

Devil's Millhopper Geological State Park

APPROVED Unit Management Plan

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**Division of Recreation and Parks
July 7, 2014**





**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

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July 7, 2014

Ms. Jennifer Carver
Planning Manager
Office of Park Planning, Division of Recreation and Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 525
Tallahassee, FL 32399-3000

Re: Devil's Millhopper Geological State Park – Lease # 2697

Dear Ms. Carver:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Devil's Millhopper Geological State Park management plan. The next management plan update is due July 7, 2024.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

Marianne S. Gengenbach
Office of Environmental Services
Division of State Lands

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INTRODUCTION

Devil's Millhopper Geological State Park is located in Alachua County just within the city limits of northwestern Gainesville (see Vicinity Map). Access to the park is from County Road 232 (Millhopper Road, or Northwest 53rd Avenue) approximately 0.25 miles west of Northwest 43rd Street in Gainesville (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

Devil's Millhopper Geological State Park was initially acquired when the University of Florida transferred the original 36.09-acre property to the Board of Trustees of the Internal Improvement Trust Fund (Trustees) in 1972. Since the initial acquisition, additional parcels were purchased through the Land Acquisition Trust Fund (LATF) program and Florida Forever Additions and Inholdings program. Presently the park comprises 66.71 acres. The Trustees hold fee simple title to the park and on January 16, 1974, the Trustees leased (Lease Number 2697) the property to the Division of Recreation and Parks (DRP) under a 99-year lease. The current lease will expire on January 15, 2073.

Devil's Millhopper Geological 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 Devil's Millhopper Geological State Park is to preserve, maintain, and improve the property for conservation and outdoor recreation for the enjoyment of Florida residents and visitors with an emphasis on protecting and interpreting the site's special geologic feature – Devil's Millhopper sink.

Park Significance

- The Devil's Millhopper is a spectacular example of a solution collapse sinkhole. The sinkhole's unusually large size and its exposed geologic formations make it a remarkable natural exposure, that provides a wealth of information about north Florida stratigraphy and paleontology.
- The microclimatic conditions in the sink support a unique flora that is more characteristic of ravine systems in the Appalachian Mountains.
- Because of its geological significance, paleontological record, and vegetative uniqueness, the Devil's Millhopper was designated a National Natural Landmark in 1976.
- The park protects examples of early park development by the Civilian Conservation Corps in the 1930's.

Devil's Millhopper Geological State Park is classified as a State Special Feature Site in the DRP's unit classification system. A special feature is a discrete and well-defined object or condition that attracts public interest and provides recreational enjoyment through visitation, observation and study. A state special feature site is an area which contains such a feature, and which is set aside for controlled public enjoyment. Special feature sites for the most part are either historical or archaeological by type, but they may also have a geological, botanical, zoological, or other basis. State special feature sites must be of unusual or exceptional character, or have statewide or broad regional significance.

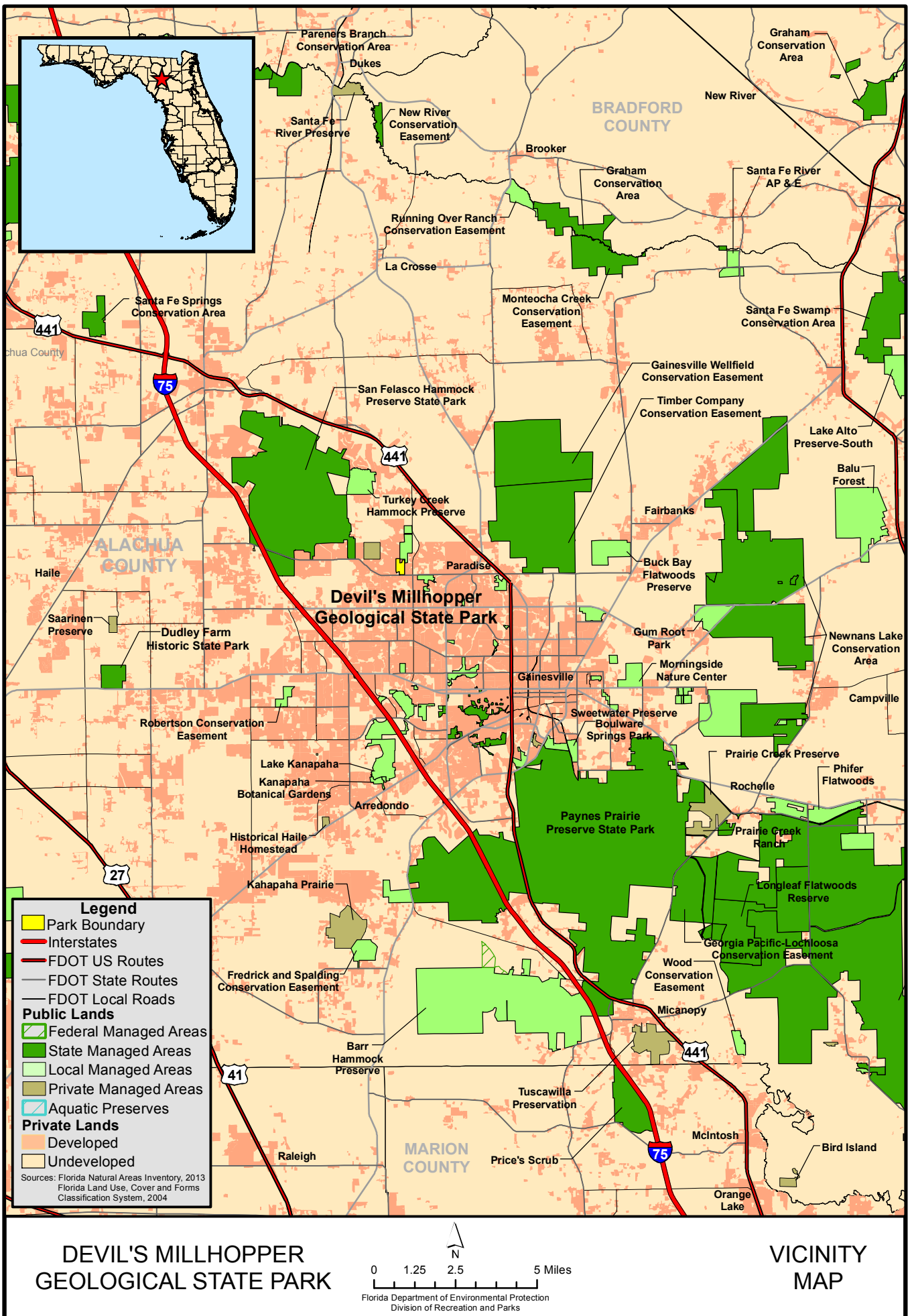
Management of special feature sites places primary emphasis on protection and maintenance of the special feature for long-term public enjoyment. Permitted uses are almost exclusively passive in nature and program emphasis is on interpretation of the special feature. Development at special feature sites is focused on protection and maintenance of the site, public access, safety and the convenience of the user.

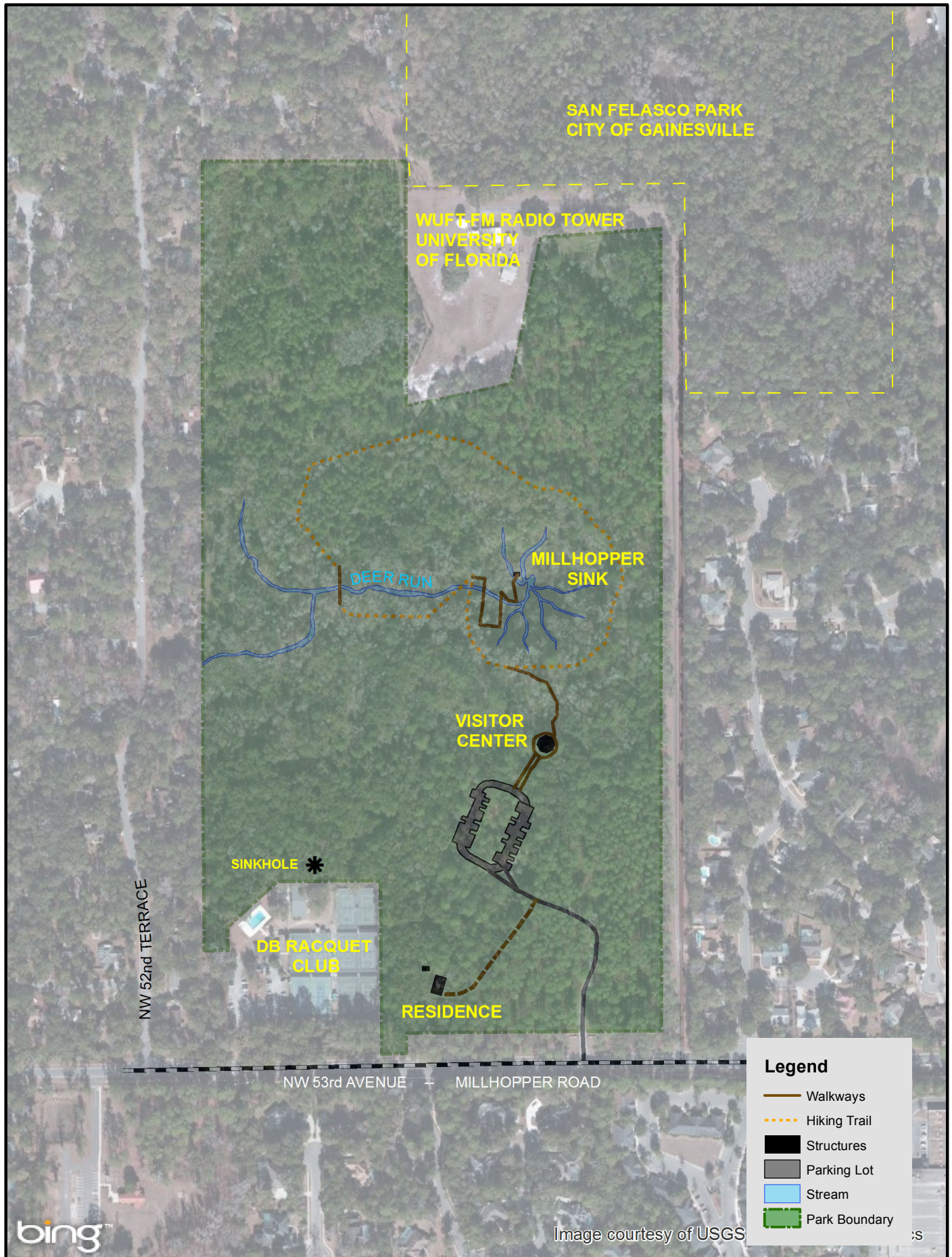
Purpose and Scope of the Plan

This plan serves as the basic statement of policy and direction for the management of Devil's Millhopper Geological 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.

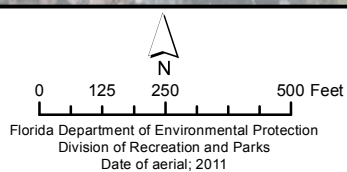
The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and 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.





DEVIL'S MILLHOPPER
GEOLOGICAL STATE PARK



REFERENCE MAP

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.

All development and resource alteration proposed in this plan is subject to the granting of 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.

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 the 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 no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. 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.

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 multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

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 Visitor Service Provider (VSP) may provide services to park visitors in order to enhance the visitor experience. For example, a VSP could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A VSP 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 VSPs, etc. are made on a case-by-case basis in accordance with the policies set forth in DRP's Operations Manual (OM).

Management Program Overview

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (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.

Many operating procedures are standardized system-wide 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 express 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 in the park.
- Remove exotic and invasive plants and animals from the park 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 necessary to meet the goals and objectives of this management plan.

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 Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FFWCC 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.

Public Participation

DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on May 30 and June 1, 2014, respectively. Meeting notices were published in the Florida Administrative Register, April 22, 2014 [VOL 40/78], 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

Devil's Millhopper Geological State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by the Department's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. Surface waters in this park are also classified as Class III waters by the Department. 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).

RESOURCE MANAGEMENT COMPONENT

Introduction

The Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) in accordance with Chapter 258, Florida Statutes, has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit 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 DEP's overall mission in ecosystem management. Cited references are contained in Addendum 3.

DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, 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 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.

DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

The entire park is divided into management zones that delineate areas on the ground that are used to reference 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 natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities. Table 1 reflects the management zones with the acres of each zone.

Table 1. Devil's Millhopper State Park Management Zones			
Management Zone	Acreage	Managed with Prescribed Fire	Contains Known Cultural Resources
DM-1A	25.80	Yes	Yes
DM-1B	9.13	Yes	Yes
DM-2	11.73	Yes	No
DM-3	20.58	Yes	No

Resource Description and Assessment

Natural Resources

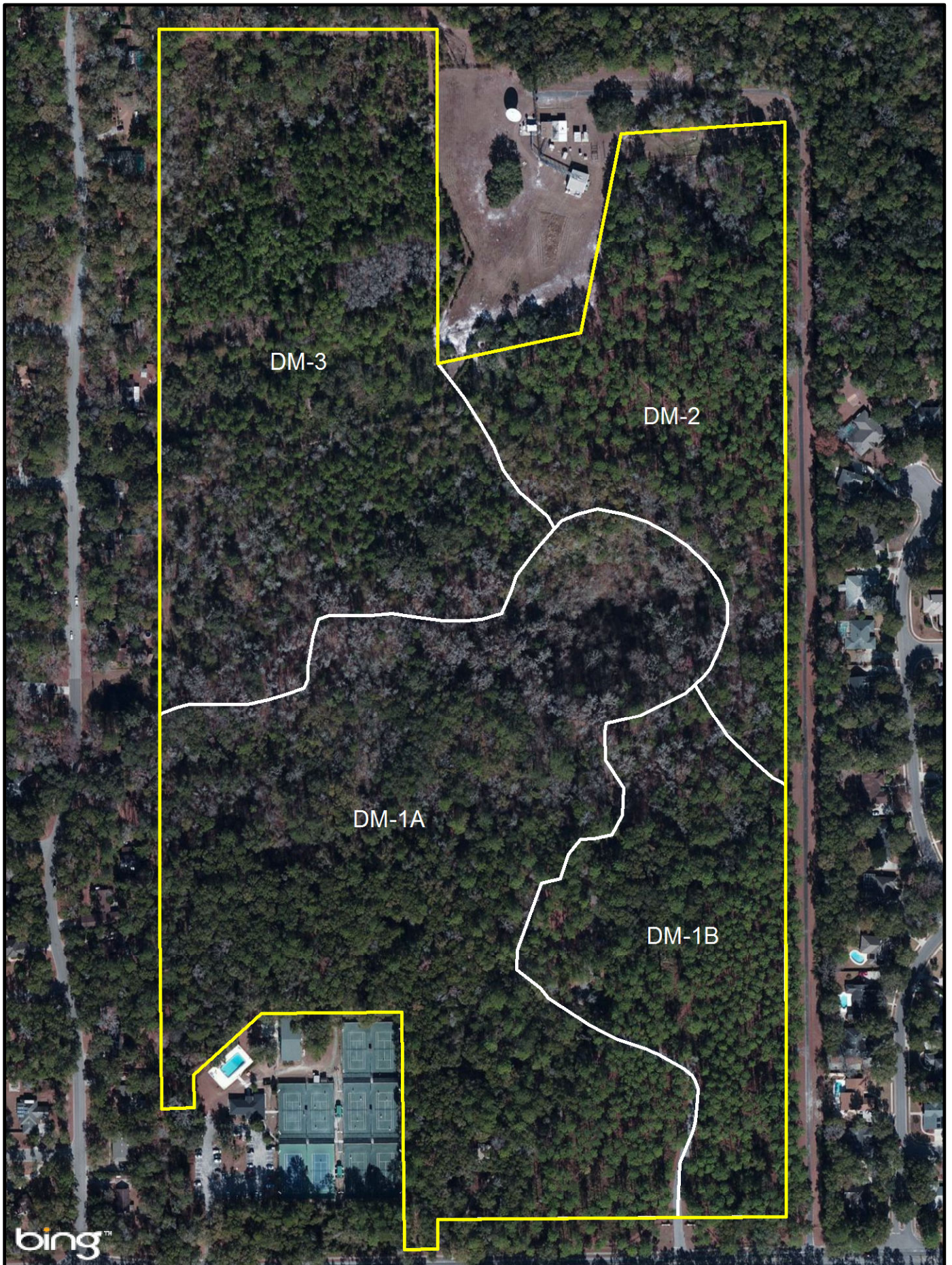
Topography

Devil's Millhopper Geological State Park is located in Alachua County near the southern edge of the Northern Highlands physiographic region (White 1970; Hoenstine, and Lane 1991) where an outfacing, relict marine feature known as the Cody Escarpment, or Cody Scarp, is situated (Puri and Vernon 1964). The Cody Scarp constitutes the most persistent topographic break in the state, its continuity unbroken except by valleys of major streams. The many incidences of subsidence and sinkhole collapse along the scarp have strongly influenced the topographical and hydrological characteristics of the region (Butt et al. 2006). A large portion of the surface runoff from the Northern Highlands drains across the Cody Scarp into sinkholes and rapidly infiltrates the subsurface limestone conduits of the Upper Floridan aquifer.

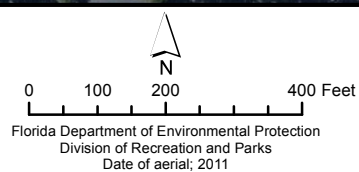
The most significant topographic feature in the park is the Devil's Millhopper sinkhole (Millhopper Sink), a 125-foot deep collapse sink with almost vertical slopes (Pirkle 1956)(see Topographic Map). Several seepage streams, most originating near the rim of the sinkhole, follow tiny, ever-changing courses down the steep slopes. A considerably larger seepage stream, Deer Run, flows through a ravine of substantial size before emptying into the sinkhole at its western rim. There are several other surface subsidence features in the Deer Run drainage area as well. Residential development has significantly altered the portion of Deer Run that is located outside the park.

With the exception of Millhopper Sink and the Deer Run ravine, topographic variation in the park is relatively minor. Small shallow depressions irregularly punctuate the park landscape. One sinkhole near the park's southern boundary receives direct storm water drainage from a private facility on adjacent property. The long-term impact of this storm water on park resources has not yet been determined.

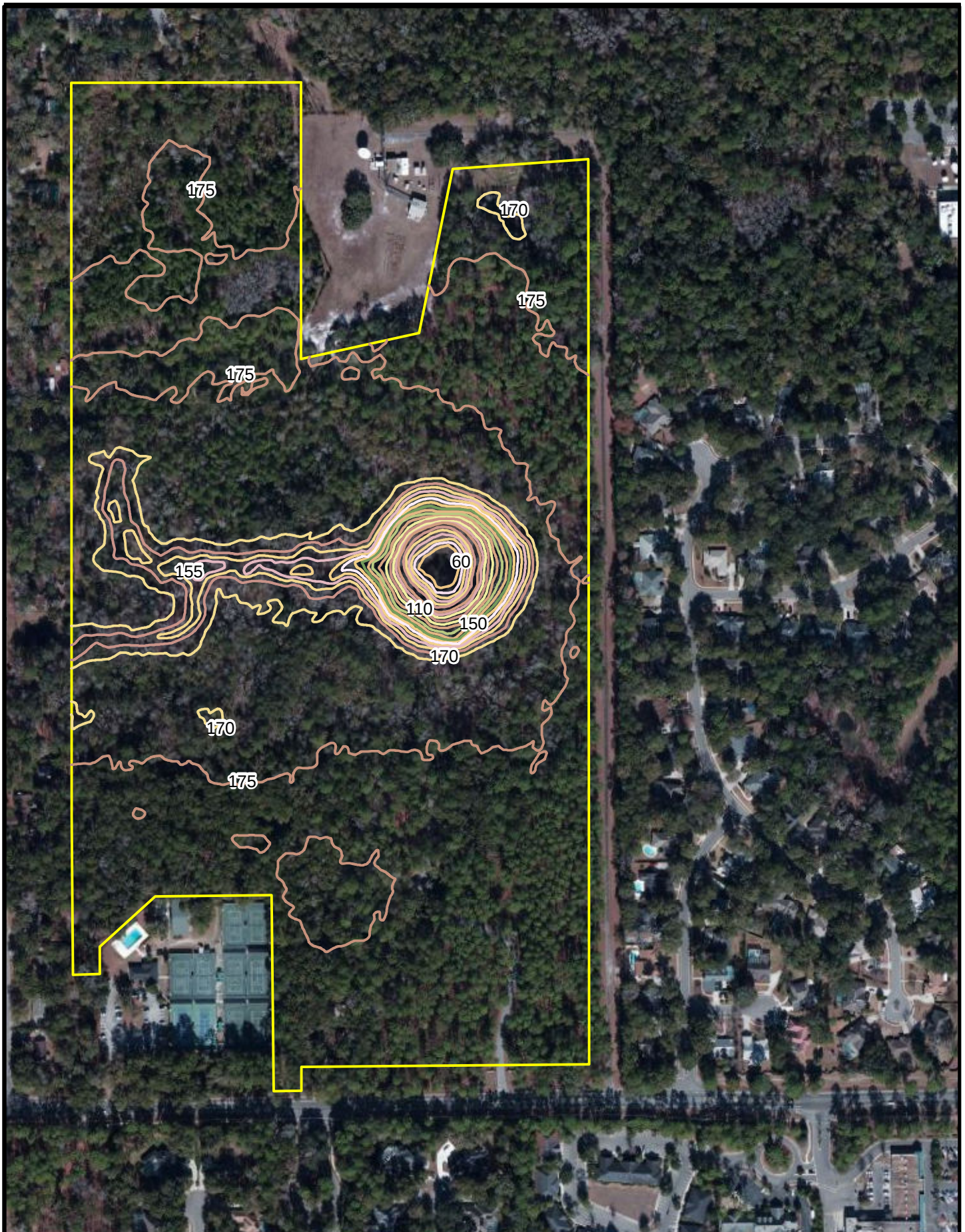
Elevations within the park range from 55 feet mean sea level (msl) at the bottom of the sinkhole to about 180 feet msl at the north end of the park. Some of the park's



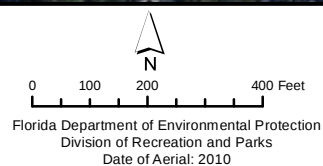
DEVIL'S MILLHOPPER
GEOLOGICAL STATE PARK



MANAGEMENT ZONES
MAP



DEVIL'S MILLHOPPER
GEOLOGICAL STATE PARK



TOPOGRAPHIC MAP

terrain has been altered. During past stratigraphic research, geologists excavated sizeable sections along the upper slopes of the sinkhole. Over time, erosion may have enlarged these cuts. Minor topographic alterations have resulted from the construction of now obsolete roads and firebreaks. Aerial photographs from the late 1930s indicate that land clearing, and possibly agricultural activity, took place in the southwestern part of the park. Although the area is now covered with second growth forest, the unusually flat terrain and decreased diversity of ground cover are persistent reminders of past land uses.

Geology

The massive Millhopper Sink is the most significant geologic feature in the park (Pirkle 1956). This sinkhole is unusual in that it is one of the few where such a large section of the Hawthorn Group is exposed. The sediment layers visible in the walls of the Millhopper Sink have provided researchers with a wealth of information about stratigraphy in north Florida geologic deposits (Pirkle 1958; Pirkle et al. 1965; Johnson 1989).

In 1980, the Florida Geological Survey extracted a geologic sediment core adjacent to the sinkhole to investigate regional stratigraphy. The coring shaft passed through 10.5 feet of undifferentiated sand and clay before it encountered the Hawthorn Formation, which was nearly 100 feet thick at the site. Directly below this stratum the coring shaft encountered the Crystal River Formation of the Ocala Limestone. Drilling ceased before another formation was penetrated. Analysis of the extracted core indicated that the Alachua Formation, a Pliocene deposit which usually overlays the Hawthorn Formation, and the Suwannee Limestone, an Oligocene deposit which generally overlays the Ocala Limestone, were not present locally (Scott 1982).

In descending order (youngest to oldest), geologic deposits underlying the Millhopper region include surficial marine deposits, the Hawthorn Formation, Ocala Limestone, Avon Park Limestone, Lake City Limestone, and Oldsmar Limestone. There are no known significant alterations of these deposits within the park.

The surficial deposits, which date from the Pleistocene and Recent Epochs, are composed chiefly of sands and clayey sands that often contain distinct layers of clay, marl, and sandy clay. They range in thickness from one foot to as much as 45 feet in areas of higher elevation.

The Hawthorn Formation is composed of clays and sandy clays that vary in color from yellow to green, gray, or blue. Beds of quartz sand and sandy phosphatic limestone are present as well. Eroded remnants of the Hawthorn Formation may be only a few feet thick in places, but near Gainesville, the formation may attain a thickness of about 160 feet.

Boulders and irregular masses of chert or flint are common near the top of the Ocala Limestone, an Eocene deposit that is 80-130 feet thick in this area. The Ocala Limestone consists of the Crystal River, Williston, and Inglis Formations (undifferentiated). Its eroded surface is usually covered by a thin layer of sands or sandy clays originating from younger deposits such as the Hawthorn or Alachua

Formations. The porous and soluble nature of the Ocala Limestone gives rise to the karst topography typical of the region.

The Avon Park Limestone is composed of dense to porous dolomite with some limestone or sand and seams of peat or lignite. In the Gainesville area, it is approximately 210 feet thick. Lake City Limestone is composed of interbedded shale and soft to hard dolomite and limestone. Oldsmar Limestone, the deepest of the Eocene strata, essentially consists of fragmented marine limestone, partially or completely dolomitized, with some chert impregnation of gypsum and thin shale beds.

Soils

Only two soil types occur at Devil's Millhopper Geological State Park (Thomas et al. 1985), one well-drained (Millhopper sand) and the other poorly drained (Pelham sand). Complete descriptions of these soil types are contained in Addendum 3 (see Soils Map).

Geologists caused extensive soil disturbance in the past when they excavated test trenches on the slopes of Millhopper Sink and Deer Run ravine. Other soil disturbances have included the construction of now obsolete roads and firebreaks. The land clearing that once took place in the southwestern portion of the park also caused some soil disturbance, but probably only affected the topsoil and upper subsoil. Many of these impacts have partially healed over time. The sinkhole in the southwest portion of the park that functions as part of a private drainage easement continues to experience sediment loading, and erosion along the drainage ditch leading to the sinkhole occurs during storm water events.

Foot trails that approach the rim of the Millhopper Sink may carry non-attenuated storm water runoff and create erosion scours in isolated locations. Stabilization and erosion prevention measures are still needed in several scoured areas along the slopes of the sinkhole. Restoration of these deep gouges may require installation of ditch blocks and backfilling where practical. Management activities will follow generally accepted best management practices to prevent further soil erosion and to conserve on-site soil and water resources.

A depression marsh natural community intersects the west boundary of the park in management zone 3. This boundary has a fire line maintained for use during prescribed burns in the park. When the marsh has standing water, vehicular passage may cause rutting of soils along wetland edges. This may contribute to the movement of sediments into the marsh. Soil stabilization along that section of the fire line may be the best way to remedy the situation.

Minerals

Research on the strata exposed within the Millhopper Sink has revealed a "phosphate reaction zone" where carbonate is being replaced by phosphate. The rock that results is known as "hard-rock" phosphate (Pirkle 1958). The upper part of the Hawthorn Formation at this site contains relatively high amounts of garnet

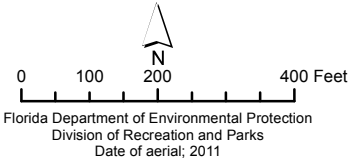


Legend

8B - Millhopper sand, 0 to 5 percent slopes

13 - Pelham sand

DEVIL'S MILLHOPPER
GEOLOGICAL STATE PARK



SOILS MAP

and epidote. Other heavy minerals are distributed in varying amounts throughout the formation. Whether any of these deposits are of commercial value is unknown.

Hydrology

The Deer Run to Millhopper Sink system is a stream-to-sink hydrologic feature similar to several others found along the Cody Scarp, particularly in nearby San Felasco Hammock Preserve State Park. All of them are important to the hydrology of the region (Williams et al. 1977). The park sits on the boundary between two major drainage areas, the Santa Fe River watershed (Blues Creek sub-basin) to the north and the Orange Creek watershed (Possum Creek sub-basin) to the south. However, most current evidence suggests that the surface water entering Millhopper Sink funnels directly through a swallow hole into the Floridan aquifer and, as groundwater, then proceeds to the Santa Fe River Basin in northwest Alachua County via the Cross-County Fracture Zone (Brooks 1967, Butt et al. 1996; Williams et al. 1977). The Santa Fe River Basin, which covers nearly 1,400 square miles, is under the jurisdiction of the Suwannee River Water Management District (SRWMD) (Clark et al. 1964; Fernald and Purdum 1998). Portions of the Santa Fe River are impaired and a Basin Management Action Plan has been developed for that water body (FDEP 2012c).

Three aquifers exist in the region. The uppermost, which is the surficial or water table aquifer, sits atop the confining Hawthorn Formation and consists of sands from Pleistocene terrace deposits, as well as layers of sand and limestone. Recharge occurs through percolation of rainfall to a water table that usually lies less than 10 feet below the surface. Discharge is by evapotranspiration, seepage to streams and lakes, and percolation into lower artesian aquifers.

A secondary artesian aquifer originates in the sand and limestone layers of the lower part of the Hawthorn Formation. Recharge is chiefly via the surficial aquifer and discharge is principally into the Floridan aquifer.

The Floridan aquifer in this region occurs in several geologic formations, the Ocala Limestone, Avon Park Limestone, and Lake City Limestone. Locally, the Floridan is semi-confined. It is recharged by water that leaks through overlying, usually confining beds, or via sinkholes that breach these beds. The main discharge points of the Floridan aquifer in this region are along the Santa Fe and Ichetucknee Rivers, where potentiometric surfaces of the aquifer are lowest.

Surface water resources within the park include Deer Run (labeled as a seepage stream in the natural communities map), numerous seepage springs associated with the sinkhole, and two ephemeral dome swamps located north of Millhopper Sink. Rainfall, local runoff and surficial groundwater maintain flows and water levels in these features.

The ecotone between the mesic flatwoods in zone 3 and an adjacent depression marsh and dome swamp contains hooded pitcherplants (*Sarracenia minor*), a species sensitive to hydrological changes. Some of the wetland areas near the pitcher plants had been altered before the Division undertook management of the park, probably to improve drainage. At least one shallow ditch that may still disrupt

the natural hydrological regime of these wetlands persists today. Another factor affecting the surface hydrology of wetlands in zone 3 is soil compaction associated with heavy equipment use during a salvage logging operation in 1994 after a devastating pine beetle outbreak.

Deer Run, which originates in an adjacent subdivision, enters the park at its west boundary and then flows through a ravine for about 650 feet before spilling into the Millhopper Sink at its western rim. Flows in the stream are variable. During times of drought, the stream may barely flow, receiving water only from numerous small seeps along its short course through the park. At those times, only a few small standing pools of water may remain along the lower sections of the stream nearest the Millhopper Sink. Alternatively, after heavy rainfall events, large amounts of surface runoff enter the stream. The primary source of this surface runoff is overflow from the Deer Run subdivision's stormwater detention pond, which is located along the course of the stream at the western boundary of the park. After large storm events, significant sediment and nutrient loading may occur along Deer Run all the way to the Millhopper Sink.

The residential development that now virtually surrounds the park has negatively affected the water quality of wetlands in the park (ACEPD 2004). Leakage from local septic systems and percolation of storm water runoff may degrade the surficial aquifer, which is the source of the seepage that feeds the park's surface waters. Pollutants, including substances derived from yard and pavement runoff, accumulate within the detention pond along Deer Run and periodically spill over into the downstream portion of the run that flows through the park. Park employees regularly place hay bales in Deer Run at the boundary of the park in an effort to filter out particulate matter suspended in waters of the stream. Potential contamination of the stream is a concern because surface waters from the creek travel directly to the aquifer via the swallow hole at the bottom of Millhopper Sink.

From 2001 through 2003, the Alachua County Environmental Protection Department performed stream bio-recon assessments of waters within Deer Run as part of a larger study within the City of Gainesville (ACEPD 2004, ACEPD 2008). These assessments provided baseline water quality and biological analyses that indicated a high level of impairment within Deer Run when it was flowing (FDEP 2012a).

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 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 dependant 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 10 distinct natural communities as well as two areas of altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

Limestone Outcrop

Desired Future Condition: Limestone outcrops are associated with karst topography and are often found within other features such as sinkholes or as isolated features within mesic hammocks and upland hardwood forests. Various ferns, mosses and smaller herbs typically grow on the limestone surface or in crevices. Characteristic species include partridgeberry (*Mitchella repens*), brittle maidenhair fern (*Adiantum tenerum*), netted chain fern (*Woodwardia areolata*), jack-in-the-pulpit (*Arisaema triphyllum*), southern shield fern (*Thelypteris kunthii*), and various species of panicgrass (*Panicum* spp.). Other rare fern species may also occur on limestone outcrops.

Description and Assessment: Limestone outcrops occur within the Devil's Millhopper sinkhole. Although small areas of limestone occur on the slopes, the largest extent of exposed limestone occurs at the base of the slopes, primarily on the north side of the bottom of the sinkhole. The limestone is encrusted with many types of ferns and other species that thrive in humid microclimates. Although past recreational uses seriously degraded the slopes of the sinkhole prior to Division management of the site, the limestone outcrops are in good condition.

General Management Measures: Measures must be taken to prevent runoff and erosion from degrading limestone outcrops by monitoring stormwater impacts from

outside the park. Ground disturbance during removal of exotic plant species in the surrounding sinkhole and upland hardwood forests will also be monitored to prevent erosion and impacts to the limestone outcrops and the rare plants that may be present within the sinkhole.

Mesic Flatwoods

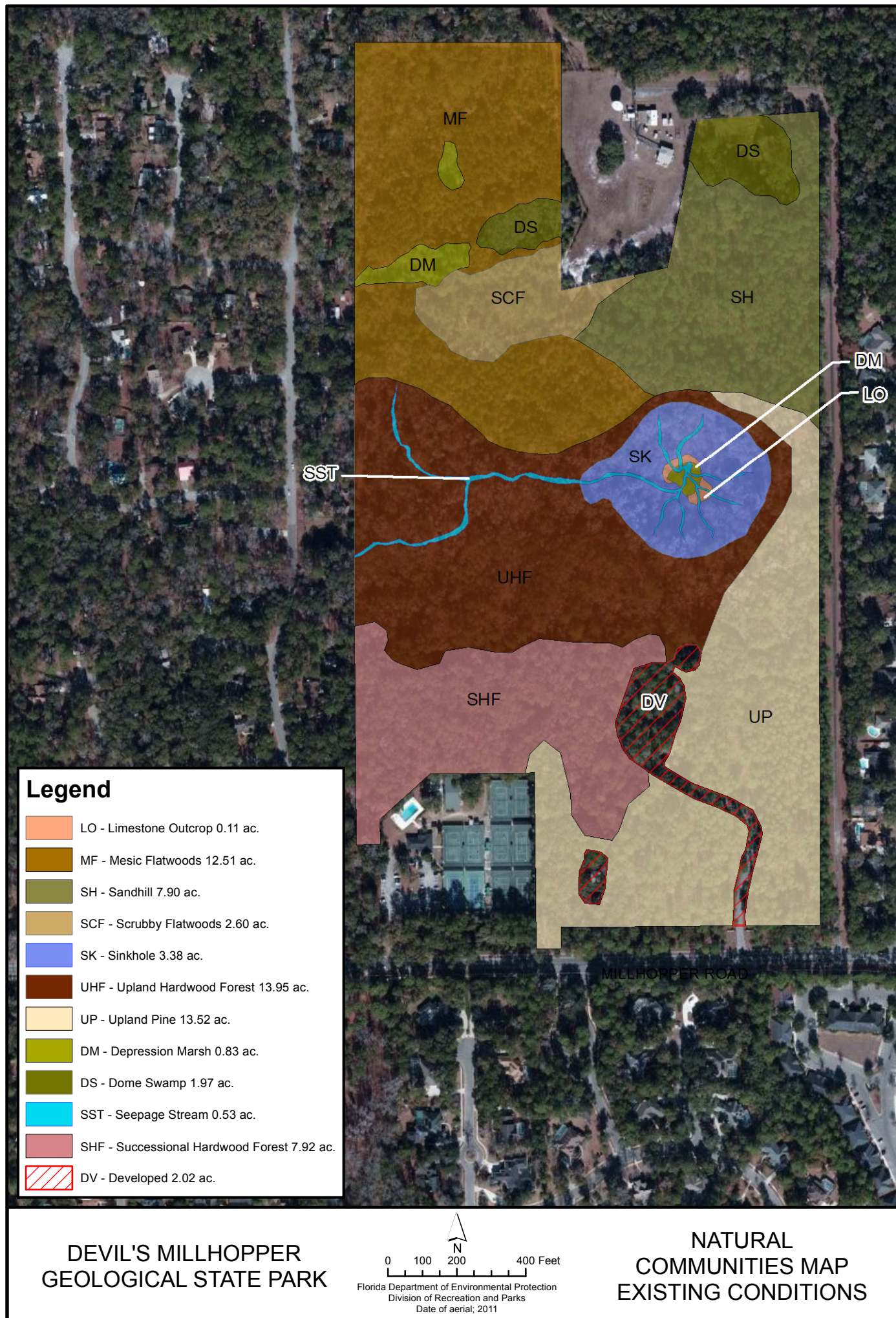
Desired Future Condition: Dominant pines will usually be longleaf pine (*Pinus palustris*). Native herbaceous groundcover should be over at least 50% of the area and less than 3 feet in height. Saw palmetto (*Serenoa repens*) will comprise no more than 50% of total shrub species cover, and are also less than 3 feet in height. Other shrub species may include gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), runner oak (*Quercus elliotii*), dwarf live oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*), and dwarf huckleberry (*Gaylussacia dumosa*). Shrubs will generally be knee-high or less, and there are few if any large trunks of saw palmetto along the ground. The Optimal Fire Return Interval for this community is 2-3 years.

Description and Assessment: Prior to designation of the Division as managing agency for the site, this community had an extensive history of alteration due to various land use practices, including timbering and perhaps farming as well. Offsite species such as loblolly pine, sweetgum and laurel oak successfully invaded the mesic flatwoods during the decades of fire. Ditching occurred historically within the mesic flatwoods to connect isolated wetlands, including a depression marsh and dome community. The 1994 clear-cut to control southern pine beetles (SPBs) removed nearly the entire pine overstory from the flatwoods. Hardwood species remain the dominant vegetation, but a restoration project in 2006 and 2007 included offsite hardwood treatment and wiregrass planting in the northern portion of the flatwoods. The mesic flatwoods have not been burned since the hardwood treatment, so hardwood sprouts are again proliferating and longleaf pines have not yet been reintroduced. The mesic flatwoods are currently in poor to fair condition.

The combination of shading and litter buildup in the past has inhibited the growth of herbaceous plants, including the rare hooded pitcherplant in the wetter portions of the flatwoods. Active management is required, including the use of prescribed fire and other means of hardwood control, to insure survival of the pitcherplant population and to encourage its expansion. A resumption of regular prescribed burning is essential for the health of this community.

One problem that will likely recur is invasion of the mesic flatwoods by exotic plant species such as the Chinese tallowtree (*Sapium sebiferum*). This exotic plant presumably spread into the park from nearby residential subdivisions. Unfortunately, developments of various types near the park continue to increase in number and extent.

General Management Measures: Additional herbiciding or mechanical removal of offsite hardwoods, along with increased frequency of prescribed fire, will be necessary to improve the condition of the mesic flatwoods. Planting of longleaf



pinus will also be necessary in the future. Groundcover plantings may be required depending on how the remnant herbaceous species respond to future prescribed fires.

Sandhill

Desired Future Condition: The dominant pine of sandhill will usually be longleaf pine (*Pinus palustris*). Herbaceous cover will be 80% or greater, typically of wiregrass (*Aristida beyrichiana*), and is less than 3 feet in height. In addition to groundcover and pines characteristics, there will be scattered individual trees, clumps, or ridges of onsite oak species (usually turkey oaks (*Quercus laevis*), sand post oak (*Quercus margaretta*), and blue-jack oak (*Quercus incana*)). In old growth conditions, sand post oaks will commonly be 150-200 years old, and some turkey oaks will be over 100 years old. The Optimal Fire Return Interval for this community is 2-3 years.

Description and Assessment: Fire was reintroduced to this community after a long absence. However the offsite hardwoods required treatment in 2006 to open the canopy and speed restoration. Fire-intolerant species still persist in some areas. Certain plant species that are characteristic of the system have decreased in numbers due to historical disturbance and long-term fire exclusion. Some species may have even disappeared altogether. The SPB clear cut of 1994 had a minimal impact on the community. Only a small number of pines were removed, and these were located along the edge of the sandhill. The sandhills are considered to be in fair to good condition.

General Management Measures: Additional prescribed fires are needed to continue to improve the condition of the sandhills.

Scrubby Flatwoods

Desired Future Condition: Dominant tree species of the interior will usually be longleaf pine (*Pinus palustris*). Mature sand pines (*Pinus clausa*) will typically not be present. There will be a diverse shrubby understory often with patches of bare white sand. A scrub-type oak “canopy” will vary in height from 3 – 8 feet and there will be a variety of oak age classes/heights across the landscape. Dominant shrubs include sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmanii*), saw palmetto (*Serenoa repens*), rusty staggerbush (*Lyonia ferruginea*), and tarflower (*Bejaria racemosa*). Cover by herbaceous species is often well below 40 percent. The Optimal Fire Return Interval for this community is regionally variable. Areas may be burned as frequently as every 3-8 years when burn prescriptions are designed to achieve a mosaic of burned and unburned areas.

Description and Assessment: Few longleaf pines were present in the scrubby flatwoods before the clear cut to control SPBs in 1994. The area was dominated by off-site loblolly pines. Once the clear cut occurred and most overstory pines were removed from the scrubby flatwoods, the community was vulnerable to an invasion by offsite oaks and to a repeat invasion by loblolly pines. Offsite hardwoods were

removed in 2006. This community still has too few overstory longleaf pines.

General Management Measures: Additional prescribed fires are needed to continue to improve the condition of the scrubby flatwoods.

Sinkhole

Desired Future Condition: Sinkholes are characterized by cylindrical or conical depressions with limestone or sand walls. Sinkholes do not contain standing water for long periods as do Sinkhole Lakes. Depending upon the age of the sinkhole, the vegetation of sandy sinkholes may represent a well-developed forest including southern magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), wax myrtle (*Myrica cerifera*), grape vines (*Vitis* spp.), Virginia creeper (*Parthenocissus quinquefolia*), water oak (*Quercus nigra*) and pignut hickory (*Carya glabra*). Sinkholes with vertical limestone walls may be covered by a variety of mosses, liverworts, ferns and small herbs. Sinkholes will generally have a very moist microclimate due to seepage and being buffered by the lower elevation and a tree canopy. Desired future conditions include limiting unnatural erosion and protecting the microclimate from disturbance.

Description and Assessment: The most notable feature in the park is the large sinkhole known as the Devil's Millhopper (Millhopper Sink). Before the property was placed under jurisdiction of the Division, there were no restrictions on visitor activities that might degrade the sinkhole. Visitors climbed indiscriminately up and down the sides of the sinkhole, and caused problems such as soil compaction, erosion, vegetation loss, and littering. These activities resulted in an accelerated accumulation of sediments on the sinkhole floor and the loss of sensitive plant and animal species.

Before the Division assumed management of Millhopper Sink, unauthorized foot traffic had caused extensive destruction of vegetation and exposure of the topsoil within the sinkhole, primarily along the steep slopes. Efforts to reduce negative visitor impacts included the construction of a boardwalk that followed natural contours with a gradual descent to the bottom of the sinkhole, and the installation of fences and signs around the rim of the sinkhole. All have been effective. The slopes are now largely stabilized, and the vegetation has largely recovered. Occasionally, visitors still wander off the designated trails and boardwalk, causing compaction and erosion of soils on the ravine and sinkhole slopes. Park staff members provide frequent interpretation to visitors about the fragile nature of this community in an attempt to foster greater public understanding about the consequences of increased erosion. The sinkhole is considered to be in good condition.

An exotic plant known as perpetual begonia (*Begonia cucullata*) occurs on the lower slopes near the sinkhole floor. Despite continued removal efforts the plant persists, particularly in seepage areas.

Unique microclimatic conditions such as cool temperatures, elevated humidity, and

moist soils exist within the sinkhole. Similar microclimatic conditions are found much further north in ravines and valleys of the Piedmont and Southern Appalachian region. Devil's Millhopper is one of the most southerly sites to harbor several species characteristic of the Appalachian flora such as Wagner's spleenwort (*Asplenium heteroresilians*). The microclimatic conditions supportive of this unique flora are sensitive to increases in the size and number of canopy openings and to changes in seepage or surface flow.

General Management Measures: Necessary management measures include continuing to restrict visitor access to the sinkhole slopes, and monitoring of hydrological disturbances within and adjacent to the park. Particular attention will be paid to the seepage stream that receives stormwater flow from the Deer Run subdivision located on the park's western boundary. Likewise, the trail that circles the sinkhole will need to be monitored for any excessive runoff into the sinkhole from the trail surface.

Upland Hardwood Forest

Desired Future Condition: Upland hardwood forest is a mature, closed canopy hardwood forest typically occurring on slopes and rolling hills with generally mesic conditions. Overstory tree species may consist of southern magnolia (*Magnolia grandiflora*), pignut hickory (*Carya glabra*), sweetgum (*Liquidambar styraciflua*), live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), Florida maple (*Acer saccharum* subsp. *floridanum*), spruce pine (*Pinus glabra*) and swamp chestnut oak (*Quercus michauxii*). Understory species will include trees and shrubs such as American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*), eastern hophornbeam (*Ostrya virginiana*), American hornbeam (*Carpinus caroliniana*), eastern redbud (*Cercis canadensis*), red bay (*Persea borbonia*), horse sugar (*Symplocos tinctoria*), and beautyberry (*Callicarpa americana*). Ground cover will be comprised of shade tolerant herbaceous species, sedges and vines.

Description and Assessment: The upland hardwood forest community grades into the sinkhole community along the upper slopes of the sinkhole. The upland hardwood forest that extends beyond the rim of the sinkhole grades into fire-maintained natural communities, including mesic flatwoods, sandhill, and upland pine. Agricultural activities, most likely for pasture development, removed most of the upland pine community to the southwest of the sinkhole. Suppression of natural fires may have also allowed an expansion of the upland hardwood forest away from the sinkhole and into adjacent fire-maintained communities. Restoration of a natural fire regime in these ecotone areas would help establish a more natural transition. The upland hardwood forest also extends naturally to the west along the seepage stream that flows into the sinkhole. The upland hardwood forest is in good to excellent condition.

General Management Measures: Upland hardwood forests typically require less active management than fire-maintained natural communities. Monitoring and removal of invasive exotic plants along with monitoring of recreational impacts are the main management measures recommended for the upland hardwood forest.

Upland Pine

Desired Future Condition: Dominant tree species will usually be longleaf pine (*Pinus palustris*). Herbaceous cover will be less than 3 feet in height and is comparable to sandhill, but may have a higher density of understory shrubs and saplings. An intermittent subcanopy of smaller hardwood trees will be scattered throughout (usually southern red oak (*Quercus falcata*), sand post oak (*Quercus margaretta*), mockernut hickory (*Carya alba*), flowering dogwood (*Cornus florida*), bluejack oak (*Quercus incana*), and sassafras (*Sassafras albidum*)). In old growth conditions, oak trees and hickories are commonly 150-200 years old. Groundcover may be dominated by wiregrass (*Aristida stricta* var. *beyrichiana*), with little bluestem (*Schizachyrium scoparium*), broomsedge bluestem (*Andropogon virginicus*), and indiagrass (*Sorghastrum* spp.). Other typical forbs include narrowleaf silkgrass (*Pityopsis graminifolia*), bracken fern (*Pteridium aquilinum*), goldenrod (*Solidago* spp.), squarehead (*Tetragonotheca helianthoides*), soft greeneyes (*Berlandiera pumila*), and yellow jessamine (*Gelsemium sempervirens*). The Optimal Fire Return Interval for this community is 2-3 years.

Description and Assessment: In the past, hardwoods largely dominated this community in the park. In recent years, prescribed burning and selective removal of offsite hardwoods have helped restore a more characteristic species composition. Despite successes in restoration, however, some plants characteristic of the community have disappeared, and certain weedy species of vines such as muscadine (*Vitis rotundifolia*) and hardwoods like laurel oak (*Quercus laurifolia*) still predominate. The upland pine is considered to be in fair condition. Most of the southwestern section of the park is currently classified as successional hardwood forest since it was cleared of native vegetation prior to 1937. This area was likely upland pine prior to being cleared. The lack of remnant upland pine species in this well-developed hardwood forest makes restoration of the community a low priority at this time.

General Management Measures: Prescribed fire is the primary management tool for upland pine at Devil's Millhopper. Frequent fires are recommended to promote restoration of the structure and composition of a natural upland pine community.

Depression Marsh

Desired Future Condition: Depression marsh is characterized as containing low emergent herbaceous and shrub species which will be dominant over most of the area and include open vistas. Trees will be few and if present, will occur primarily in the deeper portions of the community. There will be little accumulation of dead grassy fuels due to frequent burning; one can often see the soil surface through the vegetation when the community is not inundated. Dominant vegetation in basin marsh and depression marsh may include maidencane (*Panicum hemitomon*), panic grasses (*Panicum* spp.), cutgrass (*Leersia* sp.), common reed (*Phragmites australis*), pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* sp.), buttonbush (*Cephalanthus occidentalis*), St. John's wort (*Hypericum fasciculatum*), and coastalplain willow (*Salix caroliniana*). The Optimal Fire Return Interval for this

community is 2-10 years depending on fire frequency of adjacent communities.

Description and Assessment: Two depression marshes occur within the mesic flatwoods, and one occurs in the bottom of the Devil's Millhopper sinkhole. The marshes within the mesic flatwoods are dominated by grassy species with scattered woody shrubs. Although suffering from lack of fire, the depression marshes retain their natural appearance and are in fair to good condition. The ecotones with the mesic flatwoods are somewhat overgrown, and the larger depression marsh is connected via an artificial ditch with the dome that lies to the east.

As recently as the early 1930s, the marsh in the sinkhole was dominated by annual plant species (Arnold 1936). Currently, perennial species are more common in the flora of the sinkhole depression marsh than are annual species. During the many years of unrestricted access to the sinkhole, the elevation of the floor rose due to erosion of organic and inorganic materials along the slopes of the sinkhole and the deposition of these materials at the bottom. Several feet of sediments are now accumulated at the bottom of the sinkhole. It is thought that herbaceous species once flourished in the depression marsh and that they had a competitive advantage over woody species when the substrate was lower and the sinkhole held greater volumes of water for longer periods. Restoration of the sinkhole floor to its natural condition would be problematic at best. Removal of the accumulated sediments has not been attempted and may not even be practical. At present, in order to encourage the dominance of herbaceous annuals in the plant cover, park rangers remove woody perennials from the floor of the sinkhole as they become established. This depression marsh is considered to be in fair to good condition.

General Management Measures: Monitoring and removal of invasive exotic plant species is the primary management measure needed for the depression marshes. Control of woody native species may also be required depending on the frequency and duration of flooding events. Restoration of hydrological disturbances, such as ditches, may also be necessary.

Dome Swamp

Desired Future Condition: Dome swamp is an isolated, forested, depression wetland occurring within a fire maintained matrix such as mesic flatwoods. The characteristic dome appearance will be created by smaller trees that grow on the outer edge (shallower water and less peat) and larger trees that grow in the interior. Pond cypress (*Taxodium ascendens*) will typically dominate, but swamp tupelo (*Nyssa sylvatica biflora*) may also form a pure stand or occur as a co-dominant. Other subcanopy species may include red maple (*Acer rubrum*), dahoon holly (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), and loblolly bay (*Gordonia lasianthus*). Shrubs may be absent to moderate (a function of fire frequency) and can include Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), buttonbush (*Cephalanthus occidentalis*), wax myrtle (*Myrica cerifera*), and titi (*Cyrilla racemiflora*). An herbaceous component may range from absent to dense and include ferns, maidencane (*Panicum hemitomon*), sawgrass (*Cladium jamaicense*), sedges, lizards tail (*Saururus cernuus*), and

sphagnum moss (*Sphagnum* spp.). Vines and epiphytes will be commonly found. Maintaining the appropriate hydrology and fire frequency is critical for preserving the structure and species composition of the community. Dome swamps should be allowed to burn on the same frequency as the adjacent fire type community, allowing fires to naturally burn across ecotones. Fires should be appropriately planned to avoid high severity fuel consumption within the dome swamp on an interval of 2-10 years.

Description and Assessment: The dome in the northeast corner of the property is considered to be in good condition. This dome is adjacent to a service road that is used by neighboring landowners and park staff. The second dome is dominated by invasive hardwoods and is in poor condition. Both domes are dominated by gum trees and other hardwoods rather than cypress.

General Management Measures: Prescribed fires in the surrounding fire-maintained natural communities should be allowed to burn into ecotones surrounding these dome swamps during wetter conditions to restore the natural transition zone. Removal of offsite hardwoods in the dome swamps may be necessary depending on water levels and the results of future prescribed fires. Monitoring and removal of any invasive exotic plant species is also recommended.

Seepage Stream

Desired Future Condition: A seepage stream can be characterized as a narrow, relatively short perennial or intermittent stream formed by percolating water from adjacent uplands. Water color will be clear to slightly colored, with a fairly slow flow rate and fairly constant temperature. Bottom substrate is typically sandy, but may include gravel or limestone.

Description and Assessment: Deer Run, augmented by flow from several small tributaries, is the major seepage stream in the park. A number of other very small, independent seepage streams exist. All of these streams eventually flow into the Millhopper Sink. Problems with water quality and flow in the seepage streams are discussed in the *Hydrology* section. The seepage streams in the park are considered to be in good condition.

General Management Measures: Monitoring of storm water impacts to the seepage stream that originates outside the park is an important management priority. It is also important to protect all the seepage streams from accelerated erosion resulting from foot traffic or other human impacts.

Altered Landcover Types

Developed

The developed areas of the park consist of a parking lot, picnic area, paved roads, a visitor center, boardwalk and a residence. A complete list of all the developed areas may be found in the Land Use Component.

The developed areas within the park will be managed in a manner that minimizes their effects on adjacent natural areas. Park staff will regularly check developed areas for the presence of priority invasive exotic plants (FLEPPC Category I and II species) and will remove any that are discovered. Other management measures will include the proper management of storm water and the use of development guidelines that are compatible with prescribed fire management in adjacent natural areas.

Successional Hardwood Forest

Successional hardwood forest occurs in the southern portion of the park from the parking lot west to the western boundary. This area appears to be cleared pasture in the 1937 aerial. This area is currently dominated by large laurel oaks and other offsite hardwood species. The lack of any remnant species makes restoration a low priority at this time.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

A list of imperiled species and their status for this park is found in Table 2. Currently six plant species at Devil's Millhopper are listed as imperiled. The majority of the imperiled plants are ferns or orchids, some of which prefer the unique microclimate of the sinkhole.

Hooded pitcherplant, a species listed as threatened by FDACS, was the subject of a specific resource management evaluation at the park in 1998. The insufficient application of prescribed fire, overgrowth of the mesic flatwoods community by woody plant species, and hydrologic alterations in the mesic flatwoods all threaten to extirpate the park's small population of hooded pitcherplants (Johnson 2001). Active measures are required to ensure that the existing population increases sufficiently to prevent its disappearance. This will entail increasing the frequency and intensity of prescribed fire and reducing the density of undesirable woody plants within the mesic flatwoods.

Imperiled animals recorded at the park include a number of species that likely range far beyond the park boundaries. All of the park's listed reptile species (four species) use fire-maintained communities and presumably breed or have bred within the park. These populations of imperiled reptiles are of special concern because of the increasing isolation and the small size of Devil's Millhopper Geological State Park. The southern dusky salamander (*Desmognathus auriculatus*) was once common to abundant at the Devil's Millhopper (Dodd 1998). However the population apparently disappeared within the park during the early 1970s. This species has experienced declines at other localities as well (Dodd 1998). Dodd

conducted multiple surveys of the Devil's Millhopper in 1996 and 1997 and failed to find any southern dusky salamanders (Dodd 1998).

No species-specific management program exists for the park. The park staff protects the sinkhole community as a whole, so many of the park's imperiled plant species also receive protection. Staff members provide additional protection by periodically inspecting the sinkhole for evidence of unauthorized removal of various ferns and orchids.

Prescribed burning of fire-adapted communities in the park will benefit the hooded pitcherplant and incised groovebur (*Agrimonia incisa*), as well as most of the imperiled animal species. Because the park is small and increasingly isolated from other natural areas, long-term maintenance of populations of imperiled species may be difficult.

Table 2 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 staff or others, 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 6.

Table 2: Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWC C	USFW S	FDACS	FNAI		
PLANTS						
Incised groovebur <i>Agrimonia incisa</i>			LE	G3, S2	1,6	Tier 1
Wagner's spleenwort <i>Asplenium heteroresiliens</i>				GNA, S1	4,9,1 0	Tier 1
Green adder's-mouth orchid <i>Malaxis unifolia</i>			LE	G5, S3	10	Tier 1
Yellow fringed orchid <i>Platanthera ciliaris</i>			LT		10	Tier 1
Widespread polypody <i>Polypodium dispersum</i>			LE		10	Tier 1
Hooded pitcherplant <i>Sarracenia minor</i>			LT		1,4,6	Tier 2

Table 2: Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWC C	USFW S	FDACS	FNAI		
AMPHIBIANS						
Southern Dusky Salamander <i>Desmognathus auriculatus</i>				G5, S1S2	4,9,1 0	Tier 3
Florida Gopher Frog <i>Lithobates capito</i>	LS			G3, S3	1,6	Tier 1
REPTILES						
Eastern Indigo Snake <i>Drymarchon couperi</i>	LT	LT		G3, S3	1,6	Tier 1
Gopher tortoise <i>Gopherus polyphemus</i>	LT			G3, S3	1,6	Tier 1
Short-tailed Snake <i>Lampropeltis extenuata</i>	LT			G3, S3	1,6	Tier 1
Florida Pine Snake <i>Pituophis melanoleucus mugitis</i>	LS			G4T3, S3	1,6	Tier 1
BIRDS						
Little blue heron <i>Egretta caerulea</i>	LS			G5, S4	4,10	Tier 1
Snowy Egret <i>Egretta thula</i>	LS			G5, S3	4,10	Tier 1
White Ibis <i>Eudocimus albus</i>	LS			G5, S4	4,10	Tier 1
Florida Sandhill Crane <i>Grus canadensis pratensis</i>	LT			G5T2T 3, S2S3	4,10	Tier 1
Wood Stork <i>Mycteria americana</i>	LE	LE		G4, S2	4,10	Tier 1
MAMMALS						
Sherman's Fox Squirrel <i>Sciurus niger shermani</i>	LS			G5T3, S3	1,6	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). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations. |
| 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. |

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

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.

The entire park has been surveyed for invasive exotic plants. Survey information is contained in the statewide exotic database. Most of the park's invasive exotic species occur on or near the western property boundary where an older residential development and a tennis club abut the park. Homeowners often throw discarded potted plants and landscaping debris over the backyard fence into the park. This material can become the source of invasive exotic infestations.

District staff and AmeriCorps members have assisted the park in removing exotics on a regular basis. Since approval of the last management plan, the park has treated 31 acres of invasive exotic plants. All treatments were done in-house. Because of the proximity of neighbors on the west boundary, the park needs to check this area regularly for new infestations. Outreach about invasive exotic plants to the homeowners and tennis club might help reduce the exotic infestations on the western and north western boundary.

Several other species of exotic plants have recently appeared in Devil's Millhopper.

Arrow bamboo (*Pseudosasa japonica*) is expanding into the park from a neighboring property in the northwest corner of the park. While the bamboo is not a FLEPPC Category I or II species, its infestation is increasing in size and the park needs to begin treating it. Other exotic species in the genus *Liriope*, and possibly in *Ophiopogon* as well, are now known to occur in the park and need treatment. None of these are listed by the Florida Exotic Pest Plant Council as either Category I or II species. These genera are very common landscape plants in the surrounding community of Gainesville. Unfortunately, they are becoming increasingly apparent in natural areas.

Table 3 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC 2011). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. For an inventory of all exotic species found within the park, see Addendum 5.

Table 3: Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
PLANTS			
Mimosa <i>Albizia julibrissin</i>	I	2	DM-1a, DM-3
Coral ardisia <i>Ardisia crenata</i>	I	1	DM-3
		2	DM-1a
Japanese climbing fern <i>Lygodium japonicum</i>	I	1	DM-3
Tuberous sword fern <i>Nephrolepis cordifolia</i>	I	1	DM-1a
Chinese tallowtree <i>Sapium sebiferum</i>	I	1	DM-3
Wax begonia <i>Begonia cucullata</i>	II	1	DM-1a

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 individual plants or small clumps of a single species scattered 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, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

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.

When feral hogs (*Sus scrofa*), armadillos (*Dasypus novemcinctus*), or feral cats (*Felix catus*) and dogs (*Canis familiaris*) appear in a park, they have a negative impact on sensitive habitats and vulnerable native species. If those exotic animals are discovered at Devil's Millhopper, their prompt removal will help protect the park's natural systems.

Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Special Natural Features

The Devil's Millhopper is a spectacular example of a solution collapse sinkhole. The sinkhole's unusually large size and its exposed geologic formations make it a remarkable natural exposure. The microclimatic conditions in the sink resemble those occurring in ravine systems in the Appalachians and the Piedmont; these conditions support a lush flora unique for this area.

The exposed sediments on the slopes of the sinkhole have provided opportunities to research conditions that existed in this part of Florida over the past twenty million years. Fossil shark's teeth and marine shells in the lower strata represent periods when seas covered the area. The fossilized remains of land animals found in the upper, more recent deposits provide a time frame for when the seas finally receded.

Because of its geological significance, paleontological record, and vegetative uniqueness, the Devil's Millhopper was designated a National Natural Landmark in 1976.

Cultural Resources

This section addresses the cultural resources present in the 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 7 contains the FDOS, Division of Historical Resources (DHR) 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.

Condition Assessment

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.

Level of Significance

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.

The following is a summary of the FMSF inventory for Devil's Millhopper Geological State Park. This inventory contains site descriptions and evaluations of site significance.

Prehistoric 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: Devil's Millhopper Geological State Park has no recorded archaeological sites. Visitors to the park over the years have found several prehistoric archaeological artifacts, but the exact locations of any discoveries remain unknown. These incidental finds seem to indicate at least early visitation to the area, if not habitation; additional research is required to identify during which time periods.

The Millhopper Sink has been a draw for visitors since at least the 1880s. The Civilian Conservation Corps (CCC) reportedly constructed a stairway to view the sink in the 1930s. Other recent historic use includes turpentine of longleaf pines in the area. There are a very few catface pines that remain in the park as a reminder of the turpentine industry.

A predictive model has been completed for the park. The model indicates that about 32% of the park is associated with features related to high archaeological sensitivity and 30% of the park is classified as having medium archaeological sensitivity (Collins et al. 2012). This indicates that there is a very good probability that there are archaeological sites within the park.

Condition Assessment: Since Devil's Millhopper Geological State Park has no known archaeological sites at this time, a condition assessment is not applicable. Park staff should encourage visitors to leave all artifacts in place and notify the park of the location of any finds. This will help the park maintain any future discoveries in good condition.

Level of Significance: Since the park has no known archaeological sites, this is not applicable.

General Management Measures: Although the park has no known archaeological sites, park visitors through the years have found some projectile points at unspecified locations. Given the park's unique geologic feature, its water sources, and its proximity to natural resources within San Felasco Hammock Preserve State Park, it is likely that archaeological sites are present. Park staff should record any cultural resource discoveries with the FMSF and encourage visitors to leave all finds in place. Any Phase I archaeological survey conducted at the park should take into consideration the park's newly developed archaeological sensitivity model, as well as its priority management needs.

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 in perpetuity, protected from physical threats and interpreted to the public.

Description: Devil's Millhopper Geological State Park has two historic structures, AL05656 and AL05657. One structure is the park entrance gate, constructed of limestone, and the other is a remnant of a trail to the bottom of the sink. All that remains of the trail are a few timbers. Both structures are from the c. 1935-1942 period and reputed to be constructed by the CCC. When a comprehensive survey for historic structures in Alachua County covered the area, however, no structures were identified (Quatrefoil 2000).

Condition Assessment: The sites are in good condition. The gate is limestone and is maintained in good repair by park staff. The trail remnants consist of a partially buried timber or two next to the current boardwalk. It is not threatened by erosion at this time. The boardwalk may be providing some protection.

Level of Significance: The park entrance gate and the old trail to the bottom of Devil's Millhopper were constructed by the CCC, c. 1935 - 1942. These structures are newly documented, and have not been evaluated by the State Historic Preservation Office.

General management measures: The Entrance Gate (AL05656) should be maintained in good repair, and the CCC Trail Remains (AL05657) should be protected from disturbance.

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 interpreted to the public.

Description: Devil's Millhopper has a very small collection which is on display at the visitor center. Several copies of old photographs that show the original boardwalk from the CCC era are on display. The rest of the collection consists of fossil bones found in the Millhopper Sink and a few projectile points. .

Condition Assessment: All of the items are in good condition. The entire collection occupies approximately one cubic foot of space. It is located in the visitor center, which is climate controlled and locked when not in use.

Level of Significance: While the collection is very small, all of the items relate to the history and natural history of the park. The photographs record a snapshot of the history of the park. Since all of the items were found inside the park, they are significant to interpretation of the park's resources.

General Management Measures: The park does not have a Scope of Collection

Statement or an inventory of collection items. The park staff needs to develop a Scope of Collections Statement that contains a statement of interpretive themes. This will serve to guide the park's interpretative program and determine which items should be included in a collection. Items should only be accepted for the collection if they fit within the goals of the Scope of Collection and the park's interpretive themes. The park also needs to inventory its collection items.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program section of this component. Table 4 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 4: Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture / Period	Description	Significance	Condition	Treatment
AL05656 Devil's Millhopper Park Entrance Gate	c. 1935-1942	Historic Structure	NE	G	RH
AL05657 CCC Trail Remains	c. 1935-1942	Historic Structure	NE	G	P

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

Resource Management Program

Management Goals, Objectives and Actions

Measurable objectives and actions have been identified for each of DRP's management goals for Devil's Millhopper Geological State Park. Please refer to the Implementation Schedule and Cost Estimates in the Implementation Component of this plan for a consolidated spreadsheet of the recommended actions, measures of progress, target year for completion and estimated costs to fulfill the management goals and objectives of this park.

While, DRP utilizes the ten-year management plan to serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for DRP staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer- term work plans are developed for natural community restoration and hydrological restoration. The work plans provide DRP with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

The work plans are reviewed and updated annually. Through this process, DRP's resource management strategies are systematically evaluated to determine their effectiveness. The process and the information collected is used to refine techniques, methodologies and strategies, and ensures that each park's prescribed management actions are monitored and reported as required by Sections 253.034 and 259.037, Florida Statutes.

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, and the annual work 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.

Natural Resource Management

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.

Objective: Conduct/obtain an assessment of the park’s hydrological restoration needs.

The most significant hydrological feature at the park is the giant Millhopper Sinkhole. Management of this important karst feature does not end at the park boundary. As described above, surface water that enters the park from Deer Run drains into the Floridan aquifer. Hence, urban communities surrounding the park directly influence the quality of groundwater in this region. That groundwater in turn has a significant influence on the Santa Fe River. Successful protection of the park’s wetland resources will require a concerted effort to focus on limiting nutrient loading within the park’s surface watershed.

The DRP will continue its tradition of close cooperation with state and federal agencies and independent researchers engaged in hydrological research and monitoring programs, both within the park and in the adjacent local neighborhoods. The Division will also encourage and facilitate additional research in those areas. The Division will rely upon agencies such as the SRWMD, USGS, and FDEP to keep it informed about any declines in surface water quality or any suspected contamination of groundwater in the region. Additional cooperative efforts may include facilitating the review and approval of research permits and providing researchers with assistance in the field, including orientation to park resources. Recommendations derived from these monitoring and research activities will be essential to the decision making process during management planning.

Park and district staffs will continue to monitor land use or zoning changes within the landscape bordering the park. Major ground disturbances in that area, or inadequate treatment of runoff from adjacent lands into the park, could cause serious degradation of water quality in the park. As appropriate, District 2 staff will provide comments to other agencies regarding proposed changes in land use or zoning on neighboring properties when such changes may negatively influence the hydrology of the park.

The park will continue to work with the Alachua County Environmental Protection Department to encourage documentation of any water quality abnormalities that might derive from outside the park, especially during large storm water events. Division staff will seek to increase the frequency of monitoring of Deer Run or any of the park’s sensitive karst features that receive significant stormwater inputs if there are indications of severe degradation to the water quality entering the park.

The Division will encourage appropriate hydrological experts to achieve a greater understanding of the groundwater flow regime associated with surface waters that drain into Millhopper Sink. In that respect, the Division should seek funding for dye trace studies to delineate groundwater connections between the Millhopper and the Santa Fe River.

Objective: Restore natural hydrological conditions and functions to approximately 2 acres of Depression Marsh and Dome Swamp natural communities.

Division staff will assess the hydrological impacts of ditching that connects wetlands in zone 3 in the northwest section of the park. If the assessment indicates that restoration is needed, staff will evaluate the best available means for restoring the local hydrology, including the possible installation of ditch blocks. Park and district staffs will also assess the hydrological impacts of a fire line through a depression marsh that reaches the west boundary of the park. Sometimes the marsh may be too wet to allow vehicular passage along the fire line without causing significant rutting and erosion. Such disturbances could hinder prescribed fire activities in the zone. The Division will determine if there is a need to install a low water crossing where the fire line passes through the depression marsh. Best management practices will be used for any hydrological restoration attempted.

Objective: Evaluate the impacts of soil erosion and sedimentation in the park and mitigate as needed.

Several areas along the steep slopes of the Millhopper Sink continue to be vulnerable to erosion. The Division will investigate best management options for mitigating the impacts of any erosion observed in these areas. The park will continue to inspect the slopes of Millhopper Sink regularly for the appearance of new erosion scours, and will promptly evaluate any recently scoured areas that are discovered and report their condition to District 2 staff.

Natural Communities Management

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

As discussed above, 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. Following are the natural community management objectives and actions recommended for the state park.

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.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the DOF.

Objective: Within 10 years, have 30 acres of the park maintained within the optimum fire return interval.

Table 5 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target for acres to be burned.

Table 5: Prescribed Fire Management		
Natural Community	Acres	Optimal Fire Return Interval (Years)
Upland Pine	14	2-3
Mesic Flatwoods	12.5	2-3
Sandhill	8	2-3
Dome Swamp	2	2-10
Depression Marsh	1	2-10
Annual Target Acreage*	12 - 20	
*Annual Target Acreage Range is based on the fire return interval assigned to each burn zone. Each burn zone may include multiple natural communities.		

The park is partitioned into management zones including those designated as burn zones (see Management Zones Table and Map). Prescribed fire is planned for each burn zone on the appropriate interval. The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

Prescribed burning at Devil's Millhopper Geological State Park is becoming increasingly complex, and continuation of a successful program is compromised by the increased development on adjacent lands. Protection of the residential and commercial properties that border the park on the east, south and west is extremely important. Because of concerns about smoke management and property protection, burns in the park that still meet ecological goals can only be conducted under restricted conditions. Fire weather parameters critical to a favorable

dispersion of smoke include a wind speed of moderate velocity and a wind direction with a southerly component. Humidity levels in the moderate range may also be required to achieve better control of fire behavior, especially along park boundaries. In some years, only a few days will be available in which weather conditions actually match those stipulated in burn prescriptions. With the limitations imposed by restrictive burn parameters, the completion of burn goals may at times be problematic. The DRP will seek opportunities to include other groups, including those involved with the statewide Interagency Cooperative Agreement, to increase burning opportunities within the park (Interagency Cooperative Agreement 2012).

To achieve a successful burn program, the park must ensure that fire lane preparation is completed on schedule and that burn equipment is always well maintained. Park staff must constantly be aware of fire weather conditions during burn season, and staff must seize the opportunity to burn when suitable burn windows appear. Staff shortages may be overcome by recruiting assistance from the District 2 office and from other parks. Additional steps may include promoting local volunteerism, educating the public, local media organizations and adjacent homeowners about the importance of prescribed burning, and alerting adjacent homeowners when the burn season begins.

Prescribed fire is an essential tool in maintaining the natural communities within the park, and staff should pursue the burn program with due diligence. The annual target acreage for the park is 12 to 20 acres per year. The mesic flatwoods community requires more frequent and intense fires in order to reverse the serious decline of the hooded pitcherplant, a species that may be threatened with extirpation in the park (Johnson 2001).

The upland pine community may benefit from a shorter fire rotation. Zone 1A should be burned on an annual rotation over the short term to determine if the more frequent fire will speed restoration of the upland pine species. Zone 1B is recommended to remain on a two to three year fire return interval.

Many species of wildlife are dependant on natural fires to maintain their habitats. At the Devil's Millhopper, species such as the gopher tortoise that persist on site will require periodic fire. Other species such as the eastern indigo snake, Florida pine snake, and Sherman's fox squirrel also depend upon periodic fires. Due to their larger home ranges and the dramatic loss of appropriate habitat outside the park, these species may no longer occur within the park.

In order to track fire management activities, DRP maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training/ experience, backlog, if burn objectives have been met, etc. The database is also used for annual burn planning which allows DRP to document fire management goals and objectives on an annual basis. Each quarter the database is updated and reports are produced that track progress towards meeting annual burn objectives.

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 communities' 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, and small-scale vegetation management.

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the mesic flatwoods community (see Desired Future Conditions Map).

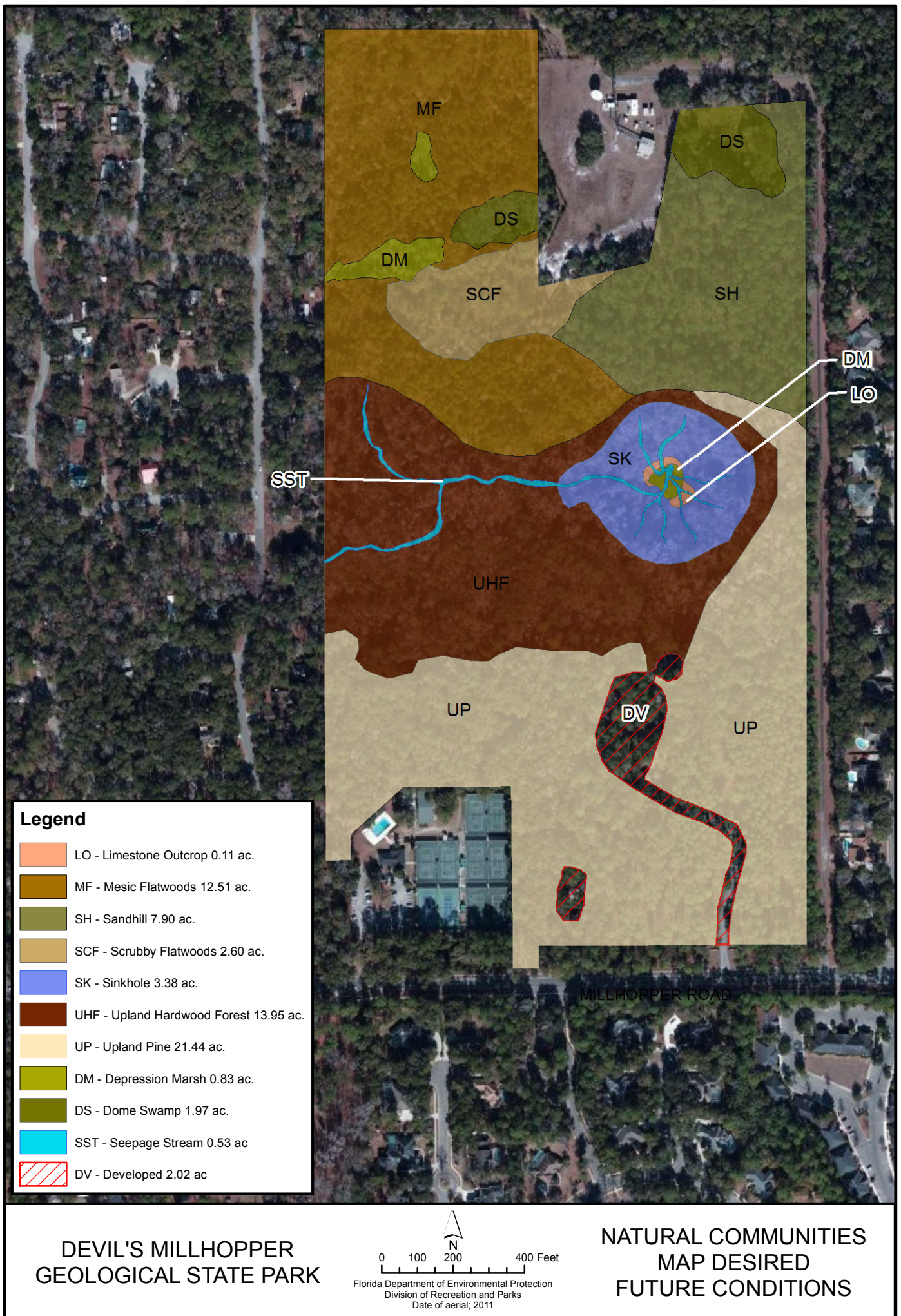
Objective: Conduct habitat / natural community restoration activities on 8 acres of Mesic Flatwoods natural community

Zone 3 in the northwest part of the park consists mainly of mesic flatwoods. The Division treated much of this area in 2006 to remove offsite hardwoods and subsequently planted it with wiregrass. The following actions are needed to continue the restoration process.

The park will burn the zone and then plant longleaf pines to begin restoration of the canopy. After the application of prescribed fire, staff will evaluate the area to determine the need for supplemental plantings of groundcover species. Follow up activities will include frequent prescribed burning, chemical treatment of offsite hardwood sprouts, and possibly the supplemental planting of groundcover species. This project is the highest resource management priority in the park.

Natural Communities 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 0.5 acres of Depression Marsh natural community.

Due to a lack of fire, pines are invading the depression marsh in zone 3. The perimeter of the depression marsh should be delineated and pines should be removed from the interior. Large pines in the transition zone between marsh and flatwoods should be left in place. Follow up with frequent prescribed fire will be necessary.

Objective: Conduct natural community/habitat improvement activities on 5 acres of Upland Pine natural community.

Management zones 1a and 1b contain upland pine and successional hardwood forest. Due to the lack of frequent fire, offsite hardwoods such as laurel oaks are encroaching on the upland pine community. To reverse that trend, staff will initiate chemical/mechanical treatment of offsite hardwood sprouts. Follow up actions will be frequent prescribed fire and retreatment of offsite hardwood sprouts as needed.

Imperiled Species Management

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

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 FFWCC'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, FFWCC, 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: Update baseline imperiled species occurrence inventory lists for plants and animals.

Plant surveys have been conducted by Division staff in the recent past, but should be updated. Surveys for imperiled animal species at Devil's Millhopper Geological State Park have focused primarily on vertebrates. Additional surveys for potential imperiled invertebrate species are needed to ensure that all imperiled species are documented. The Division will enlist the assistance of academic researchers and staff from other agencies during development of species occurrence inventory lists, especially where necessary for certain taxonomic groups.

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

The southern dusky salamander (*Desmognathus auriculatus*) appears to have been extirpated from the park for unknown reasons sometime in the early 1970s. Although extensive surveys in 1996 and 1997 failed to locate any southern dusky salamanders, district staff will conduct additional surveys of the Millhopper periodically to document occurrence of the species if it happens to reappear. Survey methodology will include time-constraint sampling similar to that described by Dodd (1998). Assistance will be solicited from other agencies and volunteers as necessary.

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

Additional surveys of the hooded pitcherplant are needed to verify locations of the remaining individuals using sub-meter GPS technology. Surveys will be more productive if conducted several weeks or months after a prescribed fire.

Exotic Species Management

Goal: Remove exotic and invasive plants and animals from the park 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: Annually treat 6 acres of exotic plant species in the park.

Although most of the current exotic infestations occur along the western and northern boundaries, the park staff needs to scout the entire unit for exotics every two years. Adopting this schedule will increase the likelihood of finding and treating new exotics in the park before they become serious problems.

Japanese climbing fern in the park needs to be treated every year. This should occur before spore production begins, if possible. Fire lines should be scouted regularly to detect new occurrences of Japanese climbing fern. If any are found, they should be treated thoroughly before the lines are disked to reduce the chances of spreading the exotics to other parts of the park.

Areas containing coral ardisia, mimosa, and Chinese tallowtree should be treated once every three years at a minimum, and preferably more frequently. That frequency of treatment will interrupt the seed production cycle of those species. Park staff should become familiar with *Liriope* and *Ophiopogon* species so that they can survey for, record, and treat any occurrences of these species in the park. Research on effective treatment methods for arrow bamboo as well as for other running bamboo species is needed.

Objective: Develop and implement measures to prevent the accidental introduction or further spread of invasive exotic plants in the park.

Exotic plants often invade an area accidentally through preventable methods of entry. To limit accidental introduction and movement of exotic species, park staff will need to develop and practice preventative measures, including a protocol for equipment inspection and decontamination. Activities such as mowing, landscaping debris disposal, logging, fire line preparation and road building can introduce or redistribute exotics through contaminated equipment. Fill dirt, lime rock, potted horticultural plants and mulch are all potentially contaminated by exotics even if they are not readily visible at the time of entry into the park. Some new infestations of exotics may be preventable by ensuring that contractors clean their equipment before entering the park. The further spread of exotics already established in the park may be avoided by making sure that staff and contractors do not move equipment, landscaping debris or soil from a contaminated area to an exotic free area within the park. Any equipment that is moved from a contaminated area to an exotic free area should be cleaned prior to moving it.

Of particular concern at Devil's Millhopper is Japanese climbing fern and possibly golden bamboo. These species can spread rapidly when spores or rhizomes are carried into non-infested areas. When fire lines are prepared or an area is mowed in the park, equipment should be cleaned before it leaves any area infested with these species.

Objective: Implement control measures on 4 nuisance and exotic animal species in the park.

Feral hogs, armadillos, and feral cats and dogs will be removed if they are encountered in the park. Their removal will help protect sensitive habitats and species.

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.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, DRP works with the local mosquito control district to achieve consensus. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans may be set aside temporarily under declared threats to public or animal health, or during a Governor's Emergency Proclamation. Devil's Millhopper does not have a specific Arthropod Control Plan with the local control district.

Additional Considerations

The least developed border of Devil's Millhopper Geological State Park is the northern boundary that adjoins a city-managed tract of land (San Felasco Park) and a parcel containing a transmitting tower operated by the University of Florida. Coordination with the city to insure that designated uses of the city park are compatible with the environmental and recreational resources of Devil's Millhopper is essential. Also important is continued cooperation with managers of the tower to ensure that their management goals and procedures are compatible with the park.

Devil's Millhopper Geological State Park is becoming increasingly isolated from the surrounding natural landscape by development. The only landscape connection between the state/city parks and a large, undeveloped natural area (San Felasco Hammock State Preserve) is the narrow floodplain of Blues Creek. This "wildlife corridor" nestled among subdivisions is only 30 feet wide in some areas. Its suitability as a corridor may be suspect for some species of animals. The isolation of Devil's Millhopper poses numerous challenges for management. The threat of exotic plant and animal invasions is likely to increase. Pest species such as feral cats and dogs may become more common. Maintaining viable populations of imperiled animal species, and of other animals not adapted to an urban setting, may be difficult at best. For example, the southern dusky salamander, once common at Devil's Millhopper, has not been recorded since before 1976 despite extensive surveys (Dodd 1998).

Scenic vistas throughout the park, along the boardwalk and park drive, should be maintained through sensitive management of vegetation. Prescribed burning to maintain vistas may be utilized where appropriate.

Cultural Resource Management

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 Devil's Millhopper Geological 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 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, 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: Assess and evaluate 2 of 2 recorded cultural resources in the park.

AL05656 and AL05657 will be assessed and evaluated over the course of this plan. AL05656 will be maintained in good condition.

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

A Phase I archeological survey will be conducted that utilizes the park's archaeological sensitivity model.

Since the Civilian Conservation Corps apparently constructed the entrance gate and steps to the bottom of the sinkhole in the park in the 1930s, additional information about their time in the area will be compiled if possible.

The park will develop a Scope of Collections Statement to serve as a guide for any future collection items.

Park staff will attempt to discover the source of cultural artifacts that visitors occasionally find at the park. This information will be recorded with the FMSF.

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

The very few collection items that belong to the park are in good condition. At this time all other cultural resources are in good condition. For Site AL05657 (CCC Trail Remains), good condition is equivalent to stable condition, which can be achieved by regularly monitoring remnants (i.e. crossties) and protecting them from disturbance.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is located in the Implementation Component of this management plan.

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. DRP considered recommendations of the land management review team and updated this plan accordingly.

Devil's Millhopper Geologic State Park has not been subject to a land management review because its size is less than 160 acres.

LAND USE COMPONENT

Introduction

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 natural Florida and its cultural resources, 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. Any new facilities needed to support the proposed activities are expressed in general terms.

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

Devil's Millhopper Geological State Park is located within Alachua County, about six miles northwest of downtown Gainesville in the north central part of the state. The population of Alachua County has grown 13.4 percent since 2000, and is projected to grow an additional 5 percent by 2025 (BEBR, University of Florida, 2011). As of 2010, 18 percent of residents in the county were in the 0-17 age group, 38 percent in the 18-34 age group, 22 percent in the 35-54 age group, and 11 percent in the 55-64 age group, and 11 percent 65 and over. This roughly reflects the state average for these groupings except for the 18-34 group which is higher than the state average due to the large University of Florida student population (BEBR, University of Florida, 2011). More than

750,000 people reside within 50 miles of the park, which includes the cities of Gainesville, Ocala, Alachua, Starke, Chiefland, Lake City, Palatka, and Green Cove Springs (BEBR, University of Florida, 2011).

Within the vicinity of Devil's Millhopper Geological State Park, there are many opportunities for resource-based recreation including hiking, biking, horseback riding, picnicking, camping, fishing, and wildlife viewing. San Felasco Hammock Preserve State Park is less than two miles northwest of the unit. Also in the vicinity are Paynes Prairie Preserve State Park and Dudley Farm Historic State Park. A number of nearby public lands that provide outdoor recreation are owned and managed by the City of Gainesville including Morningside Nature Center, Gum Root Swamp and San Felasco Park. Alachua County recreation areas include Sweetwater Preserve, Barr Hammock Preserve, and Phifer Flatwoods. Newnan's Lake Conservation Area is managed by the St. John's River Water Management District. The park is also part of the "Great Florida Birding Trail".

Existing Use of Adjacent Lands

Single-family residential development nearly surrounds the small park. A private tennis club is located at the park's southwest corner. The northern park boundary adjoins a University of Florida-owned property with a radio transmitting tower and the City of Gainesville's San Felasco Park. The park is bounded on the south by NW 53rd Avenue (Millhopper Road). A commercial zone, beginning at the southeast corner of the park, extends approximately .25 miles to the busy intersection of NW 53rd Avenue and Northwest 43rd Street. This area of Gainesville has grown rapidly over the last 10 years increasing the visibility of the park and complicating natural resource management particularly regarding prescribed fire and smoke management.

Planned Use of Adjacent Lands

The park falls just within the Gainesville City limits and is designated Conservation on the Future Land Use Map (City of Gainesville Comprehensive Plan, 2013). The adjacent Future Land Use designations to the south and east are Single Family Residential (up to 8 units/acre) and Office. To the north is Conservation. The land adjacent to the western boundary of the park is under Alachua County jurisdiction and the land use, according to the Alachua County Future Land Use Map is Low-Density Residential, allowing eight units/acre (Alachua County Comprehensive Plan, 2012). Surrounding zoning designations include Conservation, Agriculture, Single Family (eight units/acre), Office, and Planned Development (City of Gainesville Land Development Code, 2013).

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.

Recreation 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 majority of the park's 66 acres is relatively level terrain bisected by the steep slopes of Deer Run and Millhopper Sink. The diversity of upland natural communities is conducive to hiking, wildlife observation, and nature study. The small size of the park is limiting to the types of trails that can be provided with short nature trails being the most appropriate.

Water Area

The water area in the park is very small. It consists of seepage streams flowing from the residential area on the park's west side to Millhopper Sink. The steep embankments are very sensitive to disturbance thus limiting direct recreational access to these water bodies. Wildlife viewing and nature study are possible at stream crossings. These are also good locations to interpret the direct connection between surface waters and the Floridan aquifer and the impacts to groundwater quality from urban stormwater runoff.

Natural Scenery

The most significant natural scenery in the park is associated with Millhopper Sink. Dramatic views of fern-encrusted limestone outcroppings can be experienced downward from the rim or upward from a viewing platform at the bottom of the sinkhole. These rock formations provide an ideal setting to interpret Florida's karst geology.

Significant Habitat

The seepage streams and the moist limestone ledges and crevices of the sinkhole provide microclimatic conditions that support a variety of plants, some of which are similar to those of cool, moist ravine systems in the Piedmont and Appalachians. The park contains ten natural communities, a relatively large number for such a small area. This diverse assemblage provides habitat for a great variety of plants and animals and significant wildlife viewing opportunities for park visitors. The park provides an important wildlife refuge in a densely populated suburban area.

Natural Features

Devil's Millhopper Geological State Park features the most spectacular example of a "dry" sinkhole in the entire state. The huge sinkhole, for which the park is named, has been designated a National Natural Landmark. The Devil's Millhopper is impressive not only from a scenic standpoint, but from a dimensional one as well. It is 500 feet across and has a depth of 120 feet. The steep slopes of the sinkhole were damaged in the past by uncontrolled access. Visitors must now descend by way of a long, wooden set of stairs to the bottom. Small seepage streams tumble down the steep slopes of the sink, disappearing through crevices at the bottom.

Archaeological and Historical Features

The primary cultural resources known to exist within the park are a few "catfaced" pines, providing evidence of the previous turpentine industry. The Civilian Conservation Corps reportedly built a stairway into the sinkhole during the 1930s and a few scattered timbers remain. These remnants provide tangible evidence of the park's history that can be incorporated into interpretive programming.

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.

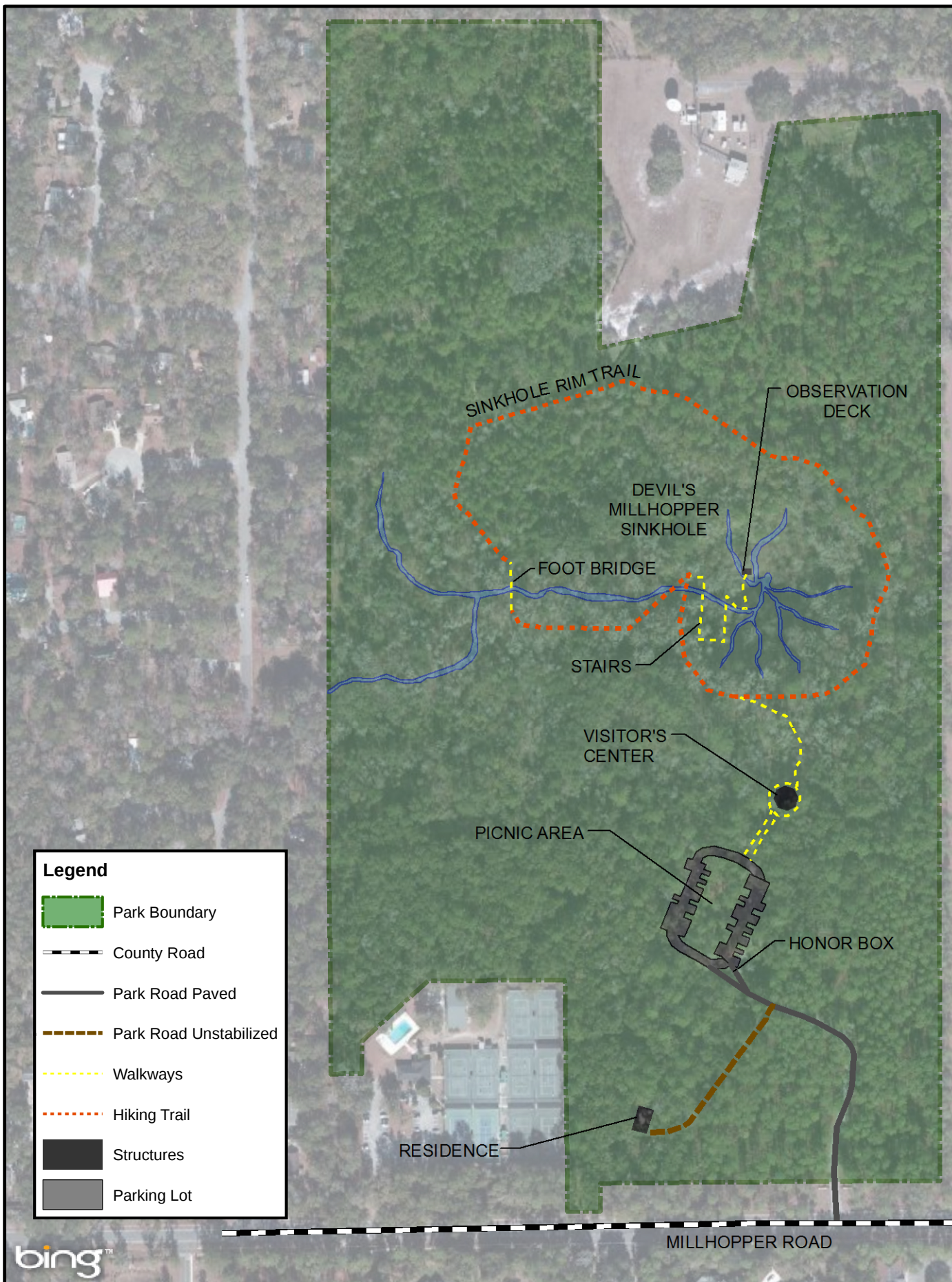
Past Uses

The impressive sinkhole has been a tourist destination since at least the early 1800s. In the past, excessive and improper descent into the sinkhole and ravine caused plant destruction in addition to soil compaction and erosion. When DRP assumed management of the site in 1974, the sinkhole was badly eroded and the sink clogged with litter and garbage. Some of the slopes were stripped of vegetation. Construction of a wooden walkway descending into the sinkhole now allows the public to experience the site without contributing to erosion on the steep slopes.

Prior to acquisition by the state, portions of the site outside the sinkhole were used for timber production, turpentine production, and possibly agricultural uses.

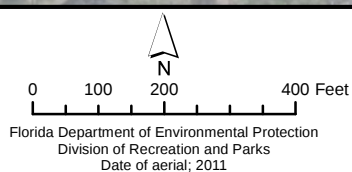
Future Land Use and Zoning

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.



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DEVIL'S MILLHOPPER GEOLOGICAL STATE PARK



BASE MAP

The Future Land Use and zoning category for the park is Conservation. This category identifies areas environmentally unsuited to urban development, permanent buffers between land uses, areas used for passive recreation and nature parks. Privately held properties within this category shall be allowed to develop at single-family densities of 1 unit per 5 acres. Land development regulations shall determine the appropriate scale of activities, structures and infrastructure that will be allowed. Typical state park development is permitted in these categories with review by the City.

Current Recreational Use and Visitor Programs

Current public use of this relatively small site focuses on viewing the sinkhole and the associated visitor center. An interpretive trail and wooden walkway into the sinkhole provide an opportunity to view one of the state's most impressive geological features from many angles. Interpretive displays featuring the sinkhole and its formation are housed in the easily accessible visitor center. Ranger guided tours of the site are available at regularly scheduled times and through appointment for groups.

A half-mile nature trail circumnavigates the sinkhole, crossing the seepage stream and passing through five natural communities. Visitors use it for walking and jogging. Limited picnicking opportunities are also available.

Devil's Millhopper Geological State Park recorded 53,843 visitors in FY 2012/2013. By DRP estimates, the FY 2012/2013 visitors contributed \$2,448,937 million in direct economic impact, the equivalent of adding 39 jobs to the local economy (FDEP 2013).

Other Uses

Use of the geologic site for conducting classroom studies, workshops and research by the University of Florida and other educational institutions has been extensive. Sediments exposed on the slopes have provided researchers a cut-away record of conditions that existed in this part of Florida over the past twenty million years.

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 Devil's Millhopper Geological State Park the sandhill, sinkhole, limestone outcrop, upland hardwood forest, upland pine, depression marsh, dome swamp, and seepage stream are designated as protected zones as delineated on the Conceptual Land Use Plan.

Existing Facilities

Recreation Facilities

The visitor center contains interpretive displays and an audiovisual program, featuring the formation of the sinkhole. A short nature trail originating at the visitor center provides opportunities to experience the site's geologic features and natural communities. The wooden walkway of about 726 lineal feet was constructed to provide access into the sinkhole, while protecting the geologic feature. An overlook and various landings along the walkway provide a number of scenic vistas. Interpretive signs along the trail and the wooden walkway describe the natural features and the erosion damage that can occur when visitors leave the designated path. Fencing around certain sections of the sinkhole prohibits unauthorized pedestrian access (see Base Map).

Support Facilities

The park has paved parking for 31 vehicles and the visitor center contains public restrooms. A ranger residence on site is the only other support facility. The geologic site is operated as a satellite of nearby San Felasco Hammock Preserve State Park, which has additional support facilities. The following is a listing of existing recreation and support facilities.

Visitor Center / Interpretive Area

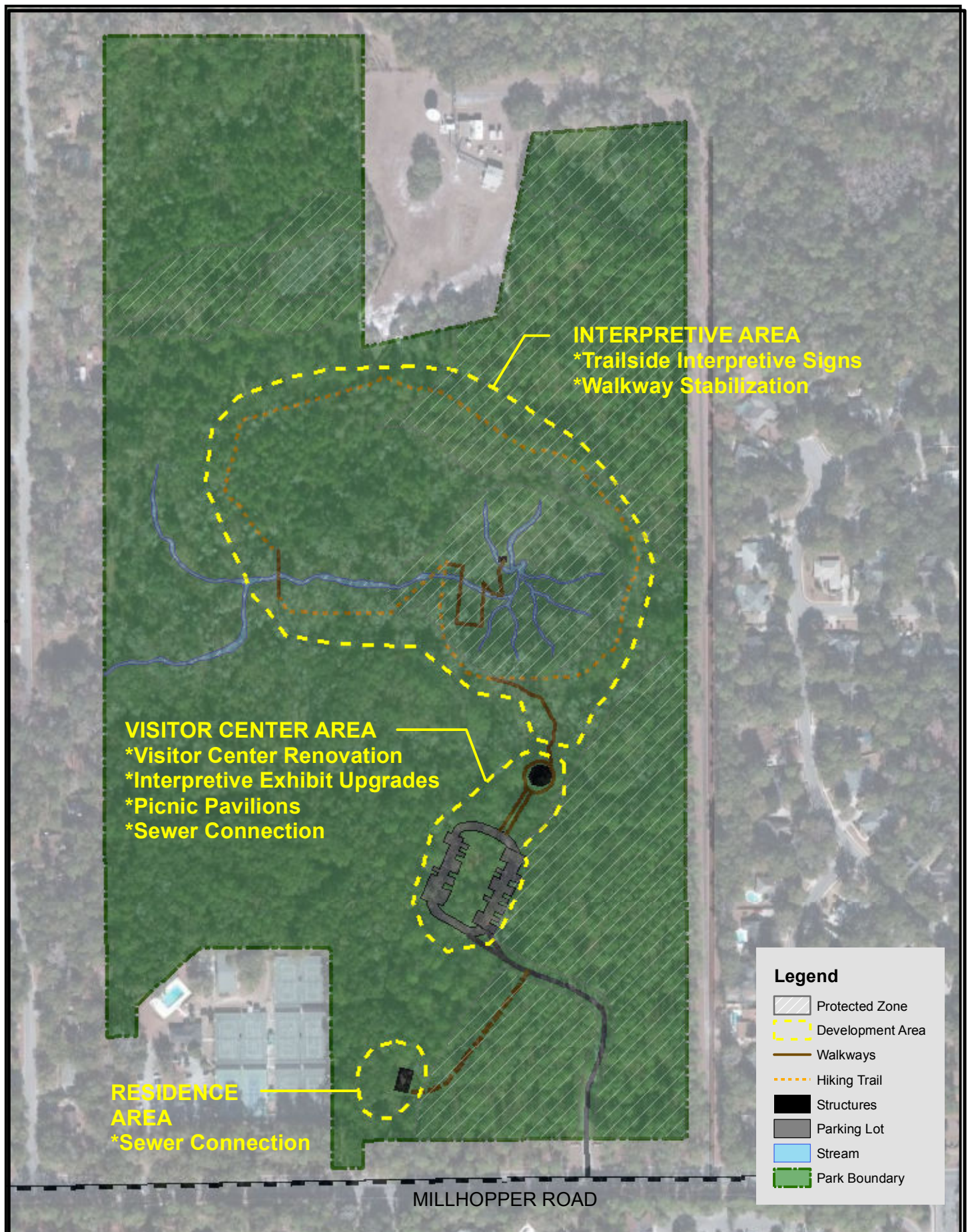
Visitor Center
Overlook/Wooden Walkway
Nature Trail

Support Facilities

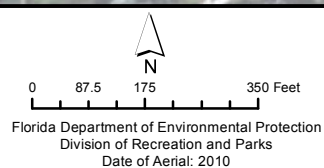
Parking
Restroom
Staff Residence

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



DEVIL'S MILLHOPPER
 GEOLOGICAL STATE PARK



CONCEPTUAL
 LAND USE PLAN

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.

Potential Uses

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/or improved activities and programs are also recommended and discussed below.

Objective: Maintain the park's current recreational carrying capacity of 400 users per day.

The park will continue to provide opportunities for resource interpretation, nature observation, hiking, and picnicking. Interpretive exhibits and programs will continue to be offered at the visitor center.

Objective: Expand the park's recreational carrying capacity by 80 users per day.

Devil's Millhopper Geological State Park has experienced a 20 percent increase in visitation over the last 10 years as a result of the significant amount of growth that has occurred in Gainesville's northwest sector. The focus of the majority of visitors is on learning about the formation of the sinkhole and the natural communities surrounding it. To accommodate the increase in visitation a renovation of the visitor

center is recommended. Trailside interpretive signage should also be upgraded and improved to enhance the experience of park visitors. The addition of picnicking opportunities would also improve the visitor experience. The possibility of providing a volunteer campsite should be considered as a way to promote volunteer opportunities in the park.

Objective: Continue to provide the current repertoire of 2 interpretive, educational and recreational programs on a regular basis.

Two interpretive programs are currently offered to park visitors. Interpretive exhibits and displays at the visitor center set the stage for the long walk to the bottom of the Devil's Millhopper by explaining the geology and natural history of the sinkhole.

Regularly scheduled ranger-led tours provide visitors with additional information and stories about the sinkhole and the natural and cultural history of the area.

Objective: Develop 1 new interpretive, educational and recreational program.

The interpretation in the visitor center should be continued along the trail with upgraded signage that would provide visitors with a self-guided experience. Interpretive themes include sinkhole formation and geology as well as the park's natural and cultural history including the origin of the Devil's Millhopper name, the earliest known visitation to the sinkhole, and the Civil Conservation Corp and Works Progress Administration component.

Proposed Facilities

Capital Facilities and Infrastructure

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

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 and renovated facilities needed to implement the conceptual land use plan for Devil's Millhopper Geological 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 3 existing facilities and 800 feet of trail.

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 of other recommended improvements and repairs are organized by use area within the park.

Visitor Center Area: The visitor experience could be significantly enhanced by the total renovation of the building. Objectives include improving the functionality, organization and circulation of the interpretive area and office; enlarging the restrooms and connecting them to the municipal sewage system; and providing state of the art interpretive exhibits and displays. The appealing exterior character of building is fitting to the site and should be preserved. Up to 2 small picnic pavilions should be added to the picnic area to provide visitors with shade and rain protection.

Interpretive Area: The walkway from the visitor center to the sinkhole overlook/stairway entrance should also be improved for ADA accessibility by stabilizing with a pervious material, if feasible. Trailside interpretive signs should be added to provide a self-guided interpretive program. Measures should be taken, on the north side of the property, to screen the view of the University of Florida radio transmitting tower from the hiking trail. This could be accomplished through vegetation management to provide a more effective visual buffer or by slightly realigning the trail to the south. If trail realignment is implemented, care should be taken to keep visitors away from the rim of the sinkhole.

Residence Area: It is recommended that the staff residence be connected to the municipal sewage system when feasible to do so. If a volunteer campsite is provided, the residence area should be considered as a possible location.

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 7) 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:

Visitor Center Area

Visitor center renovation

Visitor center interpretive exhibit upgrades

Connect visitor center to municipal sewage

Small picnic pavilions (2)

Interpretive Area

Improve/stabilize walkway to sinkhole (800 ft.)

Trailside interpretive signs (10)

Residence Area

Connect residence to municipal sewage

Volunteer campsite

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 6. Recreational Carrying Capacity						
Activity / Facility	Existing Capacity *		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Trails	40	160			40	160
Picnicking	20	40	20	40	40	80
Visitor Center	50	200	10	40	60	240
TOTAL	110	400	30	80	140	480
*Existing capacity revised from approved plan according to DRP guidelines.						

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, and as land use changes on adjacent property, modification of the park's optimum boundary may be necessary.

At this time, no additional lands have been identified for management as part of the park. No lands are considered surplus to the needs of the park.

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 Devil's Millhopper Geological 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.

Park Administration and Operations

- Since 2003 approximately 600 volunteer hours have been contributed to the park to assist with park maintenance, visitor services, administration, interpretation, protection and resource management activities.

Resource Management

Natural Resources

- Upland restoration within 16.8 acres (herbicide off-site hardwoods) in 2006 in zones 2 and 3 (sandhill, scrubby and mesic flatwoods).
- Depression marsh restoration in 2006 in zone 3 (off-site pine removal).
- Groundcover wiregrass planting (4.6 acres) in zone 3 in 2007.
- Imperiled species survey for Southern dusky salamander in 2012.
- Continued exotic plant removal program.
- Continued prescribed burn program. Since 2003 a total of 36 acres, with 9 acres burned in 2004 and 27 acres burned in 2009.

Cultural Resources

- Continued efforts to maintain, protect and interpret park's 2 cultural sites- park stone entrance and the site of original boardwalk system originally constructed by the CCC.
- The park underwent a cultural resource Predictive Model Assessment in 2011. The outcome of the predictive model assessment will be used to further understand the placement of protected zones in the park.

Recreation and Visitor Services

- Continued to provide weekly interpretive walks, and guided walks for groups by reservation.
- Volunteers along with park staff created a tree identification system using signage, written guide and a non-obtrusive marking system.

Park Facilities

- Visitor Center roof structure was repaired and metal roofing was installed.
- Ranger residence roofing was repaired and metal roofing was installed.
- Decking on the bridge crossing Deer Run creek was replaced.
- Additional rail fencing was installed along the perimeter of the nature trail to further protect the slopes of the sinkhole.
- New boundary fire line and fencing in SE corner in zone 1.

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 7) 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 7 may need to be adjusted during the ten-year management planning cycle.

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Goal I: Provide administrative support for all park functions.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Continue day-to-day administrative support at current levels.	Administrative support ongoing	C	\$60,000
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	C	\$12,000
Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain restored condition.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Conduct/obtain an assessment of the park's hydrological needs.	Assessment conducted	LT	\$64,000
Action 1	Continue to cooperate with other agencies and researchers regarding hydrological research and monitoring	Cooperation ongoing	C	\$3,500
Action 2	Continue to monitor, review and comment on proposed land use/zoning changes within lands bordering the park	Assessment ongoing	C	\$13,000
Action 3	Seek funding for dye trace study to determine groundwater connection to Santa Fe River	Funding obtained	ST	\$1,000
Action 4	Conduct dye trace to determine connection between park and Santa Fe River	Study conducted	UFN	\$30,000
Action 5	Continue to work with Alachua County EPD to monitor the water quality of the Deer Run system especially during major storm events	Cooperation ongoing	C	\$15,000
Action 6	Implement appropriate stormwater control measures where Deer Run enters the park, using best management practices, to allow for increased filtration during large storm events	Control measures implemented	UFN	\$1,500
Objective B	Restore natural hydrological conditions and functions to approximately 2 acres of Depression Marsh and Dome Swamp natural communities.	Impacts determined, # of acres restored	UFN	\$28,000
Action 1	Assess the need for installing ditch blocks in zone 3	Assessment conducted	ST	\$16,400
Action 2	Assess the need for installing a low water crossing where the fireline crosses depression marsh in zone 3	Assessment conducted	ST	\$1,400
Action 2	Implement installation of a low water crossing (LWC) where the fireline crosses depression marsh in zone 3 using best management practices	BMP's implemented	UFN	\$10,000
Objective C	Evaluate and mitigate the impacts of soil erosion in the park.	Monitoring ongoing	C	\$5,000
Action 1	Assess the impacts of soil erosion on the steep slopes of Millhopper sink	Assessment conducted	ST	\$2,200

* 2014 Dollars
ST = actions within 2 years
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UFN = currently unfunded need

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Action 2	Implement erosion control measures, using best management practices, for impacts of soil erosion on the steep slopes of Millhopper sink	BMP's implemented	UFN	\$2,400
Goal III: Restore and maintain the natural communities/habitats of the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Within 10 years, have 30 acres of the park maintained within optimal fire return interval.	# Acres within fire return interval target	LT	\$26,000
Action 1	Develop/update annual burn plan.	Plan updated	C	\$16,000
Action 2	Manage fire dependent communities for ecosystem function, structure and processes by burning between 12 - 20 acres annually, as identified by the annual burn plan.	Average # acres burned annually	C	\$10,000
Objective B	Conduct habitat/natural community restoration activities on 8 acres of Mesic Flatwoods communities.	# of acres restored	LT	\$21,000
Action 1	Implement prescribed fire in fire supressed zone 3 by buring the zone and subsequently planting longleaf pines	Burning and planting completed	ST	\$2,600
Action 2	Assess and evaluate the need for additional groundcover planting or off site hardwood treatment after fire	Evaluation completed	LT	\$18,000
Objective C	Conduct natural community/habitat improvement activities on 0.5 acres of Depression Marsh community.	# of acres improved	LT	\$17,000
Action 1	Assess fire supressed zone 3 by delineating the marsh perimeter, removing all pines from marsh interior and implementing prescribed fire in this zone	Pine removal and burning completed	ST	\$800
Action 2	Assess and evaluate the need for additional off site pine and hardwood treatment after fire	Evaluation completed	LT	\$15,700
Objective D	Conduct natural community/habitat improvement activities on 5 acres of Upland Pine community.	# acres improved	LT	\$16,000
Action 1	Increase burn frequency of prescribed burns in zone 1 which has been previously fire supressed	Burn frequency increased in fire supressed zone	ST	\$600
Action 2	Assess and evaluate the need for additional off site hardwood treatment after fire	Evaluation completed	UFN	\$15,000
Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Update baseline imperiled species occurrence inventory lists for plants and animals, as needed.	List updated	C	\$2,000

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Objective B	Monitor and document 3 selected imperiled animal species in the park.	# Species monitored	C	\$4,000
Action 1	Develop monitoring protocol for the southern dusky salamander	Protocols developed	ST	\$200
Action 2	Implement monitoring protocol for the southern dusky salamander	Protocols implemented	LT	\$4,000
Objective C	Monitor and document 3 selected imperiled plant species in the park.	# Species monitored	C	\$4,000
Action 1	Develop monitoring protocol for the hooded pitcher plant	Protocols developed	ST	\$200
Action 2	Implement monitoring protocol for the hooded pitcher plant	Protocols implemented	LT	\$4,000
Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Annually treat 6 acres of exotic plant species in the park.	# Acres treated	C	\$27,000
Action 1	Annually develop/update exotic plant management work plan	Plan developed and updated	C	\$18,000
Action 2	Implement annual work plan by treating 6 acres of exotic plants annually and continuing maintenance and follow-up treatments as needed	Plan implemented	C	\$7,800
Action 1	Develop and implement measures to prevent accidental introduction or spread of invasive exotic plants in the park.	Measures developed	ST	\$1,150
Objective B	Implement control measures on 4 exotic and nuisance animal species in the park.	# Species for which control measures implemented	C	\$12,000
Action 1	Establish and implement monitoring procedures for exotic and nuisance animals, particularly feral hogs, and remove them from the park as needed	Monitoring and removal procedures implemented	C	\$12,000
Goal VI: Protect, preserve and maintain the cultural resources of the park.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Assess and evaluate 2 of 2 recorded cultural resources in the park.	Documentation complete	C	\$33,000
Action 1	Complete 2 Historic Structure Reports (HSR) for historic buildings and cultural landscape.	Reports completed	UFN	\$32,349
Action 2	Prioritize stablization, restoration and rehabilitation projects	Prioritization completed	LT	\$800

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Objective B	Compile reliable documentation for all recorded historic and archaeological sites.	Documentation complete	LT	\$51,000
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File	Assessment completed	ST	\$600
Action 2	Conduct Level 1 archaeological survey priority areas based on results of the predictive model completed in 2012	Survey completed	UFN	\$50,724
Action 3	Develop a Scope of Collections Statement for the park	Document completed	ST	\$600
Objective C	Bring 2 of 2 recorded cultural resources into good condition.	# Sites in good condition	LT	\$49,000
Action 1	Develop and implement a regular monitoring plan for protective and preventative maintenance of the Park's cultural resources	Monitoring plan developed and implemented	C	\$1,135
Action 2	Create and implement a cyclical maintenance program for the park's cultural resources	Program implemented	UFN	\$47,800
Goal VII: Provide public access and recreational opportunities in the park.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain the park's current recreational carrying capacity of 400 users per day.	# Recreation/visitor opportunities per day	C	\$634,000
Objective B	Expand the park's recreational carrying capacity by 80 users per day.	# Recreation/visitor opportunities per day	UFN	\$127,000
Objective C	Continue to provide the current repertoire of 2 interpretive, educational and recreational programs on a regular basis.	# Interpretive/education programs	C	\$15,000
Objective D	Develop 1 new interpretive, educational and recreational programs.	# Interpretive/education programs	UFN	\$7,000
Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.				
		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain all public and support facilities in the park.	Facilities maintained	C	\$290,000
Objective B	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.	Plan implemented	LT	\$100,000
Objective C	Improve and/or repair 3 existing facilities and 800 feet of trail as identified in the Land Use Component.	# Facilities/Feet of Trail	UFN	\$820,000
Objective D	Expand maintenance activities as existing facilities are improved and new facilities are developed.	Facilities maintained	UFN	\$20,000

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NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

Summary of Estimated Costs		
Management Categories		Total Estimated Manpower and Expense Cost* (10-years)
Resource Management		\$359,000
Administration and Support		\$72,000
Capital Improvements		\$920,000
Recreation Visitor Services		\$1,093,000
Law Enforcement Activities ¹		
	1Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.	

* 2014 Dollars

ST = actions within 2 years

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Addendum 1—Acquisition History

Devil's Millhopper Geological State Park Acquisition History

Purpose of Acquisition:

DRP manages Devil's Millhopper Geological State Park for the purpose of preserving, developing, improving, operating, maintaining and otherwise managing said lands for outdoor recreational, park, conservation and related purposes.

Sequence of Acquisition:

On December 4, 1972, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) obtained title to a 36.09-acre property constituting the initial area of Devil's Millhopper Geological State Park. The State Board of Education transferred the property to the Board of Trustees for the use and benefit of the University of Florida for scientific and other educational purposes. Since the initial acquisition, the Trustee purchased two new parcels and added them to Devil's Millhopper Geological State Park. One of the parcels was purchased from Devil's Run Limited under the Land Acquisition Trust Fund (LATF) program. The other piece was purchased under Florida Forever Additions and Inholdings program. Presently the park comprises 66.71 acres.

Title Interest:

The Trustees holds fee simple title to Devil's Millhopper Geological State Park.

Lease Agreement:

On January 16, 1974, Trustees leased Devil's Millhopper Geological State Park to the State of Florida Department of Natural Resources, predecessor in interest to the State of Florida Department of Environmental Protection, for the use and benefit of the Division of Recreation and Parks (DRP) under a 99 (ninety-nine) year term lease, Lease No. 2697. This lease will expire January 15, 2073.

Special Conditions on Use:

Devil's Millhopper Geological State Park is designated as a single-use property to provide resource-based public outdoor recreation and other park related uses. Uses such as water resource development projects, water supply projects, storm-water management projects, and linear facilities and sustainable agriculture and forestry are not consistent with the purpose for which DRP manages Devil's Millhopper Geological State Park.

Outstanding Reservations:

Following is a listing of outstanding rights that apply to Devil's Millhopper Geological State Park.

Type of Instrument:	Special Warranty Deed
Grantor:	University of Florida Foundation, Inc.

Devil's Millhopper Geological State Park Acquisition History

Grantee: Trustees
Beginning Date: May 30, 2002
Ending date: Perpetuity
Outstanding Rights: In the Schedule "B" of this warranty deed, there was a reference to an easement that allows the City of Gainesville, a municipal corporation, to construct, install, operate, and maintain municipal public utility facilities as recorded in ORB 2453, page 342, Alachua County, Florida.

Type of Instrument: Special Warranty Deed
Grantor: University of Florida Foundation, Inc.
Grantee: Trustees
Beginning Date: May 30, 2002
Ending date: Perpetuity
Outstanding Rights: In the schedule "B" of this warranty deed, there was a reference to a drainage easement recorded in ORB 1618, page 2576, Alachua County, Florida.

Addendum 2—Advisory Group Members and Report

**Devil's Millhopper Geological State Park
Advisory Group Members and Report**

Local Government Officials

The Honorable Ed Braddy, Mayor
City of Gainesville
200 E. University Avenue
Gainesville, Florida 32601

The Honorable Lee Pinkoson, Chair
Alachua County Board of County
Commissioners
12 SE 1st Street
Gainesville, Florida 32601

Agency Representatives

Randall E. Brown, Park Manager
Devil's Millhopper Geological
State Park
12720 NW 109 Lane
Alachua, Florida 32615

Mr. Ken Hornby
Alachua Soil and Water
Conservation District
3924 NW 29th Lane
Gainesville, Florida 32606

Doug Longshore
Florida Forest Service
7620 133rd Road
Live Oak, Florida 32060

Matt Pollock
Florida Fish and Wildlife
Conservation Commission
3377 East U.S. Highway 90
Lake City, Florida 32055

Mike Wisenbaker, Archaeology
Supervisor
Bureau of Archaeological Research
Florida Division of Historical
Resources
1001 DeSoto Park Drive
Tallahassee, Florida 32301

Tourist Development Council

John Pricher, Director
Alachua County Visitors and
Convention Bureau
30 East University Avenue
Gainesville, Florida 32601

Environmental Representatives

Robert Simons
Alachua Audubon Society
1122 SW 11th Avenue
Gainesville, Florida 32601

Erick Smith, President
Paynes Prairie Chapter
Florida Native Plant Society
P.O. Box 1004
Archer, Florida 32618

User Groups

Judy Trotta, Chapter Council
Representative
Florida Trail Association,
Florida Crackers Chapter
8123 SW 47th Road
Gainesville, Florida 32608

Citizen Support Organization

Aaron Eagan
Friends of San Felasco Hammock
Preserve State Park
6130 NW 28th Terrace
Gainesville, Florida 32653

Adjacent Landowner

Mark Spiller
Deer Run
5519 NW 52nd Terrace
Gainesville, Florida 32653

Devil's Millhopper Geological State Park Advisory Group Members and Report

The Advisory Group meeting for Devil's Millhopper Geological State Park was held at the Florida Park Service District 2 Office in Gainesville, Florida on May 1, 2014. Linda Demetropoulos represented Mayor Ed Braddy, Susanna Hetrick represented Commissioner Lee Pinkoson; Scotland Talley represented Matt Pollock; Michael Bubb represented Erick Smith. Robert Simons and Judy Trotta were not able to attend. Mike Wisenbaker did not attend but sent in written comments by email. All other Advisory Group members were in attendance. In addition to attending the meeting, Mr. Spiller sent in written comments before and after the meeting. Attending staff were Clif Maxwell, Craig Parenteau, Rick Owen, Randy Brown, and David Copps.

Mr. Copps began the meeting by explaining the purpose of the Advisory Group, reviewing the meeting agenda, and summarizing the comments from public workshop that was held the previous evening at Alachua County Public Library Millhopper Branch. Mr. Copps then asked each member of the Advisory Group to express his or her comments on the draft plan.

Summary of Advisory Group Comments

Doug Longshore (Florida Forest Service) asked if burning is difficult to accomplish in the park. Randy Brown confirmed that burning in this urban interface location is a challenge and dependent on southerly winds which are relatively uncommon. Mr. Longshore asked if mowing is used in place of fire. Mr. Brown confirmed that mowing is used to knock down brush which helps to keep flame heights low.

Ken Hornby (Alachua Soil and Water Conservation District) commented that the management plan is of "big park" quality. He recommended that the first sentence in paragraph four on page 69 be changed to convey the fact that city sewer is available on Millhopper Road and the park should connect to it. Mr. Hornby expressed concern about the density of vines and underbrush in the pinelands near the park entrance. Randy Brown acknowledged that this is a problem area and stated that the area had recently been mowed and is scheduled to be burned this year. Mr. Hornby noted the lack of interpretive signs along the trail and recommended that more be installed. He recommended a spur trail in the flatwoods area in the northwest corner of the park. Mr. Brown noted the wet conditions in that area and said that a boardwalk would have to be constructed to provide access. Mr. Hornby asked if the retention ponds in the Deer Run subdivision are working. Mr. Brown confirmed that they are working to keep most sediment out of Deer Run. Rick Owen stated that the park is concerned about water quality and that the park will continue to monitor and study the water quality of Deer Run. Clif Maxwell suggested that language could be added to the plan stating that the park will continuously work with adjacent neighborhoods to address water quality as stormwater management technology advances.

Michael Bubb (Florida Native Plant Society) asked how close the park is to achieving the optimum fire return intervals as stated in the plan. Randy Brown stated that zones one and two are on track but zone three has been a challenge

Devil's Millhopper Geological State Park Advisory Group Members and Report

due to hardwood encroachment after the pine beetle infestation and subsequent pine harvest. Mr. Bubb asked how the Deer Run flow is being monitored. Rick Owen replied that regular monitoring is not being conducted at this time. Mr. Bubb asked what is planned for water quality monitoring. Mr. Owen said that a more proactive approach is needed for water sampling. Mr. Hornby asked about the amount of sediment in the sinkhole. Cliff Maxwell said that the sediment in the bottom of the sinkhole is the result of slope erosion that occurred before the property was a state park. Randy Brown noted that slope erosion and sedimentation have been very much reduced with state park management. He said that Deer Run will bring in some sediment but only during very heavy rainfall events. Rick Owen stated that it is very difficult for district and park staff to do the necessary water quality monitoring on their own. He said that monitoring must include assistance from DEP's Water Resource Management Program as well as Alachua County. Mr. Bubb asked if there was opposition to burning from the adjacent neighborhoods. Mr. Brown said that the majority of homeowners support burning but there is some opposition with smoke being the main concern. Mr. Bubb said that the park should consider educating adjacent homeowners about the benefits of fire with signs and publications.

Linda Demetropoulos (City of Gainesville) asked if contractors could be used to carrying out prescribed burning in the park. Cliff Maxwell stated that the park service uses contractors to burn in certain priority areas. He said that it may be possible to use them at Devil's Millhopper depending on burning priorities in the district. Ms. Demetropoulos described an interagency cooperative agreement for burning public conservation land and urged the park to take advantage of this partnership to accomplish burn objectives. She recommended that the interagency cooperative agreement be mentioned on page 47 of the management plan as a way to offset staff shortages. Ms. Demetropoulos stated that the City of Gainesville's San Felasco Park is willing to work with the park as partners by possibly cooperating on projects such as trail connections and the removal of exotics. She stated that Devil's Millhopper is a very significant tourist destination and that funding for the proposed visitor center upgrades may be available from a funding source that utilizes tourist dollars.

Mark Spiller (Adjacent Landowner) stated that stormwater management from the Deer Run neighborhood must address nutrient and pesticide run-off from the many manicured lawns in the subdivision. He said that biological filtration could help with this. Mr. Spiller recommended that, in addition to the benefits of prescribed fire, homeowners need to be educated about exotic invasive plant threats, environmentally sensitive lawn care and the selection of appropriate landscape plants. Mr. Spiller pointed out that stormwater enters the park from the DB Racquet Club via a ditch which drains into a sinkhole on park property. That sinkhole is now completely covered with sediment. He said that the park has done a good job of controlling sedimentation in Devil's Millhopper but noted that the \$600 figure for implementing future stormwater control measures (Goal II, Objective A, Action 6) is too low and should be increased. Mr. Spiller recommended that an action item and cost be added to Table 7 for connecting park facilities to the city sewage system.

Devil's Millhopper Geological State Park Advisory Group Members and Report

He noted the poor condition of the park's entrance sign and recommended that it be replaced. Mr. Brown said that a new sign is on order.

Scotland Talley (Florida Fish and Wildlife Conservation Commission) suggested that a more nuanced approach be taken when describing the removal of hardwoods in the park because some mast producing trees are necessary to support fox squirrels. Rather than using the blanket term of "removing hardwoods," Mr. Talley recommended the use of adjectives such as "excessive" hardwoods or "off-site" hardwoods. Mr. Talley recommended that invertebrates be given a higher priority in the plan. He said that he supports the fire program, sewer hook-up, and the addition of a volunteer campsite.

Susie Hetrick (Alachua County) stated that she supports sewer hook-up for the park and said that there may be funding sources to help pay for it. Ms. Hetrick recommended that the park find out who owns the upper pond in the Deer Run neighborhood so that a formal partnership can be established with that entity to deal with water quality issues. She said that newer technologies need to be implemented to address the water quality in Deer Run water quality and that homeowners may be willing to share in the responsibility of protecting that water quality. Ms. Hetrick said that Alachua County may be able to assist in water quality sampling. She said that the \$500 figure provided in Table 7 (Goal II, Objective A, Action 5) is too low and that the funding amount should be increased. Ms. Hetrick said that the City of Gainesville should be part of the water quality partnership and that they may be able to provide some funding. Clif Maxwell mentioned that an educational outreach program to provide adjacent neighborhoods with information about water quality and nutrient loading would be a good idea. Ms. Hetrick encouraged the park to take advantage of interagency cooperative agreements for burning in the park. She said that wax begonia should be added to the exotic species list in the plan. Ms. Hetrick said that public education, outreach and partnerships are the types of projects that the Citizen Support Organization should become involved in. Doug Longshore said that the St. John's Water Management District may have an interest in partnering in water quality protection initiatives.

Aaron Eagan (Citizen Support Organization) asked where the water flows from Devil's Millhopper. Rick Owen said that the assumption is that it goes to the Santa Fe River. Mr. Eagan noted that there are no outcome measures for the accomplishments listed in the last unit management plan. Mr. Owen explained that measurable outcomes are part of the new plan format which has just been implemented in the last few years. With the new format, there will be a direct relationship between outcome measures from plan to plan. Mr. Eagan expressed disappointment that the park only recorded 600 volunteer hours during the last planning period. Randy Brown said that the park does not have the staff to supervise volunteers. Mr. Eagan said that the proposed volunteer campsite should help to boost that number. Clif Maxwell agreed that the volunteer campsite should provide great benefit for the relative small amount of money that it will take to develop it. Mr. Eagan asked if active relationships are pursued with University of Florida professors and graduate students to conduct research in the park. Mr. Owen

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said that the Florida Park Service hosts research in Florida state parks by a variety of universities and colleges. Mr. Eagan said that a database should be created for academics that lists research needs for the park.

John Pricher (Visit Gainesville) recommended that the visitor carrying capacity be increased and that the two objectives on page 67 should be combined. Mr. Pricher said the quantity and quality of interpretive signs should be increased to help visitors understand the significance of the Devil's Millhopper. He said that grants through the Tourist Product Development Program may be available in the future to help fund park signage and some visitor center upgrades. Mr. Spiller noted the problem of sign vandalism in public parks and asked if the Tourist Development Council has information on vandal proof signs. Mr. Pricher said he would inquire at the upcoming state association meeting. Ms. Hetrick said that vandal proof signs are very expensive. She said that Alachua County parks use inexpensive signs that are easy to replace. Randy Brown said that the lack of staff on site aggravates the vandalism problem. Clif Maxwell asked if the San Felasco Hammock Preserve State Park and Devil's Millhopper State Park CSOs are combined. Randy Brown confirmed that they are. Mr. Eagan said that the CSO could develop a Devil's Millhopper task force to conduct more projects in that park.

Summary of Written Comments

Mark Spiller (Adjacent Landowner) provided comments by email. Copies of the comments are attached. He pointed out a discrepancy between a statement on page 7 (paragraph 3) that "stormwater management projects are not consistent with this plan" and the stated goal on page 8 to "protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition." He described a sediment clogged sinkhole in management zone DM-1A that receives stormwater from DB Racquet Club and noted that the sinkhole is not located on any of the plan maps. He recommended that the long-term impact of this stormwater source on park resources be determined and that the park should help fund better management methods/facilities for stormwater flowing from DB Racquet Club and Deer Run. He stated that the \$600 budgeted for stormwater control measures (Table 7, Goal II, Obj. A, Action 6) is too low and pointed out the need to regulate fertilizer and pesticide applications on adjacent properties. Mr. Spiller noted the threats from a variety of exotic and nuisance species and encouraged the park to follow through with the "educational outreach" to adjacent landowners as stated in the plan. Concerning imperiled species, Mr. Spiller noted that Florida pine snakes may be more prevalent in the park than noted in the plan. He stated that sandhill cranes may use the thermal air currents above the Millhopper as a staging area during spring migration and warned of the threats to this pattern from significant landscape changes. Mr. Spiller noted that municipal sewer service is available and that language on page 69 should be amended to reflect that. He recommended that the cost of sewer hook-up for park facilities should be included in Table 7. Mr. Spiller noted the poor condition of the park entrance sign and recommended a replacement. He recognized the difficulty of burning in the park but stated that the fire dependent natural communities need to

Devil's Millhopper Geological State Park Advisory Group Members and Report

be burned more frequently. He recommended that the discussion of diversifying the park's revenue stream should be better developed. Mr. Spiller noted that the Acquisition History (Addendum 1) appears to be incomplete in regards to a five acre land swap with the University of Florida Foundation. He provided additional comments regarding misspellings and errors on the vicinity map. Mr. Spiller recommended that the management plans for San Felasco Hammock Preserve State Park and Devil's Millhopper Geological State Park be combined into one plan to avoid duplication of effort and waste of public resources. Mr. Spiller expressed concern that the public workshop was not adequately noticed in order to receive timely public input. He relayed the concern of some Deer Run residents about fire leaping from Devil's Millhopper into San Felasco City Park, an area with high fuel loads and potential for fire spreading into the canopy.

Mike Wisenbaker (Florida Division of Historical Resources) was not able to attend the meeting. He provided comments by email. Copies of the comments are attached. Mr. Wisenbaker encouraged the park to interpret the Civil Conservation Corps and Works Progress Administration component of the park's history if not being done already. He recommended that research be conducted to determine the first known visitation to the sinkhole, the nature of the visitation, and the origin of the name "Devil's Millhopper." He stated that caution should be used when applying the archaeological predictive model within the park and that DHR's Compliance Review Section be contacted before doing any alterations on the grounds. He encouraged the park to conduct a systematic, professional archaeological and historical survey of the property.

Staff Recommendations

The staff recommends approval of the proposed management plan for Devil's Millhopper Geological State Park as presented, with the following changes.

- Language will be amended in the plan to state that city sewer service is available and the park will connect to it when feasible to do so.
- Include a mention of the Interagency Cooperative Agreement as a way offset staff shortages for burning.
- Describe the removal of hardwoods in a way that is sensitive to fox squirrels and their need for a certain amount of mast producing trees.
- The advisory group made suggestions on revising the costs for some resource management activities. Staff will review costs and adjust as necessary.
- Add wax begonia to the exotic invasive plant species list in the plan.
- Provide the location of the sinkhole in management zone one on the appropriate map and expand the language stating that the park will seek to

Devil's Millhopper Geological State Park Advisory Group Members and Report

determine the impacts on park resources by stormwater flow from adjacent properties.

- Add language to the interpretive objectives section to provide more information about the cultural history of the park (the earliest known visitation to the sinkhole, the Civil Conservation Corp and Works Progress Administration component, origin of the "Devil's Millhopper" name).

Additional revisions were made throughout the document to address editorial corrections and consistency of spellings and notations.

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. DRP'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 DRP staff.

**Devil's Millhopper Geological State Park
Advisory Group Members and Report**

Addendum 3—References Cited

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Addendum 4 -- Soil Descriptions

Devil's Millhopper Geological State Park

Soil Descriptions

(8B) Millhopper sand, 0 to 5 percent slopes - This nearly level to gently sloping, moderately well-drained soil is in small and large irregularly shaped areas on uplands and on slightly rolling knolls in the broad flatwoods. Slopes are mostly nearly smooth or convex. The areas range from about 10 to 250 acres in size.

Typically, the surface layer is dark grayish brown sand about nine inches thick. The subsurface layer is sand or fine sand about 49 inches thick. The upper 17 inches are yellowish brown, the next 22 inches are light yellowish brown, and the lower 10 inches are very pale brown. The subsoil extends to a depth of 89 inches. The upper six inches is yellowish brown loamy sand that has grayish and brownish mottles. The next 22 inches is light gray, mottled sandy clay loam, and the lower three inches is light gray, mottled sandy loam.

The water table is at a depth of 40 to 60 inches for one to four months and at a depth of 60 to 72 inches for two to four months during most years. The available water capacity is low in the surface and subsurface layers and is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper six inches of the subsoil, and slow to moderately slow below this depth. Natural fertility is low. Organic matter content is low to moderately low.

(13) Pelham sand - This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from zero to two percent. The areas are irregular in shape and range from 10 to 50 acres.

Typically, the surface layer is sand about seven inches thick. The upper four inches is very dark gray, and the lower three inches is dark gray. The subsurface layer is sand about 22 inches thick. The upper seven inches is light brownish gray and has gray mottles, and the lower 15 inches is gray. The subsoil extends to a depth of 69 inches. The upper three inches is gray sandy loam, and the lower 37 inches is gray, mottled sandy clay loam. Between depths of 69 and 80 inches, the underlying material is gray, mottled sandy loam.

The water table is less than 10 inches below the surface for one to four months during most years. The water table recedes below a depth of 40 inches during dry seasons. Surface runoff is slow. The available water capacity is low in the surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the loamy subsoil. Natural fertility is low in the upper 29 inches and medium below 29 inches. The organic matter is moderately low.

Devil's Millhopper Geological State Park
Soil Descriptions

Addendum 5—Plant and Animal List

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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PTERIDOPHYTES

Venus'-hair fern.....	<i>Adiantum capillus-veneris</i>	
Bicolored spleenwort	<i>Asplenium heterochroum</i>	
Wagner's spleenwort	<i>Asplenium x heteroresiliens</i>	SK, UMW
Ebony spleenwort.....	<i>Asplenium platyneuron</i>	
Rattlesnake fern	<i>Botrychium virginianum</i>	
Southern wood fern.....	<i>Dryopteris ludoviciana</i>	
Japanese climbing fern	<i>Lygodium japonicum</i> *	
Tuberous sword fern.....	<i>Nephrolepis cordifolia</i> *	
Cinnamon fern.....	<i>Osmunda cinnamomea</i>	
Widespread polypody	<i>Pecluma dispersa</i>	SK
Resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Tailed bracken	<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	
Cretan brake	<i>Pteris cretica</i> *	
Meadow spike-moss	<i>Selaginella apoda</i>	
Hairy maiden fern	<i>Thelypteris hispidula</i> var. <i>versicolor</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Ovate marsh fern.....	<i>Thelypteris ovata</i>	
Netted chain fern	<i>Woodwardia areolata</i>	
Virginia chain fern.....	<i>Woodwardia virginica</i>	

GYMNOSPERMS

Red cedar	<i>Juniperus virginiana</i>	
Slash pine	<i>Pinus elliottii</i>	
Spruce pine.....	<i>Pinus glabra</i>	
Longleaf pine.....	<i>Pinus palustris</i>	
Loblolly pine.....	<i>Pinus taeda</i>	

ANGIOSPERMS

MONOCOTS

Bushy bluestem	<i>Andropogon glomeratus</i> var. <i>pumilus</i>	
Elliott's bluestem	<i>Andropogon gyrans</i>	
Splitbeard bluestem	<i>Andropogon ternarius</i>	
Broomsedge bluestem	<i>Andropogon virginicus</i>	
Chalky bluestem	<i>Andropogon virginicus</i> var. <i>glaucus</i>	
Green silkyscale.....	<i>Anthaenantia villosa</i>	
Greendragon	<i>Arisaema dracontium</i>	
Jack-in-the-pulpit.....	<i>Arisaema triphyllum</i>	
Woollysheath threeawn.....	<i>Aristida lanosa</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Arrowfeather threeawn	<i>Aristida purpurascens</i>	
Wiregrass.....	<i>Aristida stricta</i> var. <i>beyrichiana</i>	
Switchcane.....	<i>Arundinaria gigantea</i>	
Common carpetgrass.....	<i>Axonopus fissifolius</i>	
Piedmont roseling	<i>Callisia rosea</i>	
Sandywoods sedge.....	<i>Carex dasycarpa</i>	
Godfrey's sedge.....	<i>Carex godfreyi</i>	
Long's sedge	<i>Carex longii</i>	
Hop sedge.....	<i>Carex lupulina</i>	
Warty sedge.....	<i>Carex verrucosa</i>	
Coastal sandbur.....	<i>Cenchrus spinifex</i>	
Slender woodoats	<i>Chasmanthium laxum</i>	
Whitemouth dayflower.....	<i>Commelina erecta</i>	
Bermudagrass	<i>Cynodon dactylon</i> *	
Swamp flatsedge	<i>Cyperus distinctus</i>	
Yellow nutgrass	<i>Cyperus esculentus</i> *	
Pinebarren flatsedge.....	<i>Cyperus ovatus</i>	
Plukenet's flatsedge	<i>Cyperus plukenetii</i>	
Green flatsedge	<i>Cyperus virens</i>	
Needleleaf witchgrass.....	<i>Dichanthelium aciculare</i>	
Deertongue witchgrass	<i>Dichanthelium clandestinum</i>	
Variable witchgrass	<i>Dichanthelium commutatum</i>	
Velvet witchgrass.....	<i>Dichanthelium scoparium</i>	
Roughhair witchgrass	<i>Dichanthelium strigosum</i>	
Florida yam	<i>Dioscorea floridana</i>	
Baldwin's spikerush.....	<i>Eleocharis baldwinii</i>	
Viviparous spikerush	<i>Eleocharis vivipara</i>	
Indian goosegrass.....	<i>Eleusine indica</i> *	
Green-fly orchid.....	<i>Epidendrum conopseum</i>	
Purple lovegrass	<i>Eragrostis spectabilis</i>	
Centipedegrass.....	<i>Eremochloa ophiuroides</i> *	
Pinewoods fingergrass	<i>Eustachys petraea</i>	
Dwarf umbrellasedge.....	<i>Fuirena pumila</i>	
Fringed yellow stargrass	<i>Hypoxis juncea</i>	
Soft rush.....	<i>Juncus effusus</i>	
Shore rush	<i>Juncus marginatus</i>	
Bighead rush	<i>Juncus megacephalus</i>	
Needlepod rush.....	<i>Juncus scirpoides</i>	
Low spikesedge	<i>Kyllinga pumila</i>	
Carolina redroot.....	<i>Lachnanthes caroliana</i>	
Whitehead bogbutton	<i>Lachnocaulon anceps</i>	
Lilyturf.....	<i>Liriope</i> sp.	
Southern watergrass	<i>Luziola fluitans</i>	
Green addersmouth orchid	<i>Malaxis unifolia</i>	UMW
Mondograss.....	<i>Ophiopogon japonicus</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Woodsgrass; Basketgrass	<i>Oplismenus hirtellus</i>	
Beaked panicum	<i>Panicum anceps</i>	
Redtop panicum.....	<i>Panicum rigidulum</i>	
Switchgrass.....	<i>Panicum virgatum</i>	
Bahiagrass	<i>Paspalum notatum</i> *	
Thin paspalum	<i>Paspalum setaceum</i>	
Blackseed needlegrass.....	<i>Piptochaetium avenaceum</i>	
Yellow fringed orchid	<i>Platanthera ciliaris</i>	MF, SSL
Hairy shadow witch	<i>Ponthieva racemosa</i>	
Arrow bamboo.....	<i>Pseudosasa japonica</i>	
Needle palm	<i>Rhapidophyllum hystrix</i>	
Shortbristle horned beaksedge .	<i>Rhynchospora corniculata</i>	
Fascicled beaksedge	<i>Rhynchospora fascicularis</i>	
Sandyfield beaksedge.....	<i>Rhynchospora megalocarpa</i>	
Millet beaksedge	<i>Rhynchospora miliacea</i>	
Dwarf palmetto.....	<i>Sabal minor</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Sugarcane plumegrass	<i>Saccharum giganteum</i>	
Woolgrass	<i>Scirpus cyperinus</i>	
Fringed nutrush	<i>Scleria ciliata</i>	
Tall nutgrass	<i>Scleria triglomerata</i>	
Saw palmetto	<i>Serenoa repens</i>	
Coastal bristlegrass.....	<i>Setaria corrugata</i>	
Yellow bristlegrass	<i>Setaria parviflora</i>	
Earleaf greenbrier	<i>Smilax auriculata</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Cat greenbrier	<i>Smilax glauca</i>	
Laurel greenbrier	<i>Smilax laurifolia</i>	
Sarsaparilla vine	<i>Smilax pumila</i>	
Jackson vine.....	<i>Smilax smallii</i>	
Bristly greenbrier	<i>Smilax tamnoides</i>	
Coral greenbrier.....	<i>Smilax walteri</i>	
Yellow indiagrass.....	<i>Sorghastrum nutans</i>	
Lopsided indiagrass	<i>Sorghastrum secundum</i>	
Swamp wedgescale	<i>Sphenopholis pennsylvanica</i>	
Greenvein ladiestresses	<i>Spiranthes praecox</i>	
Smutgrass	<i>Sporobolus indicus</i> *	
Pineywoods dropseed	<i>Sporobolus junceus</i>	
St. Augustinegrass.....	<i>Stenotaphrum secundatum</i>	
Yellow hatpins	<i>Syngonanthus flavidulus</i>	
Ballmoss	<i>Tillandsia recurvata</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Fringed yelloweyed grass.....	<i>Xyris fimbriata</i>	
Richard's yelloweyed grass.....	<i>Xyris jupicai</i> *	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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Tall yelloweyed grass..... *Xyris platylepis*
 Spanish bayonet *Yucca aloifolia*

DICOTS

Boxelder *Acer negundo*
 Red maple..... *Acer rubrum*
 Florida maple *Acer saccharum* subsp. *floridanum*
 Red buckeye..... *Aesculus pavia*
 Beach false foxglove..... *Agalinis fasciculata*
 Slenderleaf false foxglove *Agalinis tenuifolia*
 Hammock snakeroot..... *Ageratina jucunda*
 Incised agrimony *Agrimonia incisa* UMW
 Smallfruit agrimony..... *Agrimonia microcarpa*
 Silktree; Mimosa..... *Albizia julibrissin* *
 Common ragweed *Ambrosia artemisiifolia*
 Bastard false indigo..... *Amorpha fruticosa*
 Peppervine..... *Ampelopsis arborea*
 American hogpeanut *Amphicarpaea bracteata*
 Groundnut *Apios americana*
 Devil's walkingstick *Aralia spinosa*
 Coral ardisia..... *Ardisia crenata* *
 Virginia snakeroot..... *Aristolochia serpentaria*
 Florida indian plantain *Arnoglossum floridanum*
 Ovateleaf Indian plantain..... *Arnoglossum ovatum*
 Georgia indian plantain..... *Arnoglossum sulcatum*
 Clasping milkweed *Asclepias amplexicaulis*
 Pinewoods milkweed *Asclepias humistrata*
 Butterflyweed..... *Asclepias tuberosa*
 Whorled milkweed..... *Asclepias verticillata*
 Green antelopehorn..... *Asclepias viridis*
 Slimleaf pawpaw *Asimina angustifolia*
 Woolly pawpaw..... *Asimina incana*
 Smallflower pawpaw..... *Asimina parviflora*
 Bearded milkvetch *Astragalus villosus*
 Smooth yellow false foxglove ... *Aureolaria flava*
 Fernleaf yellow false foxglove ... *Aureolaria pectinata*
 Blue waterhyssop..... *Bacopa caroliniana*
 Groundsel tree; Sea-myrtle..... *Baccharis halimifolia*
 Coastalplain honeycombhead... *Balduina angustifolia*
 White wild indigo *Baptisia alba*
 Wax begonia *Begonia cucullata* *
 Tarflower *Bejaria racemosa*
 Soft greeneyes *Berlandiera pumila*

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Florida greeneyes.....	<i>Berlandiera subacaulis</i>	
Beggarticks	<i>Bidens alba</i>	
Spanish needles.....	<i>Bidens bipinnata</i>	
Crossvine.....	<i>Bignonia capreolata</i>	
False nettle; Bog hemp.....	<i>Boehmeria cylindrica</i>	
American beautyberry	<i>Callicarpa americana</i>	
Trumpet creeper.....	<i>Campsis radicans</i>	
Coastalplain chaffhead.....	<i>Carphephorus corymbosus</i>	
Hairy chaffhead	<i>Carphephorus paniculatus</i>	
American hornbeam	<i>Carpinus caroliniana</i>	
Pignut hickory	<i>Carya glabra</i>	
Mockernut hickory.....	<i>Carya tomentosa</i>	
Chinquapin.....	<i>Castanea pumila</i>	
New Jersey tea	<i>Ceanothus americanus</i>	
Littleleaf buckbrush.....	<i>Ceanothus microphyllus</i>	
Sugarberry; Hackberry	<i>Celtis laevigata</i>	
Spadeleaf.....	<i>Centella asiatica</i>	
Spurred butterfly pea	<i>Centrosema virginianum</i>	
Common buttonbush.....	<i>Cephalanthus occidentalis</i>	
Eastern redbud	<i>Cercis canadensis</i>	
Hairyfruit chervil	<i>Chaerophyllum tainturieri</i>	
Partridge pea.....	<i>Chamaecrista fasciculata</i>	
Sensitive pea.....	<i>Chamaecrista nictitans</i>	
Hyssopleaf sandmat	<i>Chamaesyce hyssopifolia</i>	
Prostrate sandmat.....	<i>Chamaesyce prostrata</i>	
White fringetree.....	<i>Chionanthus virginicus</i>	
Cottony goldenaster	<i>Chrysopsis gossypina</i>	
Maryland goldenaster	<i>Chrysopsis mariana</i>	
Coastalplain goldenaster	<i>Chrysopsis scabrella</i>	
Camphortree	<i>Cinnamomum camphora</i> *	
Purple thistle	<i>Cirsium horridulum</i>	
Nuttall's thistle	<i>Cirsium nuttallii</i>	
Swamp leather-flower.....	<i>Clematis crispa</i>	
Netleaf leather-flower	<i>Clematis reticulata</i>	
Tread-softly.....	<i>Cnidoscolus stimulosus</i>	
Canadian horseweed	<i>Conyza canadensis</i>	
Flowering dogwood	<i>Cornus florida</i>	
Swamp dogwood.....	<i>Cornus foemina</i>	
Dwarf hawthorn.....	<i>Crataegus uniflora</i>	
Slender scratchdaisy	<i>Croptilon divaricatum</i>	
Lanceleaf rattlebox.....	<i>Crotalaria lanceolata</i> *	
Rabbitbells	<i>Crotalaria rotundifolia</i>	
Showy rattlebox.....	<i>Crotalaria spectabilis</i> *	
Silver croton.....	<i>Croton argyranthemus</i>	
Vente conmigo.....	<i>Croton glandulosus</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Leafless swallowwort	<i>Cynanchum scoparium</i>	
Whitetassels	<i>Dalea carnea</i>	
Summer farewell.....	<i>Dalea pinnata</i>	
Florida ticktrefoil.....	<i>Desmodium floridanum</i>	
Zarabacoa comun	<i>Desmodium incanum</i>	
Perplexed ticktrefoil.....	<i>Desmodium perplexum</i>	
Slimleaf ticktrefoil	<i>Desmodium tenuifolium</i>	
Carolina ponysfoot	<i>Dichondra carolinensis</i>	
Poor Joe.....	<i>Diodia teres</i>	
Virginia buttonweed	<i>Diodia virginiana</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Pink sundew.....	<i>Drosera capillaris</i>	
Oblongleaf twinflower	<i>Dyschoriste oblongifolia</i>	
False daisy	<i>Eclipta prostrata</i>	
Tall elephantsfoot	<i>Elephantopus elatus</i>	
Devil's grandmother	<i>Elephantopus tomentosus</i>	
American burnweed	<i>Erechtites hieraciifolius</i>	
Oakleaf fleabane.....	<i>Erigeron quercifolius</i>	
Prairie fleabane.....	<i>Erigeron strigosus</i>	
Early whitetop fleabane	<i>Erigeron vernus</i>	
Dogtongue wild buckwheat.....	<i>Eriogonum tomentosum</i>	
Fragrant eryngo.....	<i>Eryngium aromaticum</i>	
Baldwin's eryngo.....	<i>Eryngium baldwinii</i>	
Button rattlesnakemaster.....	<i>Eryngium yuccifolium</i>	
Coralbean; Cherokee bean	<i>Erythrina herbacea</i>	
Swamp doghobble.....	<i>Eubotrys racemosa</i>	
American strawberrybush.....	<i>Euonymus americanus</i>	
White thoroughwort	<i>Eupatorium album</i>	
Dogfennel	<i>Eupatorium capillifolium</i>	
Yankeeweed.....	<i>Eupatorium compositifolium</i>	
Rough boneset	<i>Eupatorium pilosum</i>	
White ash	<i>Fraxinus americana</i>	
Carolina ash; pop ash.....	<i>Fraxinus caroliniana</i>	
Lanceleaf blanketflower	<i>Gaillardia aestivalis</i>	
Downy milkpea.....	<i>Galactia regularis</i>	
Eastern milkpea.....	<i>Galactia volubilis</i>	
Coastal bedstraw	<i>Galium hispidulum</i>	
Hairy bedstraw	<i>Galium pilosum</i>	
Stiff marsh bedstraw	<i>Galium tinctorium</i>	
Pennsylvania everlasting.....	<i>Gamochaeta pensylvanica</i>	
Spoonleaf purple everlasting	<i>Gamochaeta purpurea</i>	
Southern beeblossom	<i>Gaura angustifolia</i>	
Dwarf huckleberry.....	<i>Gaylussacia dumosa</i>	
Blue huckleberry.....	<i>Gaylussacia frondosa</i> var. <i>tomentosa</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Carolina cranesbill.....	<i>Geranium carolinianum</i>	
Rough hedgehyssop	<i>Gratiola hispida</i>	
Carolina frostweed	<i>Helianthemum carolinianum</i>	
Pinebarren frostweed.....	<i>Helianthemum corymbosum</i>	
Narrowleaf sunflower.....	<i>Helianthus angustifolius</i>	
Hairy sunflower.....	<i>Helianthus hirsutus</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
Queen-devil.....	<i>Hieracium gronovii</i>	
Innocence	<i>Houstonia procumbens</i>	
Manyflower marshpennywort....	<i>Hydrocotyle umbellata</i>	
Whorled marshpennywort	<i>Hydrocotyle verticillata</i>	
Nakedflower ticktrefoil	<i>Hylodesmum nudiflorum</i>	
Carolina woollywhite.....	<i>Hymenopappus scabiosaeus</i>	
Roundpod St. John's-wort	<i>Hypericum cistifolium</i>	
St. Andrew's-cross	<i>Hypericum hypericoides</i>	
Dwarf St. John's-wort.....	<i>Hypericum mutilum</i>	
Clustered bushmint	<i>Hyptis alata</i>	
Tropical bushmint	<i>Hyptis mutabilis</i> *	
Carolina holly; Sand holly	<i>Ilex ambigua</i>	
Dahoon.....	<i>Ilex cassine</i>	
Inkberry; Gallberry	<i>Ilex glabra</i>	
American holly.....	<i>Ilex opaca</i>	
Carolina indigo	<i>Indigofera caroliniana</i>	
Hairy indigo.....	<i>Indigofera hirsuta</i> *	
Man-of-the-earth	<i>Ipomoea pandurata</i>	
Juba's bush.....	<i>Iresine diffusa</i>	
Rootstock bloodleaf.....	<i>Iresine rhizomatosa</i>	
Virginia willow	<i>Itea virginica</i>	
Virginia dwarfdandelion	<i>Krigia virginica</i>	
Woodland lettuce	<i>Lactuca floridana</i>	
Grassleaf lettuce.....	<i>Lactuca graminifolia</i>	
Lantana; Shrubverbena	<i>Lantana camara</i> *	
Hairy pinweed	<i>Lechea mucronata</i>	
Virginia pepperweed.....	<i>Lepidium virginicum</i>	
Hairy lespedeza	<i>Lespedeza hirta</i>	
Slender gayfeather.....	<i>Liatris gracilis</i>	
Shortleaf gayfeather.....	<i>Liatris tenuifolia</i>	
Gopher apple.....	<i>Licania michauxii</i>	
Chinese privet	<i>Ligustrum sinense</i> *	
Sweetgum.....	<i>Liquidambar styraciflua</i>	
Tuberous gromwell.....	<i>Lithospermum tuberosum</i>	
Downy lobelia.....	<i>Lobelia puberula</i>	
Coral honeysuckle	<i>Lonicera sempervirens</i>	
Seaside primrosewillow.....	<i>Ludwigia maritima</i>	
Creeping primrosewillow	<i>Ludwigia repens</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Lady lupine	<i>Lupinus villosus</i>	
Rose-rush	<i>Lygodesmia aphylla</i>	
Coastalplain staggerbush	<i>Lyonia fruticosa</i>	
Fetterbush	<i>Lyonia lucida</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Sweetbay.....	<i>Magnolia virginiana</i>	
Black medick.....	<i>Medicago lupulina</i> *	
Chinaberrytree	<i>Melia azedarach</i> *	
White sweetclover.....	<i>Melilotus albus</i> *	
Creeping cucumber	<i>Melothria pendula</i>	
Climbing hempvine.....	<i>Mikania scandens</i>	
Sensitive brier	<i>Mimosa quadrivalvis</i>	
Partridgeberry	<i>Mitchella repens</i>	
Spotted beebalm.....	<i>Monarda punctata</i>	
Red mulberry	<i>Morus rubra</i>	
Southern bayberry; Wax myrtle	<i>Myrica cerifera</i>	
Blackgum.....	<i>Nyssa sylvatica</i>	
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Common eveningprimrose	<i>Oenothera biennis</i>	
Clustered mille grains	<i>Oldenlandia uniflora</i>	
False gromwell	<i>Onosmodium virginianum</i>	
Pricklypear	<i>Opuntia humifusa</i>	
Piedmont leatherroot.....	<i>Orbexilum lupinellus</i>	
Wild olive.....	<i>Osmanthus americanus</i>	
Eastern hophornbeam	<i>Ostrya virginiana</i>	
Common yellow woodsorrel.....	<i>Oxalis corniculata</i>	
Pink woodsorrel	<i>Oxalis debilis</i> *	
Coastalplain palafox	<i>Palafoxia integrifolia</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Purple passionflower.....	<i>Passiflora incarnata</i>	
Yellow passionflower	<i>Passiflora lutea</i>	
Buckroot.....	<i>Pedimelum canescens</i>	
Eustis lake beardtongue.....	<i>Penstemon australis</i>	
Hale's pentodon	<i>Pentodon pentandrus</i>	
Red bay	<i>Persea borbonia</i>	
Swamp bay	<i>Persea palustris</i>	
Thicket bean	<i>Phaseolus polystachios</i>	
Downy phlox	<i>Phlox pilosa</i>	
Red chokeberry	<i>Photinia pyrifolia</i>	
Turkey tangle fogfruit.....	<i>Phyla nodiflora</i>	
Cutleaf groundcherry.....	<i>Physalis angulata</i>	
Husk tomato	<i>Physalis pubescens</i>	
American pokeweed	<i>Phytolacca americana</i>	
Canadian clearweed	<i>Pilea pumila</i>	
Small butterwort.....	<i>Pinguicula pumila</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Pitted stripeseed	<i>Piriqueta cistoides</i>	
Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>	
Rosy camphorweed	<i>Pluchea baccharis</i>	
Camphorweed	<i>Pluchea camphorata</i>	
Stinking camphorweed	<i>Pluchea foetida</i>	
Procession flower	<i>Polygala incarnata</i>	
Orange milkwort	<i>Polygala lutea</i>	
Candyroot	<i>Polygala nana</i>	
Showy milkwort	<i>Polygala violacea</i>	
Mild waterpepper	<i>Polygonum hydropiperoides</i>	
Dotted smartweed.....	<i>Polygonum punctatum</i>	
Bog smartweed.....	<i>Polygonum setaceum</i>	
Rustweed.....	<i>Polypremum procumbens</i>	
Combleaf mermaidweed.....	<i>Proserpinaca pectinata</i>	
Chickasaw plum.....	<i>Prunus angustifolia</i>	
Carolina laurelcherry	<i>Prunus caroliniana</i>	
Black cherry	<i>Prunus serotina</i>	
Blackroot	<i>Pterocaulon pycnostachyum</i>	
Mock bishopsweed	<i>Ptilimnium capillaceum</i>	
Carolina desertchicory	<i>Pyrrhopappus carolinianus</i>	
Bastard white oak	<i>Quercus austrina</i>	
Chapman's oak.....	<i>Quercus chapmanii</i>	
Spanish oak; Southern red oak.....	<i>Quercus falcata</i>	
Sand live oak.....	<i>Quercus geminata</i>	
Bluejack oak.....	<i>Quercus incana</i>	
Turkey oak.....	<i>Quercus laevis</i>	
Laurel oak; Diamond oak	<i>Quercus laurifolia</i>	
Sand post oak	<i>Quercus margaretta</i>	
Basket oak; Swamp chestnut oak	<i>Quercus michauxii</i>	
Myrtle oak.....	<i>Quercus myrtifolia</i>	
Water oak	<i>Quercus nigra</i>	
Running oak.....	<i>Quercus pumila</i>	
Live oak.....	<i>Quercus virginiana</i>	
Pale meadowbeauty	<i>Rhexia mariana</i>	
Maid Marian	<i>Rhexia nashii</i>	
Nuttall's meadowbeauty.....	<i>Rhexia nuttallii</i>	
Fringed meadowbeauty.....	<i>Rhexia petiolata</i>	
Winged sumac.....	<i>Rhus copallinum</i>	
Doubleform snout bean.....	<i>Rhynchosia difformis</i>	
Dollarleaf	<i>Rhynchosia reniformis</i>	
Twining snoutbean	<i>Rhynchosia tomentosa</i>	
Twining snoutbean	<i>Rhynchosia tomentosa var. mollissima</i>	
Southern marsh yellowcress.....	<i>Rorippa teres</i>	
Sand blackberry.....	<i>Rubus cuneifolius</i>	
Sawtooth blackberry.....	<i>Rubus pensilvanicus</i>	

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Southern dewberry.....	<i>Rubus trivialis</i>	
Blackeyed Susan.....	<i>Rudbeckia hirta</i>	
Carolina wild petunia.....	<i>Ruellia caroliniensis</i>	
Heartwing dock.....	<i>Rumex hastatulus</i>	
Shortleaf rosegentian	<i>Sabatia brevifolia</i>	
Carolina willow	<i>Salix caroliniana</i>	
Azure blue sage	<i>Salvia azurea</i>	
Lyreleaf sage.....	<i>Salvia lyrata</i>	
American elder; Elderberry.....	<i>Sambucus nigra</i>	
Pineland pimpernel.....	<i>Samolus valerandi</i> subsp. <i>parviflorus</i>	
Canadian blacksnakeroot	<i>Sanicula canadensis</i>	
Popcorn tree; Chinese tallow tree	<i>Sapium sebiferum</i> *	
Hooded pitcherplant	<i>Sarracenia minor</i>	SSL
Lizard's tail.....	<i>Saururus cernuus</i>	
Whitetop aster.....	<i>Sericocarpus tortifolius</i>	
Piedmont blacksenna.....	<i>Seymeria pectinata</i>	
Cuban jute	<i>Sida rhombifolia</i>	
Common wireweed.....	<i>Sida ulmifolia</i>	
Gum bully	<i>Sideroxylon lanuginosum</i>	
Sleepy catchfly	<i>Silene antirrhina</i>	
Kidneyleaf rosinweed.....	<i>Silphium compositum</i>	
American black nightshade.....	<i>Solanum americanum</i>	
Carolina horsenettle	<i>Solanum carolinense</i>	
Pinebarren goldenrod	<i>Solidago fistulosa</i>	
Chapman's goldenrod	<i>Solidago odora</i> var. <i>chapmanii</i>	
Downy ragged goldenrod	<i>Solidago petiolaris</i>	
Roughfruit scaleseed	<i>Spermolepis divaricata</i>	
Queensdelight	<i>Stillingia sylvatica</i>	
Pineland scalypink.....	<i>Stipulicida setacea</i>	
Eastern silver aster	<i>Symphyotrichum concolor</i>	
Wavyleaf aster.....	<i>Symphyotrichum undulatum</i>	
Common sweetleaf.....	<i>Symplocos tinctoria</i>	
Spiked hoary pea.....	<i>Tephrosia spicata</i>	
Pineland nerveray	<i>Tetragonotheca helianthoides</i>	
Carolina basswood	<i>Tilia americana</i> var. <i>caroliniana</i>	
Atlantic poison oak.....	<i>Toxicodendron pubescens</i>	
Eastern poison ivy.....	<i>Toxicodendron radicans</i>	
Forked bluecurls	<i>Trichostema dichotomum</i>	
Winged elm.....	<i>Ulmus alata</i>	
American elm	<i>Ulmus americana</i>	
Zigzag bladderwort	<i>Utricularia subulata</i>	
Sparkleberry	<i>Vaccinium arboreum</i>	
Highbush blueberry	<i>Vaccinium corymbosum</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	

* Non-native species

Devil's Millhopper Geological State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Florida valerian	<i>Valeriana scandens</i>	
Giant ironweed	<i>Vernonia gigantea</i>	
Possumhaw	<i>Viburnum nudum</i>	
Walter's viburnum	<i>Viburnum obovatum</i>	
Rusty blackhaw	<i>Viburnum rufidulum</i>	
Florida vetch	<i>Vicia floridana</i>	
Early blue violet	<i>Viola palmata</i>	
Primroseleaf violet	<i>Viola primulifolia</i>	
Common blue violet	<i>Viola sororia</i>	
Prostrate blue violet	<i>Viola walteri</i>	
Summer grape	<i>Vitis aestivalis</i>	
Florida grape	<i>Vitis cinerea</i> var. <i>floridana</i>	
Muscadine	<i>Vitis rotundifolia</i>	
Southern rockbell	<i>Wahlenbergia marginata</i> *	
Oriental false hawksbeard	<i>Youngia japonica</i> *	
Hercules-club	<i>Zanthoxylum clava-herculis</i>	

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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FISH

Mosquitofish *Gambusia affinis*.....DS

AMPHIBIANS

Frogs and Toads

Southern Cricket Frog..... *Acris gryllus*.....SK, DM, DS
Oak Toad *Anaxyrus quercicus*.....SH, UP
Southern Toad *Anaxyrus terrestris*MTC
Greenhouse Frog *Eleutherodactylus planirostris* *..... SK, UMW
Eastern Narrow-mouthed Toad ... *Gastrophryne carolinensis* MF, DM
Cope's Gray Treefrog *Hyla chrysoscelis*.....SK, DM, DS
Green Treefrog *Hyla cinerea*.....MTC
Pine Woods Treefrog *Hyla femoralis*.....MF, DS
Barking Treefrog *Hyla gratiosa*MTC
Squirrel Treefrog..... *Hyla squirella*.....MTC
Gopher Frog *Lithobates capito*SH, UP
American Bullfrog..... *Lithobates catesbeiana* DM, DS
Bronze Frog..... *Lithobates clamitans clamitans*..... SKLK, SST
Pig Frog *Lithobates grylio*..... DM, DS
Southern Leopard Frog *Lithobates sphenoccephala*..... DM, DS
Spring Peeper *Pseudacris crucifer*..... MF, DM
Southern Chorus Frog..... *Pseudacris nigrita*MF, SK
Little Grass Frog *Pseudacris ocularis* SSL
Eastern Spadefoot Toad *Scaphiopus holbrookii* UMW, UP

Salamanders and Amphiumas

Two-toed Amphiuma *Amphiuma means*.....DS
Southern Dusky Salamander *Desmognathus auriculatus*.....SK, SST
Dwarf Salamander..... *Eurycea quadridigitata* DM, DS
Southeastern Slimy Salamander . *Plethodon grobmani*.....SK, SST

REPTILES

Turtles

Chicken Turtle *Deirochelys reticularia*.....DS
Gopher Tortoise *Gopherus polyphemus*.....SH, UP
Eastern Mud Turtle *Kinosternon subrubrum* DM, DS
Peninsula Cooter *Pseudemys peninsularis*DS
Florida Box Turtle..... *Terrapene carolina bauri*..... UMW, UP

Lizards

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Green Anole	<i>Anolis carolinensis</i>	MTC
Six-lined Racerunner	<i>Aspidozelis sexlineata</i>	MF, UP
Eastern Glass Lizard	<i>Ophisaurus ventralis</i>	MTC
Southeastern Five-lined Skink.....	<i>Plestiodon inexpectatus</i>	MTC
Broad-headed Skink	<i>Plestiodon laticeps</i>	UMW, UP
Florida Worm Lizard	<i>Rhineura floridana</i>	UP, UHF
Eastern Fence Lizard.....	<i>Sceloporus undulatus</i>	SH, UP
Ground Skink.....	<i>Scincella lateralis</i>	UMW, UP

Snakes

Florida Cottonmouth.....	<i>Agkistrodon piscivorus conanti</i>	SK, DS, SST
Scarletsnake.....	<i>Cemophora coccinea</i>	MTC
Southern Black Racer	<i>Coluber constrictor priapus</i>	SH, UP
East. Diamond-backed Rattlesnake	<i>Crotalus adamanteus</i>	MTC
Southern Ringnecked Snake	<i>Diadophis punctatus punctatus</i>	MTC
Eastern Indigo Snake.....	<i>Drymarchon couperi</i>	SH, UP
Eastern Hognose Snake	<i>Heterodon platirrhinos</i>	MF, SH
Short-tailed Snake	<i>Lampropeltis extenuatum</i>	SH, UP
Eastern Coral Snake	<i>Micrurus fulvius</i>	SK, UMW
Banded Watersnake.....	<i>Nerodia fasciata fasciata</i>	DM, DS
Florida Watersnake.....	<i>Nerodia fasciata pictiventris</i>	DM, DS
Rough Green Snake.....	<i>Opheodrys aestivus</i>	MTC
Eastern Ratsnake	<i>Pantherophis alleghaniensis</i>	MTC
Eastern Corn Snake	<i>Pantherophis guttatus</i>	MF, SH
Florida Pine Snake.....	<i>Pituophis melanoleucus mugitus</i>	SH, UP
Striped Crayfish Snake	<i>Regina alleni</i>	DM, DS
Pine Woods Littersnake	<i>Rhadinaea flavilata</i>	MF, UMW
Dusky Pigmy Rattlesnake	<i>Sistrurus miliarius barbouri</i>	MTC
Florida Brownsnake	<i>Storeria victa</i>	SK, DM, DS
Florida Crowned Snake	<i>Tantilla relicta</i>	SH, UP
Peninsula Ribbon Snake	<i>Thamnophis sauritus sackenii</i>	DM, DS
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	MTC
Rough Earthsnake	<i>Virginia striatula</i>	UMW, UP

BIRDS

Waterfowl

Wood Duck.....	<i>Aix sponsa</i>	DS
Hooded Merganser	<i>Lophodytes cucullatus</i>	DS

Partridges, Grouse, and Turkeys

Wild Turkey	<i>Meleagris gallopavo</i>	MTC
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New World Quails

Northern Bobwhite	<i>Colinus virginianus</i>	SH
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* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Grebes		
Pied-billed Grebe.....	<i>Podilymbus podiceps</i>	DS
Cormorants		
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	DS
Anhingas		
Anhinga	<i>Anhinga anhinga</i>	DS
Hérons and Egrets		
Great Blue Heron	<i>Ardea herodias</i>	DM, DS
Great Egret	<i>Ardea alba</i>	DM, DS
Snowy Egret.....	<i>Egretta thula</i>	DM, DS
Little Blue Heron	<i>Egretta caerulea</i>	DM, DS
Cattle Egret.....	<i>Bubulcus ibis</i>	DS
Green Heron.....	<i>Butorides virescens</i>	DM, DS
Ibises		
White Ibis	<i>Eudocimus albus</i>	DM, DS
Storks		
Wood Stork	<i>Mycteria americana</i>	DM, DS, OF
New World Vultures		
Black Vulture	<i>Coragyps atratus</i>	OF, MTC
Turkey Vulture.....	<i>Cathartes aura</i>	OF, MTC
Hawks, Eagles, and Kites		
Mississippi Kite	<i>Ictinia mississippiensis</i>	SK, UHF, DS, SHF
Bald Eagle.....	<i>Haliaeetus leucocephalus</i>	OF
Sharp-shinned Hawk	<i>Accipiter striatus</i>	UHF, UP, SHF
Red-shouldered Hawk.....	<i>Buteo lineatus</i>	MTC
Broad-winged Hawk.....	<i>Buteo platypterus</i>	SK, UHF, SHF
Red-tailed Hawk.....	<i>Buteo jamaicensis</i>	SH, UP
Falcons		
American Kestrel.....	<i>Falco sparverius</i>	SH, UP
Cranes		
Sandhill Crane	<i>Grus canadensis</i>	OF
Sandpipers		
American Woodcock	<i>Scolopax minor</i>	SK, DM, DS
Solitary Sandpiper.....	<i>Tringa solitaria</i>	DM, DS

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Gulls and Terns		
Ring-billed Gull	<i>Larus delawarensis</i>	OF
Pigeons and Doves		
Rock Pigeon.....	<i>Columba livia</i> *	DV
Mourning Dove	<i>Zenaida macroura</i>	MTC
Common Ground-Dove	<i>Columbina passerina</i>	SH
Cuckoos		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	UHF, UP, SHF
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	UHF, UP, SHF
Owls		
Eastern Screech-Owl	<i>Otus asio</i>	UP, SHF
Barred Owl.....	<i>Strix varia</i>	SK, UHF, DS
Nightjars		
Common Nighthawk	<i>Chordeiles minor</i>	SH, OF
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	UHF, UP, SHF
Whip-poor-will	<i>Caprimulgus vociferus</i>	UHF, UP, SHF
Swifts		
Chimney Swift	<i>Chaetura pelagica</i>	SH, OF
Hummingbirds		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	UP, SHF
Kingfishers		
Belted Kingfisher.....	<i>Ceryle alcyon</i>	DS
Woodpeckers		
Redheaded Woodpecker.....	<i>Melanerpes erythrocephalus</i>	SH, UP
Red-bellied Woodpecker.....	<i>Melanerpes carolinus</i>	MTC
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	SK, UHF, DS, SHF
Downy Woodpecker.....	<i>Picoides pubescens</i>	MTC
Hairy Woodpecker	<i>Picoides villosus</i>	MF, SH, UP
Northern Flicker	<i>Colaptes auratus</i>	MF, SH, UP
Pileated Woodpecker	<i>Dryocopus pileatus</i>	SK, UHF, UP, SHF
Tyrant Flycatchers		
Eastern Wood Pewee	<i>Contopus virens</i>	SH, UP
Acadian Flycatcher	<i>Empidonax virescens</i>	SK, DS

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Least Flycatcher	<i>Empidonax minimus</i>	UP
Eastern Phoebe	<i>Sayornis phoebe</i>	MTC
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	MF, DS, UP, SHF
Eastern Kingbird	<i>Tyrannus tyrannus</i>	SH
Shrikes		
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SH
Vireos		
White-eyed Vireo	<i>Vireo griseus</i>	MTC
Yellow-throated Vireo	<i>Vireo flavifrons</i>	SH, UP
Blue-headed Vireo	<i>Vireo solitarius</i>	SK, UHF, UP, SHF
Red-eyed Vireo	<i>Vireo olivaceus</i>	SK, UHF, SHF
Crows and Jays		
Blue Jay	<i>Cyanocitta cristata</i>	MTC
American Crow	<i>Corvus brachyrhynchos</i>	MTC
Fish Crow	<i>Corvus ossifragus</i>	MTC
Swallows		
Purple Martin	<i>Progne subis</i>	OF
Tree Swallow	<i>Tachycineta bicolor</i>	OF
Tits and Allies		
Carolina Chickadee	<i>Poecile carolinensis</i>	MTC
Tufted Titmouse	<i>Baeolophus bicolor</i>	MTC
Creepers		
Brown Creeper	<i>Certhia americana</i>	UHF, UP, SHF
Wrens		
Carolina Wren	<i>Thryothorus ludovicianus</i>	MTC
House Wren	<i>Troglodytes aedon</i>	MF, UP, SHF
Kinglets		
Golden-crowned Kinglet	<i>Regulus satrapa</i>	SH, UP
Ruby-crowned Kinglet	<i>Regulus calendula</i>	MTC
Old World Warblers and Gnatcatchers		
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	MTC
Thrushes		
Eastern Bluebird	<i>Sialia sialis</i>	SH, UP
Veery	<i>Catharus fuscescens</i>	UHF, UP, SHF
Swainson's Thrush	<i>Catharus ustulatus</i>	UHF, SHF
Hermit Thrush	<i>Catharus guttatus</i>	SK, UHF, UP, SHF

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Wood Thrush	<i>Hylocichla mustelina</i>	SK, UHF, SHF
American Robin.....	<i>Turdus migratorius</i>	MTC
Mockingbirds and Thrashers		
Gray Catbird.....	<i>Dumetella carolinensis</i>	MF, UP, SHF
Northern Mockingbird	<i>Mimus polyglottos</i>	SH, UP, DV
Brown Thrasher	<i>Toxostoma rufum</i>	UP, SHF
Starlings		
European Starling	<i>Sturnus vulgaris</i> *	DV
Waxwings		
Cedar Waxwing.....	<i>Bombycilla cedrorum</i>	MTC
New World Warblers		
Ovenbird	<i>Seiurus aurocapilla</i>	SK, UHF, SHF
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	SK, UHF, SHF
Louisiana Waterthrush	<i>Parkesia motacilla</i>	SK, DM, DS
Northern Waterthrush.....	<i>Parkesia noveboracensis</i>	SK, DM, DS
Golden-winged Warbler.....	<i>Vermivora chrysoptera</i>	SK, SHF
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	SH, UP
Black-and-white Warbler	<i>Mniotilta varia</i>	MTC
Prothonotary Warbler	<i>Protonotaria citrea</i>	SK, DS
Tennessee Warbler	<i>Oreothlypis peregrina</i>	SK, UP, SHF
Orange-crowned Warbler	<i>Oreothlypis celata</i>	SK, UHF, DS, SHF
Kentucky Warbler.....	<i>Geothlypis formosa</i>	SK, DS, UHF
Common Yellowthroat.....	<i>Geothlypis trichas</i>	SK, DM, SSL
Hooded Warbler	<i>Setophaga citrina</i>	SK, UHF
American Redstart.....	<i>Setophaga ruticilla</i>	SK, UHF, UP, SHF
Cape May Warbler	<i>Setophaga tigrina</i>	SK, UP, SHF
Cerulean Warbler	<i>Setophaga cerulea</i>	SK, UHF, UP, SHF
Northern Parula	<i>Setophaga americana</i>	MTC
Magnolia Warbler	<i>Setophaga magnolia</i>	SK, UHF, UP, SHF
Bay-breasted Warbler.....	<i>Setophaga castanea</i>	SK, SHF
Blackburnian Warbler.....	<i>Setophaga fusca</i>	MF, SH, UP
Yellow Warbler.....	<i>Setophaga petechia</i>	SK, DM
Chestnut-sided Warbler.....	<i>Setophaga pensylvanica</i>	SK, UP, SHF
Blackpoll Warbler	<i>Setophaga striata</i>	SK, UP, SHF
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	SK, UHF, SHF
Palm Warbler.....	<i>Setophaga palmarum</i>	SH, UP, DV
Pine Warbler.....	<i>Setophaga pinus</i>	MF, SH, UP
Yellow-rumped Warbler.....	<i>Setophaga coronata</i>	MTC
Yellow-throated Warbler.....	<i>Setophaga dominica</i>	MF, SH, UP
Prairie Warbler.....	<i>Setophaga discolor</i>	SH, UP
Black-throated Green Warbler.....	<i>Setophaga virens</i>	SK, UHF, UP, SHF
Canada Warbler	<i>Cardellina canadensis</i>	SK, SHF

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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Tanagers

Summer Tanager	<i>Piranga rubra</i>	MF, SH, UP
Scarlet Tanager	<i>Piranga olivacea</i>	UHF, UP, SHF

Sparrows and Allies

Eastern Towhee	<i>Pipilo erythrophthalmus</i>	MF, SCF
Chipping Sparrow	<i>Spizella passerina</i>	SH, UP, DV
Field Sparrow	<i>Spizella pusilla</i>	SH
Fox Sparrow	<i>Passerella iliaca</i>	UHF, UP, SHF
Song Sparrow	<i>Melospiza melodia</i>	MTC
Swamp Sparrow	<i>Melospiza georgiana</i>	DM, SSL
White-throated Sparrow	<i>Zonotrichia albicollis</i>	MF, UP, SHF
Dark-eyed Junco	<i>Junco hyemalis</i>	SH, UP

Cardinals, Grosbeaks and Buntings

Northern Cardinal	<i>Cardinalis cardinalis</i>	MTC
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	UHF, UP, SHF
Blue Grosbeak	<i>Guiraca caerulea</i>	SH, UP
Indigo Bunting	<i>Passerina cyanea</i>	SH, UP

Blackbirds and Allies

Red-winged Blackbird	<i>Agelaius phoeniceus</i>	DM, DS
Common Grackle	<i>Quiscalus quiscula</i>	MTC
Brown-headed Cowbird	<i>Molothrus ater</i>	SH
Orchard Oriole	<i>Icterus spurius</i>	UP
Baltimore Oriole	<i>Icterus galbula</i>	UHF, UP, SHF

Finches and Allies

Purple Finch	<i>Carpodacus purpureus</i>	SK, SHF
American Goldfinch	<i>Carduelis tristis</i>	MTC

Old World Sparrows

House Sparrow	<i>Passer domesticus</i> *	DV
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MAMMALS

Didelphids

Virginia Opossum	<i>Didelphis virginiana</i>	MTC
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Insectivores

Southern Short-tailed Shrew	<i>Blarina carolinensis</i>	MTC
Eastern Mole	<i>Scalopus aquaticus</i>	MTC

Edentates

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Nine-banded Armadillo.....	<i>Dasypus novemcinctus</i> *	MTC
Lagomorphs		
Eastern Cottontail	<i>Sylvilagus floridanus</i>	MTC
Rodents		
Southeastern Pocket Gopher.....	<i>Geomys pinetis</i>	SH, UP
Southern Flying Squirrel.....	<i>Glaucomys volans</i>	MTC
Round-tailed Muskrat.....	<i>Neofiber alleni</i>	DM, DS
Golden Mouse	<i>Ochrotomys nuttalli</i>	UMW, UP
Cotton Mouse	<i>Peromyscus gossypinus</i>	MTC
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	MTC
Sherman's Fox Squirrel.....	<i>Sciurus niger</i>	SH, UP
Hispid Cotton Rat	<i>Sigmodon hispidus</i>	MTC
Carnivores		
River Otter	<i>Lutra canadensis</i>	DS, SST
Bobcat	<i>Lynx rufus</i>	MF, UMW
Striped Skunk.....	<i>Mephitis mephitis</i>	MTC
Long-tailed Weasel.....	<i>Mustela frenata</i>	MTC
Raccoon.....	<i>Procyon lotor</i>	MTC
Gray Fox	<i>Urocyon cinereoargenteus</i>	MTC
Artiodactyls		
White-tailed Deer	<i>Odocoileus virginianus</i>	MTC

* Non-native species

Devil's Millhopper Geological State Park

Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
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Addendum 6—Imperiled Species Ranking Definitions

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 Game and Freshwater Fish Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

ENAI 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)

Imperiled Species Ranking Definitions

- 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.

Imperiled Species Ranking Definitions

- 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 - FFWCC)

- ST..... Listed as Threatened Species by the FFWCC. 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 FFWCC. 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

Imperiled Species Ranking Definitions

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.

**Management Procedures for Archaeological and Historical Sites and Properties on
State-Owned or Controlled Properties (revised March 2013)**

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:

Deena S. Woodward
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

Eligibility Criteria for National Register of Historic Places

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

Eligibility Criteria for National Register of Historic Places

- e)** 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
- f)** a property achieving significance within the past 50 years, if it is of exceptional importance.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines

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.

**Preservation Treatments as Defined by Secretary of Interior's Standards and
Guidelines**
