q..... same as above, but validity as subspecies or variety is questioned.

GU.....due to lack of information, no rank or range can be assigned (e.g., GUT2).
G? .....Not yet ranked (temporary)
S1 .....Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 .....Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 .....Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4 .....apparently secure in Florida (may be rare in parts of range)
S5 .....demonstrably secure in Florida
SH.....of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX .....believed to be extinct throughout range
SA .....accidental in Florida, i.e., not part of the established biota
SE .....an exotic species established in Florida may be native elsewhere in North America
SN.....regularly occurring but widely and unreliably distributed; sites for conservation hard to determine
SU.....due to lack of information, no rank or range can be assigned (e.g., SUT2).
S?.....Not yet ranked (temporary)
N .....Not currently listed, nor currently being considered for listing, by state or federal agencies.

LEGAL STATUS

FEDERAL
(Listed by the U. S. Fish and Wildlife Service - USFWS)

LE.....Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
PE.....Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT.....Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
PT.....Proposed for listing as Threatened Species.
C .....Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
E(S/A).....Endangered due to similarity of appearance.

T(S/A).....Threatened due to similarity of appearance.
EXPE, XE.....Experimental essential population. A species listed as experimental and essential.
EXPN, XN....Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

STATE

ANIMALS ..(Listed by the Florida Fish and Wildlife Conservation Commission - FWC)

FE.....Federally-designated Endangered

FT.....Federally-designated Threatened

FXN .....Federally-designated Threatened Nonessential Experimental Population

FT(S/A) .....Federally-designated Threatened species due to similarity of appearance

ST .....Listed as Threatened Species by the FWC. Defined as a species, subspecies, or isolated population, which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat, is decreasing in area at a rapid rate and therefore is destined or very likely to become an endangered species within the near future.

SSC .....Listed as Species of Special Concern by the FWC. Defined as a population which warrants special protection, recognition or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance or substantial human exploitation that, in the near future, may result in its becoming a threatened species.

PLANTS ....(Listed by the Florida Department of Agriculture and Consumer Services - FDACS)

LE.....Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973,as amended.

LT.....Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Addendum 7—Cultural Information

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, '*Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
http://www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Phone: (850) 245-6425
Toll Free: (800) 847-7278
Fax: (850) 245-6435

The criteria to be used for evaluating eligibility for listing in the National Register of Historic Places are as follows:

1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- **a)** are associated with events that have made a significant contribution to the broad patterns of our history; and/or
- **b)** are associated with the lives of persons significant in our past; and/or
- **c)** embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- **d)** have yielded, or may be likely to yield, information important in prehistory or history.

2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- **a)** a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
- **b)** a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- **c)** a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
- **d)** a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or a reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- **e)** a property achieving significance within the past 50 years, if it is of exceptional importance.

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

Stabilization is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Addendum 8—Land Management Review

Land Management Review of Bahia Honda State Park
Monroe County (Lease No. 3609): January 25, 2000

Prepared by Division of State Lands Staff

William Howell, OMC Manager
John Barrow, Environmental Specialist II

for
the Bahia Honda State Park Site Management Review Team

Final Report April 28, 2000

Land Manager:	DRP
Area:	524 acres
County:	Monroe County
Mngt. Plan Revised:	5/29/1997
Mngt. Plan Update Due:	5/29/2002

Management Review Team Members

Agency Represented	Team member Appointed	Team member in attendance
DEP/DRP	Ms. Renate Skinner	Ms. Renate Skinner
DEP South District	Mr. R.J. Helbling	Mr. R.J. Helbling
DACS/DOF	Mr. Bill Korn	Mr. Bill Korn
FWCC	Mr. Robert Guerra	Mr. Robert Guerra
Soil and Water Conservation		
County Commission	Mr. Harry Delashmutt	Mr. Harry Delashmutt
Conservation Organization	Ms. Pam Pierce	Ms. Pam Pierce
Private Land Manager	Mr. Bernie Cogan	

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides

sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Land Acquisition and Management Advisory Council (LAMAC), and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of Bahia Honda State Park considered approximately 524 acres in Monroe County that are managed by Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of Recreation and Parks revised the management plan on May 29,1997, and the management plan update is due on May 29, 2002.

Review Team Determination

Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. All team members agreed that the Bahia Honda State Park is being managed for the purpose for which it was acquired.

Are actual management practices, including public access, in compliance with the management plan?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Commendations to the Managing Agency

1. The team commends the park staff for their continued vigilance in keeping the park free of invasive exotics. (Vote 6+, 0-)

2. The team commends the park manager for aligning partners for aid in removal of debris near mangrove area.

3. The team commends the park staff for the fencing & boardwalks to protect the dune environment and focus people towards designated access sites. (Vote 6+, 0-)

4. The team commends the park staff for it's good efforts to restore dunes following storms and work to protect populations of hammock and dune plants some of which are listed species. (Vote 6+, 0-)

5. The team commends the park staff for it's extensive interpretive program at this park. (Vote 6+, 0-)

Exceptional Management Actions

The following items received high scores on the review team checklist (see Attachment 1), which indicates that management actions exceeded expectations.

- Natural Communities: protection & maintenance for the rockland hammock, beach dune, and marine composite substrate
- Restoration of disturbed natural communities: beach dune
- Non-native Invasive & Problem Species: animals & plants
- Resource Protection: gates & fencing, signage, law enforcement presence, and boardwalks
- Public Access and Education: roads, parking, water access, recreational opportunities, interpretive facilities & signs, and environmental education/outreach

Recommendations and checklist findings

The management plan must include responses to the recommendations and checklist items that are identified below.

1. The team recommends that Division of Recreation and Parks initiate a feasibility study to improve surface water circulation in impounded mangrove areas. (Vote: 6+, 0-)

Agree. Funding will need to be sought for both impounded areas, bayside and next to treatment plant #3. Feasibility studies have already been completed.

2. The team recommends that because permanent housing for resident park personnel is inadequate alternatives should be considered because of the affordable housing crisis and R.O.G.O. restrictions. Considerations should be given to moving the families in the ranger residence area into the existing cabins and restore the ranger residence area. (Vote 5+, 1-)

Disagree. The existing cabins produce substantial revenue and provide a recreational activity in fitting with the resource. The restoration of the resident area is likely to have an adverse impact on the surrounding communities since it is fill over a prior dump.

3. The team recommends that the Division of Recreation and Parks insure that the current arthropod control plan provides safeguard to protect natural areas from control measures inappropriate for environmental sensitive lands. (Vote 6+, 0-)

Agree. The present arthropod plan provides sufficient safeguards. However, the approval to larvacide by helicopter should be rescinded since the lagoon has natural, tidal creek connections to the Atlantic Ocean and Florida Bay.

4. The team recommends that Division of Recreation and Parks pursue a maintenance dredging policy for the marina in the unit plan. (Vote 6+, 0-)

Agree. The main channel is slowly filling in from the east shore. A study just completed by the concessionaire shows the channel ranges from a depth of 3 ½ feet on the west side to 8 inches on the east side at mean low water (mlw). A depth of 3 ½ feet mlw needs to be maintained.

5. The team recommends that Division of Recreation and Parks should retain storm water with best management practices from all parking areas. (Vote 6+, 0-)

Agree. We will be participating in the "Clean Marina Program" and meet storm water runoff requirements at parking lots that drain to our marina. Since upland areas are limited and contain important communities, we will consider the feasibility and impacts of making modifications of drainage from eastern day use parking lots.

Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), which indicates that management actions, in the field, were insufficient (*f*) or that the issue was not sufficiently addressed in the management plan (*p*). These items need to be addressed in the management plan update.

1.Inholdings/Additions (*p*)
Manager's Response: *Disagree. The DRP does not include Little Bahia Honda Key on the current additions and inholdings list* ***as it is already a part of the park****. The optimum boundary line of the park will be re-evaluated in the process of developing the next updated UMP.*

2. Cabin Facilities (*p*)
Manager's Response: *Disagree. The six existing cabins comply with 1990 extended unit management plan. Bahia Honda is not included on the statewide-proposed unit's list.*

3. Housing (*f*)
Manager's Response: *Disagree. Housing, both state-owned and employee-owned, meet established criteria.*

ATTACHMENT I

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/ restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items. For each item in each section the scores for all team members were averaged. Some items received high scores (≥ 4.0) in the field review, which indicates that exceptional management actions are being taken. Some items received low scores (≤ 0.5 for plan review; ≤ 2.0 for field review), which indicates that they were not sufficiently addressed in the plan, or that management practices did not meet expectations. These items must be addressed in the management plan update.

PLAN REVIEW								**AVERAGE**
Coastal Berm	I.A.1	1	1	1	1	1	1	1
Rockland Hammock	I.A.2	1	1	1	1	1	1	1
Beach Dune	I.A.3	1	1	1	1	1	1	1
Marl Prairie	I.A.4	1	1	1	0	1	1	0.83
Marine Tidal Swamp	I.A.5	1	1	1	1	1	1	1
Marine Composite Substrate	I.A.6	1	1	1	1	1	1	1
Marine Consolidated Substrate	I.A.7	1	1	1	1	1	1	1
Marine Grassbed	I.A.8	1	1	1	1	1	1	1
Marine Unconsolidated Substrate	I.A.9	1	1	1	1	1	1	1
Animals	I.B.1	1	1	1	1	1	1	1
Plants	I.B.2	1	1	1	1	1	1	1

Survey	ll.A	1	1	1	0	1	1	0.83
Protection and Preservation	ll.B	1	1	1	1	1	1	1
Beach Dune	III.B1	1		1	1	1	1	1
Mangroves	III.B.2	1		1	1	1	1	1
Hammock	lll.B.3	1		1	1	1	1	1
Animals	lll.D.1	1	1	1	1	1	1	1
Plants	III.D.2	1	1	1	1	1	1	1
Shoreline Erosion	III.E.A	1		1	1	1	1	1
Wetland Restoration	III.E.B	1	1	0	0	1	1	0.67
Boundary Survey	III.F.1	1	1	1	1	1	1	1
Gates & Fencing	III.F.2	1	1	1		1	1	1
Signage	III.F.3	1	1	1	1	1	1	1
Law Enforcement Presence	III.F.4	1	1	1	1	1	1	1
Boardwalks	III.F.5	1	1	1	1	1	1	1
Inholdings/Additions	III.G.2	1	0		0	0	1	0.33
Roads	IV.1.A	1	1	1	1	1	1	1
Parking	IV.1.B	1	1	1	1	1	1	1
Water Access	IV.1.C	1	1	1	1	1	1	1
Recreational Opportunities	IV.2	1	1	1	1	1	1	1
Interpretive Facilities and Signs	IV.3	1	1	1	1	1	1	1
Environmental Education/outreach	IV.4	1	1	1	1	1	1	1
Swimming	VI.A.1	1	1	1	1	1	1	1
Fishing	VI.A.2	1	1	1	1	1	1	1
Camping	VI.A.3	1	1	1	1	1	1	1
Boating	VI.A.4	1	1	1	1	1	1	1
Nature Trails	VI.A.5	1	1	1	1	1	1	1
Interpretive Exhibits	VI.B.1	1	1	1	1	1	1	1
Cabin Facilities	VI.B.2	1	1	0	0	0	1	0.5
Ranger Residence	VI.B.3	1	1	1	1	1	1	1
FIELD REVIEWS								
Coastal Berm	I.A.1	5	3	4	3	3	4	3.67
Rockland Hammock	I.A.2	4	4	5	4	3	4	4
Beach Dune	I.A.3	5	4	4	4	5	4	4.33
Marl Prairie	I.A.4	5	4	3	3	3	4	3.67
Marine Tidal Swamp	I.A.5	5	2	3	3	3	2	3
Marine Composite Substrate	I.A.6	5	4	4	3	3	5	4
Marine Consolidated Substrate	I.A.7	5	4	3	3	3	5	3.83
Marine Grassbed	I.A.8	5	3	4	3	3	5	3.83
Marine Unconsolidated Substrate	I.A.9	5	4	3	3	3	4	3.67
Animals	I.B.1	5	3	4	3	3	4	3.67
Plants	I.B.2	5	3	3	4	4	4	3.83
Survey	II.A	5	2	4	2	3	4	3.33
Protection and Preservation	II.B	5	3	4	3	3	4	3.67
Beach Dune	III.B.1	4	5	4	4	5	4	4.33
Mangroves	III.B.2	4	4	5	3	4	2	3.67
Hammock	III.B.3	4	3	4	3	3	4	3.5
Animals	III.D.1	5	4	4	3	4	4	4

Plants	III.D.2	5	4	4	4	4	4	4.17
Shoreline Erosion	III.E.1 A	5		4	4	3	3	3.5
Wetland Restoration	III.E.1 B	3	2		2	3	2	2.33
Quality	III.3.A	4	3	3	4	3	4	3.5
Boundary Survey	III.F.1	5	5	3	3	3	4	3.83
Gates & Fencing	III.F.2	4	4	4	4	4	5	4.17
Signage	III.F.3	5	5	4	4	4	4	4.33
Law Enforcement Presence	III.F.4	5	4	4	4	4	4	4.17
Boardwalks	III.F.5	5	5	4	4	4	5	4.5
Inholdings/additions	III.G.2	3	3		3	3	2	2.67
Roads	IV.1A	4	4	4	4	4	4	4
Parking	IV.1B	5	4	3	4	4	4	4
Water Access	IV.1C	5	4	4	4	4	4	4.17
Recreational Opportunities	IV.2	5	5	3	4	3	4	4
Interpretive Facilities and Signs	IV.3	5	3	5	4	4	4	4.17
Environmental Education/Outreach	IV.4	5	3	5	4	4	4	4.17
Waste Disposal	V.1A	4	3	4	3	4	2	3.33
Sanitary Facilities	V.1B	4	3	4	3	4	4	3.67
Buildings	V.2A	4	2	4	3	3	4	3.33
Equipment	V.2B	4	2		3	3	4	3.33
Housing	V.2C			1	2	2	2	1.75

Addendum 9–Miami Blue Butterfly Management Plan

The goal of this management plan is to identify and describe issues threatening the persistence of Miami Blue Butterflies within the boundaries of Bahia Honda State Park (BHSP), to provide practical management guidelines to address those threats, and to create conditions favoring the persistence or reestablishment of Miami Blue Butterflies at Bahia Honda.

The Miami Blue Butterfly (*Cyclargus thomasi bethunebakeri*) is a small butterfly, with a wingspan of an inch or less. A member of the Lycaenidae, the Miami Blue Butterfly is the only subspecies of Thomas's Blue Butterfly (*Cyclargus thomasi*) occurring in the United States.

Except for a few records from the Bahamas, the Miami Blue Butterfly is endemic to South Florida. Though occasionally found further north and further inland, the Miami Blue Butterfly was once abundant in coastal areas from Hillsborough and Volusia Counties south through the Florida Keys. The area occupied by the species has retracted southward as natural habitat was altered or destroyed and for human uses. By 1992 the species was believed to be extinct. In 1999 a small population was discovered at Bahia Honda State Park which later expanded within the park. Two additional colonies were discovered in 2006 on islands approximately 20 miles west of Key West.

In 2002, the Miami Blue Butterfly was listed as endangered Species. At that time the species met three of five criteria for listing used by the Florida Fish and Wildlife Conservation Commission. These criteria included:

1. A reduction in population size by more than 80% from 1992 through 2002)
2. A reduction in area occupied of more than 99%
3. A population comprised of fewer than 250 adults, all within a single location

The Miami Blue Butterfly is not the first species in Florida to be threatened with extinction by human activities. Even in the Florida Keys, there have been other species that have declined and even disappeared completely. However, the Miami Blue Butterfly and its decline are early examples of an ongoing problem, and an opportunity that will test our understanding of the problem, our ingenuity and ability to find solutions, and our resolve to save threatened and endangered species.

MANAGEMENT OBJECTIVES FOR MIAMI BLUE BUTTERFLY AT BAHIA HONDA

The management objective for this endangered endemic butterfly that, from 1999 to 2006 was only known to persist at this park, is to maintain, restore and protect known habitat required by this species in a condition favorable to the persistence of this species at this park.

This goal can only be achieved by an integrated approach combining the following:

1. Effective monitoring and management of the species and its habitat.
2. Mitigation of known threats and monitoring to detect new threats to the survival of this species.

3. Education of; Florida Park Service staff, volunteers and associated personnel, park visitors, and the local community.
4. Working cooperatively with other agencies and non-government organizations wherever possible.

Threats to the Miami Blue Butterfly at Bahia Honda State Park (BHSP)

Habitat Loss Due to Land Use

The most often cited cause for the Miami Blue Butterfly's decline and its current precarious status is the loss of natural habitat. Natural areas along the Florida coast have been and continue to be converted for development of commercial and residential buildings, recreational facilities (such as golf courses and ball fields), and rights-of-way for transportation and utilities. Even where "green areas" are preserved, turf and other non-native ornamental landscape plants often replace native plant species utilized by the Miami blue butterfly as both larval and nectar host plants as well as adversely impacting native plant communities. Within Bahia Honda, development such as picnic shelters, parking facilities, campgrounds, restrooms and trails all create and focus visitor activities with direct traffic and indirect impacts on nearby resources.

Trampling of habitat

While traffic through natural areas has always been a difficult-to-manage threat to habitat at BHSP for the Miami Blue butterfly, it threatens not only the butterfly's population at this park, but the survival of the species in the United States.

Currently, one of the most significant threats to Bahia Honda's native plants, the soil they protect, and the communities they create appears to be caused by foot traffic entering natural areas. Both park visitors and park staff create this damage, the latter usually in the performance of park maintenance activities, or during resource management work including removal of exotic plants and animals, or monitoring butterflies.

Most of the species on which the Miami Blue butterfly depends are herbaceous plants. Unlike woody plants and some of the tougher vines, many herbaceous plants have comparatively fragile stems, easily damaged if stepped on. During the dry season from November-May, these stems are especially brittle and even more easily broken. Recovery or replacement of plants damaged or killed by trampling during the latter portion of the annual dry season, a period lasting approximately six months and exacerbated during droughts can be difficult.

Despite fences and regulatory signs, some park visitors persist in walking through areas marked as "closed" to access. This activity appears to be most problematic in and around the historic Old Bahia Honda Bridge, a popular destination that many park visitors hope to reach by the most direct route.

Access to the bridge is by a footpath up a gentle grade on the same route once used by vehicles and railroad traffic. The material used to build up this grade reaches an elevation of approximately fifty feet where it meets the bridge. As it

approaches the bridge, the slope to either side of the bridge access trail grows steadily steeper. Because of its narrow profile and steepness, and the very porous nature of the fill material, the soils on either side of the fill are prone to erosion.

Many park visitors miss the entrance to the access trail and until they have already walked to the stairs that pass under the bridge, are unaware that the upper deck of the Old Bahia Honda Bridge cannot be accessed from the west end of the island. What is visible at this point is the short 100 feet of concrete walkway leading to two steep but conspicuously well-worn dirt paths of approximately 50 feet that appear to provide access to and from the bridge. This route is surrounded by a fence and with several signs indicating path is within a "restricted area." However, unauthorized spur trails persist as a result of visitors accessing the path of least resistance. These unauthorized trails are especially conspicuous toward the end of the six-month dry season.

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To better protect this area additional signs or brochures directing visitors to the approved route, as well as an interpretive display or kiosk providing information on the importance of impacts from unauthorized access will be needed. Increased enforcement and public outreach will also be necessary in order to minimize or prevent this unauthorized access.

Habitat Loss to Invasive Exotic Plants

In addition to land development, habitat loss is also caused by invasive non-native species. Even in areas set aside for conservation, introduction of invasive species plants alter and replace native plant communities. For the Miami Blue butterfly invasive plants including beach naupaka (*Scaevola sericea*), coconut palm (*Cocos nucifera*), portia (*Thespesia populnea*) latherleaf (*Colubrina asiatica*), yellow alder (*Turnera ulmifolia*) and Brazilian pepper (*Schinus terebinthifolia*) alter habitat and reduce the availability of the native larval and nectar plants the butterfly relies on.

Habitat fragmentation

Fragmentation of habitat is important because the Miami Blue butterfly typically occurs in small, often ephemeral populations that rely on genetic exchange with other nearby populations. Barriers to this exchange, such as urbanized landscapes, increase the vulnerability of each population and can also prevent the butterfly from establishing new populations.

At Bahia Honda, Miami Blue butterflies no longer have access to genetic reinforcement or to replenishment after a population decline from other nearby populations. Whether the subspecies can survive this isolation remains in doubt, especially since it has been extirpated from more than 99% of its range in Florida.

Invasive Exotic Wildlife

The number of species of non-native wildlife introduced by humans is still increasing, even as the impacts of well-established exotic species are only just becoming apparent. In the Florida Keys several non-native species distributed by the pet trade are established as a result of escapes and/or intentional releases.

Green Iguanas

The Miami Blue butterfly has adapted to a diet based on a plant that most other insects shun due to chemical defenses in the plant. Species that can use a toxic or noxious food avoided by other species gain an advantage by avoiding competition. During times of scarcity, this advantage is especially important.

Other than native insects, the only significant herbivore at Bahia Honda is the non native green iguana (*Iguana iguana*).Green iguanas have become well established with increasing population densities in the Keys. Native from Mexico to Brazil, green iguanas may live twenty years in captivity, however, most iguanas often become unmanageable as pets after two or three years. At this point, there is the potential for them to be released by their owners into natural areas where it is believed by the owners that they will flourish. This practice is illegal.

Although immature green iguanas can be taken by native snakes, raptors, wading birds, and other predators, their control by predators and disease found within their natural range is lacking. There have been no documented reports that raccoons excavate iguana nests.

The diet of green iguanas starts with the foliage, flowers and tender shoots of their preferred food plants. However, where population densities increase, iguanas have altered the landscape by consuming almost all vegetation. The rare reports of wild green iguanas feeding on anything but plants appear to represent incidental items ingested while grazing on plants and a few insignificant anomalies. In is important to note that recent documentation by U.F. Fish and Wildlife cameras shows green iguanas and other non-native reptiles feeding on the carcasses of Key Deer in the Key Deer National Wildlife Refuge (Chad Anderson personal communication June 2011).

Exotic Ants

One of the least well-understood factors in the decline of the Miami Blue butterfly is its obligate relationship with several native ant species, most notably *Camponotus*. These ants tend the larvae of the Miami Blue and other butterflies, even defending them from predators in exchange for nutrient-rich liquid secreted by the larvae. Introduced species of ants, especially the South American fire ant (*Solenopsis invicta*) and the elongate twig ant (*Pseudomyrmex gracilis*), appear to compete with and sometimes displace native ant species, and may prey on the eggs and larvae of this and other butterflies.

Other Exotic Fauna

Though seldom mentioned in discussions about the Miami Blue butterfly, there are other invasive exotic lizards at Bahia Honda, in addition to the green iguana. The brown anole (*Anolis sagrei*) and the bark anole (*Anolis distichus*) are two Caribbean species well established in the park. Both are diurnal insectivores capable of taking Miami Blue butterfly adults and larvae.

Pesticide Use

Increased development in Florida and decreased tolerance of mosquitoes has resulted in the widespread use of non-selective insecticides despite the non-target impact to other arthropods. It has been documented that spray dispensed from vehicles and aircraft can drift for miles beyond the intended treatment areas, sometimes killing non-target species in nearby natural areas.

Once the Miami Blue butterfly was observed in the park, the use of mosquito control was restricted and could only take place with the approval of the Park Manager. Mosquito spraying is approved in the buttonwood campground, maintenance shop and staff residence area. To prevent accidental spraying where it has not been authorized, park staff must ensure that the truck operator, upon entering the park, is aware of the limited area approved for spraying. This is critical not only to the potential future of Miami Blue populations, but to the interagency agreement which allows the mosquito spraying to be conducted.

Climate Change

There is little that management of state parks can do to affect climate change. However, measures can be taken to protect threatened species and natural communities, to prepare for and to lessen its effects. Even the mitigation of other threats can enhance the Miami Blue butterfly's ability to adapt to the effects of climate change.

The Miami Blue butterfly is a tropical species at the northern limit of its range. A record-setting cold spell in January 2010 created severe impacts on sensitive species. Most relevant was the destruction of tender foliage and flowers of tropical and subtropical plants used by the butterflies.

Miami Blue butterflies were temporarily deprived of their larval host plant, the new shoots and flowers of gray nickerbean (*Caesalpinia bonduc*), and the nectar sources required by adult butterfly. The latter included mostly perennial herbaceous species such as snow squarestem (*Melanthera nivea*), scorpion-tail (*Heliotropium angiospermum*), Spanish needle (*Bidens alba*), sleepy morning (*Waltheria indica*), and many other species of wildflowers.

Gray nickerbean is a large shrub with a significant underground root system. After the cold spell nickerbean began to replace its lost foliage with new growth critical to the survival of Miami Blue butterfly caterpillars. Because there was limited new growth on most of the herbaceous vegetation, green iguanas began consuming the new shoots of the nickerbean. This undoubtedly had an impact on incidental ingestion of butterfly larvae and eggs. Smaller, herbaceous vegetation either died back or were killed by the cold, thereby limiting the nectar sources for the Miami Blue. Miami Blue butterflies were observed only a few times after the cold with documented photographs confirming the sightings in January, February, March and July 2010.

The cold spell also impacted the green iguanas throughout the Keys, but the population at BHSP had a higher survival rate due to the availability of burrows.

The current Bahia Honda park brochure states that "All plant and animal life is protected in State Parks. Do not remove, deface, mutilate or molest any natural or cultural resources or park facilities." New information needs to be added to an updated brochure to include discussion of Miami Blue butterfly habitat protection, specifically addressing the fragility of butterfly habitat and the importance of remaining on marked trails. The park also distributes its own in-house brochures featuring list of the park's butterflies, birds and plants. Produced primarily to aid park visitors who hope to observe these species; each should be amended with a statement addressing the protection of fragile habitat and the need to remain on marked trails.

Suggested Guidelines for Addressing Habitat Loss at BHSP

Habitat Management

1. All FPS staff, DEP Law Enforcement officers, and volunteers must understand the importance of staying out of fragile habitat, especially during the dry season. Toward this goal, it is recommended that park staff, law enforcement officers, volunteers and others working in the park should be briefed each month on status of the Miami Blue Butterfly and other park projects that require access to sensitive habitat.
2. When access to sensitive habitat is needed, trampling of vegetation should be avoided or minimized. Multiple site needs should be handled simultaneously and care should be taken not to step on stems, particularly of herbaceous species.
3. Tools and techniques should be developed to reduce the need to trample vegetation while removing litter from natural areas.
4. Access through fragile vegetation, especially if repeated, will create what appears to be a trail. Therefore, such access should be planned so that such trails are inconspicuous as possible and do not appear to provide a shortcut to any popular destination.
5. Photo points of at least 10 sites identified as important or likely habitat for the Miami Blue butterfly should be established to document habitat alterations.

Pesticide Use

1. The use of non-selective pesticides for mosquito control should be minimized.
2. Management should ensure that other methods (screening, mosquito-resistant clothing, personally applied repellents, CO2 traps) are encouraged.
3. To prevent accidental spraying where it has not been authorized, park staff must ensure that the truck operator, upon entering the park, is aware of the limited area approved for spraying.

Interagency Cooperation

1. One or more FPS staff with knowledge of the status of Miami Blue butterfly management effort should participate in the Imperiled Butterfly Work Group.
2 One or more FPS staff with knowledge of the park's Miami Blue butterfly management effort should participate in the Florida Keys Invasive Exotics Task Force.

Exotic Species Control

1. Non-native vegetation should be removed from natural areas, to protect native plants that provide food for Miami Blue butterfly and other wildlife as well as preventing soil erosion. Exotic removal should prioritize prevention of seed production, removal of existing seeds on target species and schedule follow-ups treatment at three month intervals for at least one year.
2. Iguana removal should remain a priority at Bahia Honda targeting reproductive adults, then nests, and finally young iguanas.
3. Each iguana removed from Bahia Honda should be recorded with information sufficient to gauge the program's success and to guide future control efforts. Data collected on each individual should include date and time collected, location, snout to vent length, weight, sex, and reproductive condition.
4. Saint Augustine grass (*Stenotaphrum secundatum*), a non-native species, is not a plant preferred by iguanas, but does appear to be an effective barrier to erosion of the bridge embankment. Therefore, treatment of St. Augustine grass should not be undertaken until suitable native plants can be planted to prevent erosion on this embankment.

Interpretation

1. Signs and kiosks interpreting the restricted area need to be installed to prevent visitors from continuing to access unauthorized spur trails. Sign language such as: "No Access to Old Bahia Honda Bridge Beyond This Point;" and "Bridge Access Trail Starts at south Side of Parking Lot, Near the Public Restrooms" should be placed alongside the paved sidewalk leading from the parking lot to the west end of the park; on the north side of the park where the sidewalk leaves the parking lot; after the nature center; where the path divides into upper and lower terraces; and at the top of the stairs that pass under the bridge.
2. The picnic pavilions and Old Bahia Honda Bridge are a main destination that draws visitors through restricted areas. Additional signs near and above those areas may help reduce unauthorized access.
3. Signs and park brochures should reiterate that it is illegal to release non-native species in Florida.
4. Current signs protecting fragile habitat merely state that the area is restricted. Additional signage explaining the impact of trampled vegetation on the endangered butterfly would provide more effective deterrence.
5. Temporary "wire stake" signs should be developed in closing newly developing trails.

Enforcement of Park Rules and Regulations

1. Park Officers and Park staff need to be aware of impacts to sensitive habitat.
2. Park Officers and Park staff should be encouraged to watch for park visitors violating restricted areas.