

**RARE PLANT SURVEY
of the
TIMUCUAN ECOLOGICAL AND HISTORIC
PRESERVE**

**Final Report to
The Nature Conservancy for the
National Park Service**

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1. Introduction

In October of 1994, The Nature Conservancy (TNC) asked Conway Conservation, Inc. to conduct a rare plant survey of the Timucuan Ecological and Historic Preserve (TEHP) concentrating on several specific areas the National Park Service (NPS) regarded as undersurveyed: Cedar Point, Burton Island, and the Broward Islands (Figures 1-1 and 1-2).

In order to prepare for focused field survey work, Conway Conservation conducted a preliminary analysis to determine which species should be considered local conservation inventory priorities. From the lengthy lists of listed species that were thought to potentially occur in the preserve, a focal list of genuinely rare plants that might realistically be expected to occur there was developed. Preliminary Element Stewardship Abstracts (EASs) were prepared to summarize known information on these plants and field surveys were oriented around the search images developed in the course of this research.

Initial reconnaissance of the areas of NPS interest indicated that rare plants would be unlikely to be encountered there and that repeated seasonal visits to these remote islands would be unproductive. Therefore, the field survey plan was restructured to emphasize more extensive and less intensive surveys. As originally planned, approximately one person-day/month was devoted to fieldwork, but different areas were explored on most visits.

Burton Island and the Broward Islands proved botanically unrewarding because of the basic ecological dynamics that control the vegetation on the preserve's islands. As isolated high spots in a thunderstorm-prone region, these islands are highly susceptible to lightning fires. Since spreading fires do not reach the islands and conditions for ignition are not exactly right very often, they do not burn frequently. Therefore heavy fuel loads build up so that when the inevitable fire does start, the result is a very hot burn. This devastates the vegetation, burns out organic accumulations, and leaves succession little to work with besides a palmetto thicket, a few rootsprouting shrubs, bare ground, and weeds. The rich groundcover flora that characterizes pinelands that receive frequent light burning cannot develop in this cycle of alternating shrub overgrowth and severe fire. In places, the interval between fires stretches long enough for hammock vegetation to develop, but only rare spots have gone unburned for long enough to develop a rich hammock flora.

Current observations on Cedar Point and past studies Ft. George Island (Pruitt 1985) and Pelotes Island (Newman *et al.* 1988, Hall 1989) indicate that these larger and more accessible islands support more rare plants than do the more isolated islands. The longterm effects of human intervention in fire regimes are evident in pinelands that have burned more frequently and hammocks that have been protected from fire for longer,

conditions conducive to the development of more diverse floras in these respective communities.

Field survey sites were selected to assure that virtually all significant upland areas in the preserve have had some degree of botanical exploration. We spent little time on Ft. George and did not visit Pelotes Island or Buckhorn Bluff because our staff had previously conducted rare plant surveys of those areas (Pruitt 1985; Newman *et al.* 1988; Hall 1989). We did not go to Ft. Caroline or the Theodore Roosevelt Preserve because botanical surveys had previously been done there (Coile 1994; National Park Service and National Biological Survey 1995).

Since there was little documentation of rare plant populations to be done, we put extra effort into describing the plant communities of the areas we explored.

The following report describes our methods and results. Appendix A presents a list of common and scientific names used in this report.

2. Focal Species

2.1 List Development

Several rare plant inventories and analyses of expected listed species have been conducted in the Timucuan region. During planning for the proposed Fairfield - Fort George development in the mid-1980s, a Water and Air Research, Inc. (WAR) botany team led by David Hall and Kent Perkins under the direction of Buford Pruitt produced several reports on the "notable" species of Fort George Island. (Information from these reports and related surveys by Don Blake, Linda Duever, and Lora Smith is cited as Pruitt 1985.) Don Blake later updated, expanded, and revised these Ft. George plant lists for the National Park Service (NPS).

During the feasibility and planning studies for the Dale E. Joyner Nature Preserve at Pelotes Island, Jacksonville Electric Authority (JEA) had KBN Engineering and Applied Sciences, Inc. (KBN) conduct vegetation surveys which documented additional occurrences of rare plants (Newman *et al.* 1988, Hall 1989). (Linda Duever and Don Blake also did these botanical surveys, with assistance from Bob Simons, Buford Pruitt, and David Hall.) Nancy Coile has conducted a botanical survey of the Theodore Roosevelt Preserve, but it has not yet been published (Coile 1994). There is a Ft. Caroline plant list on the NPFlora database on the Internet. Several plant lists were included in the General Management Plan (GMP) for the Timucuan Ecological and Historic Preserve (TEHP). Over a hundred species have been labelled "rare", "notable", "protected", etc. on these lists.

Appendix B, Table 1, summarizes the information Conway Conservation to evaluate which of these species were of real local conservation significance. The TEHP records

listed are those species that appear in the list on pages 148-149 of the Affected Environment section of the GMP, which NPS gave to Conway Conservation as the best available list of the rare plants that might be on the preserve. The Fairfield records are those from the WAR studies (Pruitt 1985) and/or those listed in Appendix F of the GMP, "Plant Species Found on Fort George Island", which is presumed to be the updated version of the Fairfield list that Don Blake prepared. The Pelotes records are from Newman *et al.* (1988), Hall (1989), and related notes in Linda Duever's files. The Roosevelt column has only has information from Nancy Coile's December 1994 telephone conversation with Linda Duever. The entries in the FNAI Matrix column indicate species named as occurring in Duval or Nassau counties in FNAI (1990).

To identify focal species for survey attention, Conway Conservation first extracted all species FNAI-ranked G1 or G2 from Table 1 in Appendix B, then examined their ranges and habitat requirements to determine if low pine flatwoods, saltmarsh edges, maritime hammocks, and/or shell mounds in the Jacksonville area would be reasonably likely habitats for them. Two species, *Forestiera godfreyi* and *Rudbeckia nitida*, were tentatively added to this list based on previous experience in the region, and a subspecies, *Helianthus debilis* ssp. *cucumerifolius* var. *tardiflorus*, was added for evaluation based on reports of the species within the preserve. The resulting draft focal species list is presented in Appendix B as Table 2.

Based on our reviews of materials from the FNAI files and our initial field survey, we refined our focal species list to more accurately reflect rare plants that could reasonably be expected to occur on the preserve.

We added *Lantana depressa* var. *floridana* because it grows in the preserve on Ft. George Island and FNAI has an EOR from Little Talbot Island just to the east. This species was not on our initial list because the FNAI 1990 matrix does not acknowledge these Duval County occurrences and FDA information (Coile 1993) implies the species is endemic to South Florida.

We added incised groove-bur (*Agrimonia incisa*) because South Carolina occurrences are reported from saltmarsh-edge maritime hammock habitats. We did not originally list this as a focal species because Florida habitat information indicates that it requires sandhill habitat.

We removed smooth beach sunflower (*Helianthus debilis* ssp. *cucumerifolius* var. *tardiflorus*) because FNAI regards it as narrowly endemic to the Big Bend region.

We deleted pigmy pipes (*Monotropsis reynoldsiae*) because the hardwood forest types it has been found in do not appear similar to the maritime hammock type of hardwood forest on the preserve.

We removed several species from the focal list because they are reported only from more inland pinelands with a rich, grassy, fire-maintained groundcover unlike any we have

found in the preserve. These species include purple balduina (*Balduina atropurpurea*), bartram's ixia (*Calydorea coelestina*), Florida toothache grass (*Ctenium floridanum*), hartwrightia (*Hartwrightia floridana*), st. john's susan (*Rudbeckia nitida*), chaffseed (*Schwalbea americana*), and variable-leaf crownbeard (*Verbesina heterophylla*). The toothache grass, chaffseed, and crownbeard also seem to prefer more xeric habitats than those in the study area.

We also deleted chapman's skeletongrass (*Gymnopogon chapmanianus*) from the focal list because it appears to prefer more xeric habitats than we observed and most occurrences are on the Gulf coast.

Although florida spiraled three-awn (*Aristida rhizomophora*), southern milkweed (*Asclepias viridula*), curtiss' sandgrass (*Calamovilfa curtissii*), and lakeside sunflower (*Helianthus carnosus*), all seem to prefer more open, sunny, and grassy pinelands than we have yet found on the preserve, we kept them on the focal list because they apparently occur in wet coastal pinelands and thus might persist in fragments of marginally appropriate habitat. At the least, these are species preserve managers should be familiar with because they might be candidates for (re?)introduction into fire-maintained habitat in the future.

These revisions left us with the following focal species list:

- incised groove-bur (*Agrimonia incisa*)
- florida spiraled three-awn (*Aristida rhizomophora*)
- southern milkweed (*Asclepias viridula*)
- curtiss' sandgrass (*Calamovilfa curtissii*)
- Godfrey's privet (*Forestiera godfreyi*)
- lakeside sunflower (*Helianthus carnosus*)
- yellow lantana (*Lantana depressa* var. *floridana*)
- green ladies' tresses (*Spiranthes polyantha*)

2.2 Research

To develop search and stewardship information on the focal species, we examined all materials on them in the FNAI files and Conway Conservation files, library, and databases. We did some World Wide Web searches, but found little information beyond basic taxonomic data on these obscure plants. We then went through the materials we had accumulated and attempted to locate and review any other relevant references referred to therein. This information was synthesized to create Draft ESAs (see Appendix C) for six of the seven focal species. (The ESA for *Agrimonia incisa* had already been written.)

Doria Gordon informed us that ESA preparation should be coordinated through Caryn Hoadley, so we contacted her and gave her the list of focal species we expected to be developing abstracts for. Caryn sent us a disc with the standard ESA fields and instructions used for the BCD system. The draft ESAs are printed from the Microsoft Access database fields Conway Conservation uses to track this sort of information. We have set up the report format to include all the information required for the ESA;

however, for this report, we have left the fields organized the way we customarily work with them. This information will be reformatted so that it is fully compatible with TNC's systems and delivered to TNC on disc so that it can be integrated into their systems and updated as needed.

The draft ESAs were circulated to the contact people listed for each species (see Appendix D) (except for a few we were unable to locate) and their responses were incorporated into the final versions.

3. Field Surveys

3.1 Reconnaissance

On June 12-13, 1995, Linda Duever and Don Blake conducted the field reconnaissance survey. Accompanied by Brian Peters and Dan Tardona of the TEHP staff, who provided an NPS boat for transportation, we set out to visit Burton Island early on the first morning, but, due to engine problems, decided it would not be wise to go so far out. We therefore chose to spend the morning investigating the islands at the mouth of Sisters Creek, which to our knowledge had never been examined botanically, then decided to survey part of Cedar Point in the afternoon. On the second day, we took another boat to Burton Island in the morning and to the center Broward Island in the afternoon.

The field reconnaissance told us several things that influenced our strategy for the remainder of the study:

- The pinelands of the Broward Islands and particularly of Burton Island, which was severely burned two years ago, do not have the kind of diverse, grassy understory that is characterized by a wide variety of ephemerally visible uncommon plants. Therefore, frequent repeat surveys of this habitat are not likely to be fruitful as they would be in a rich wiregrass flatwoods.
- The uplands of the TEHP are mostly islands and they indeed exhibit the principles of island biogeography: there is considerable variation in species composition and abundance from one island to another. Some of the smallest islands have very low species diversity but large populations of species rare elsewhere in the preserve.
- The Cedar Point forest is typical maritime hammock. The rare species to be expected here are generally things that are either visible throughout the growing season or winter - early spring ephemerals (mostly terrestrial orchids).

3.2 Seasonal Surveys

Figures 3-1 through 3-4 show the areas visited during the course of this study.

Field work scheduling for this project was complicated by the fact that Burton Island is only accessible for four hours at high tide. Field surveys therefore had to be planned according to tide tables so that staff arrived at the island at an appropriate time of day at

the beginning of the high tide period. Several other sites were easier to access at extreme tides, which complicated logistics.

The sites surveyed are documented in Appendix E, which have been printed off Microsoft Access in Conway Conservation's usual field survey report format. If required, these could be printed in another format to meet TNC's needs.

4. Conclusions

4.1 Rare Plant Populations

Remarkably few listed plant populations were encountered in the course of the study. No new populations of the focal species or any other genuinely rare plants were found.

Element Occurrence Records (EORs) for the two FNAI Special Plant populations confirmed are presented in Appendix F.

A number of the locally uncommon, but not really rare, species from the various lists synthesized in Table 1, Appendix B, were encountered. They included *Asplenium platyneuron*, *Cissus trifoliata*, *Corallorhiza wisteriana*, *Epidendrum conopseum*, *Ilex ambigua*, *Ilex opaca*, *Phlebodium aureum*, *Pinguicula pumila*, *Psilotum nudum*, *Rivina humilis*, *Salvia coccinea*, and *Spiranthes lacinata*. None of these species are tracked by FNAI. Their general locations are documented in the Field Survey Reports (see Appendix E).

There are several known Special Plant populations in the preserve that have not been included in the FNAI database or monitored by NPS. All occurrences reported from earlier studies of Pelotes Island, Ft. George Island, Ft. Caroline, and the Theodore Roosevelt Preserve should be checked, documented, and monitored.

4.2 Element Occurrence Records

Element Occurrence Records are presented in Appendix F.

4.3 Management Recommendations

Conway Conservation's management recommendations are presented below. These recommendations are based on our staff expertise and do not necessarily reflect the opinions of The Nature Conservancy.

4.3.1 Burton Island Flatwoods Restoration

The pinelands on Burton Island apparently went unburned for many years prior to the 1993 fire. It appears that many of the flatwoods understory species were choked out by

trees and shrubs during this period and that much of the pineland vegetation that remained was eliminated by the intensity of the fire. The site still has abundant saw palmetto, however.

If this pineland is left alone, it can be expected to grow up into a low quality mixed pine and oak forest composed of common second-growth species which will contribute little to regional biodiversity. The amount of palmetto present and the saltmarsh island location assure that lightning strikes will start infrequent hot fires, which will periodically set succession back so that full development into a rich mature maritime hammock is unlikely.

This situation presents something of a management dilemma in that commonplace low diversity pineland succeeding to maritime hammock may well be regarded as natural on many of the TEHP islands. We have seen no evidence that human activity has degraded the habitat (although it could well have been plantation a century or two back).

If a regular prescribed burning program were instituted and appropriate flatwoods understory species were reintroduced, this site and others like it could be restored to and maintained as a valuable flatwoods that could support populations of several of the focal species and numerous other species of conservation significance. There was (about five years ago, when Conway Conservation staff last surveyed it) appropriate material for transplanting available on areas of the St. Johns Power Park permitted as future landfill. Similar flatwoods are rapidly being destroyed for residential development along the Nassau River.

In view of the rapid loss of rich flatwoods throughout the region, Conway Conservation recommends that NPS consider promptly instituting a program to enhance the Burton Island flatwoods while donor sites for the appropriate reintroduction materials are still readily available.

Similar management dilemmas will arise on the Broward islands and elsewhere in the preserve as severe fires denude islands with heavy fuel accumulations.

4.3.2 Exotic Species Removal

4.3.2.1 Japanese Honeysuckle

As indicated in the June field survey reports, Don Blake and Linda Duever observed small infestations of Japanese honeysuckle (*Lonicera japonica*) growing vigorously in several maritime hammocks on the preserve. Although both of these field biologists have conducted many botanical surveys on the TEHP over many years, neither of them had ever recorded this exotic pest species in the area before. Japanese honeysuckle is a serious problem in Georgia natural areas and appears to be becoming one in north Florida. Particularly since many of the preserve's uncommon species are relatively delicate

hammock groundcover species that could be choked out by a vigorous understory vine like Japanese honeysuckle, this species should be regarded as a significant threat to the ecological integrity of the TEHP.

We recommend that a monitoring and control program be instituted immediately to prevent this highly invasive species from becoming established throughout the preserve. This will need to be a longterm effort, since birds are apparently carrying the seeds to islands within the preserve from sources beyond the boundaries and it can be expected that these external seed sources will become more extensive.

4.3.2.2 Chinese Tallow

We observed individual chinese tallow (*Sapium sebiferum*) trees in several locations on the preserve. They did not seem to be spreading or significantly invading natural habitats in any of these places. Nevertheless, since this species is considered an invasive exotic, it would be prudent to remove these trees soon. Locations where chinese tallow was observed are noted in the Field Survey Reports.

4.3.3 Establishing Additional Colonies of Rare Species

Numerous species occur in only one or two locations on the TEHP. Particularly since the preserve's coastal location is susceptible to severe storms and a large proportion of these species are at the northern limits of their ranges where many individuals can be expected to succumb to freezes, these populations are highly vulnerable. We therefore recommend that such species as yellow lantana (*Lantana depressa* var. *floridana*), green ladies' tresses (*Spiranthes polyantha*), lip fern (*Cheilanthes microphylla*), reddish peperomia (*Peperomia humilis*), and whisk fern (*Psilotum nudum*) be propagated from sources within or near the TEHP and established in multiple similar habitats within the preserve. This should be done cautiously under the guidance of Don Blake and other horticulture and conservation/restoration experts familiar with both the species and the preserve.

4.3.4 Prescribed Burning

The Cedar Point pine flatwoods should be restored with regular prescribed burning. This area has been clearcut and ditched, but the understory is still reasonably natural. With fire, the full complement of native species could be expected to become reestablished.

The boundary between the area to be burned to restore flatwoods and the area to be allowed to grow into hammock needs to be carefully defined.

The north end of The Clearcut has obviously been pineland for a long time; it does not have the weedy character of a hammock clearcut and planted to pine. The species present are typical pine flatwoods groundcover plants that do not invade rapidly. It is almost certain that botanical surveys of this site would confirm the presence of at least a few

moderately rare plant species here if this area were burned. These species and most of the others we observed will be extirpated or restricted to trailsides if fire is not used to maintain this area as open pineland.

The south edge of The Clearcut looks like it was once hammock, but was cut and planted to pine. This area should be restored to maritime hammock.

The flatwoods within the Pelotes Island preserve appear to have the most diverse groundcover of any pinelands in the preserve, but they are long overdue for a burn. NPS should cooperate with JEA to see that the burning program there is initiated before this community is lost.

4.4 Additional Research

Botanical exploration of the preserve should continue. NPS should get volunteers and visiting botanists to assist Don Blake in conducting field surveys of relatively promising areas at appropriate times of year.

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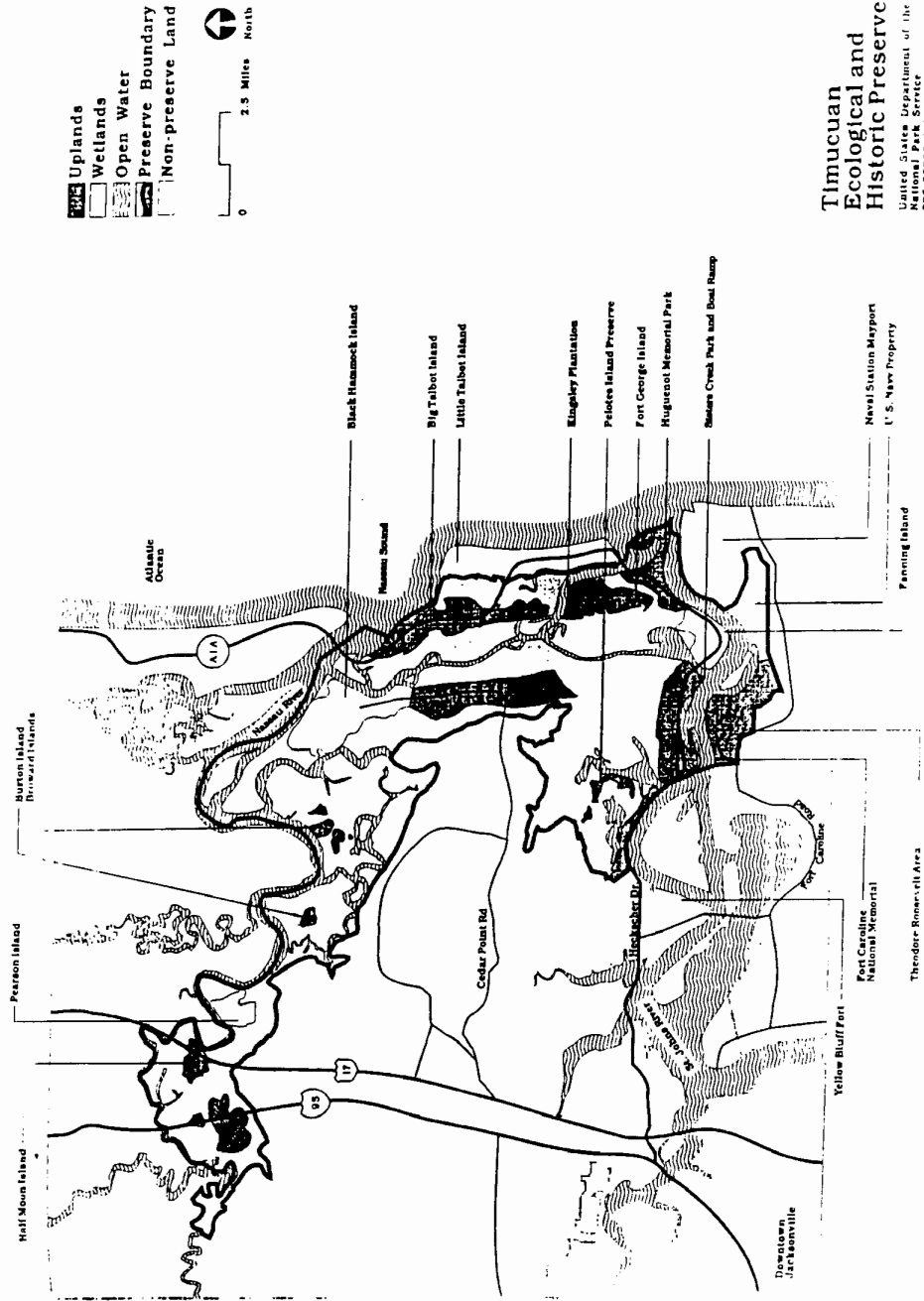
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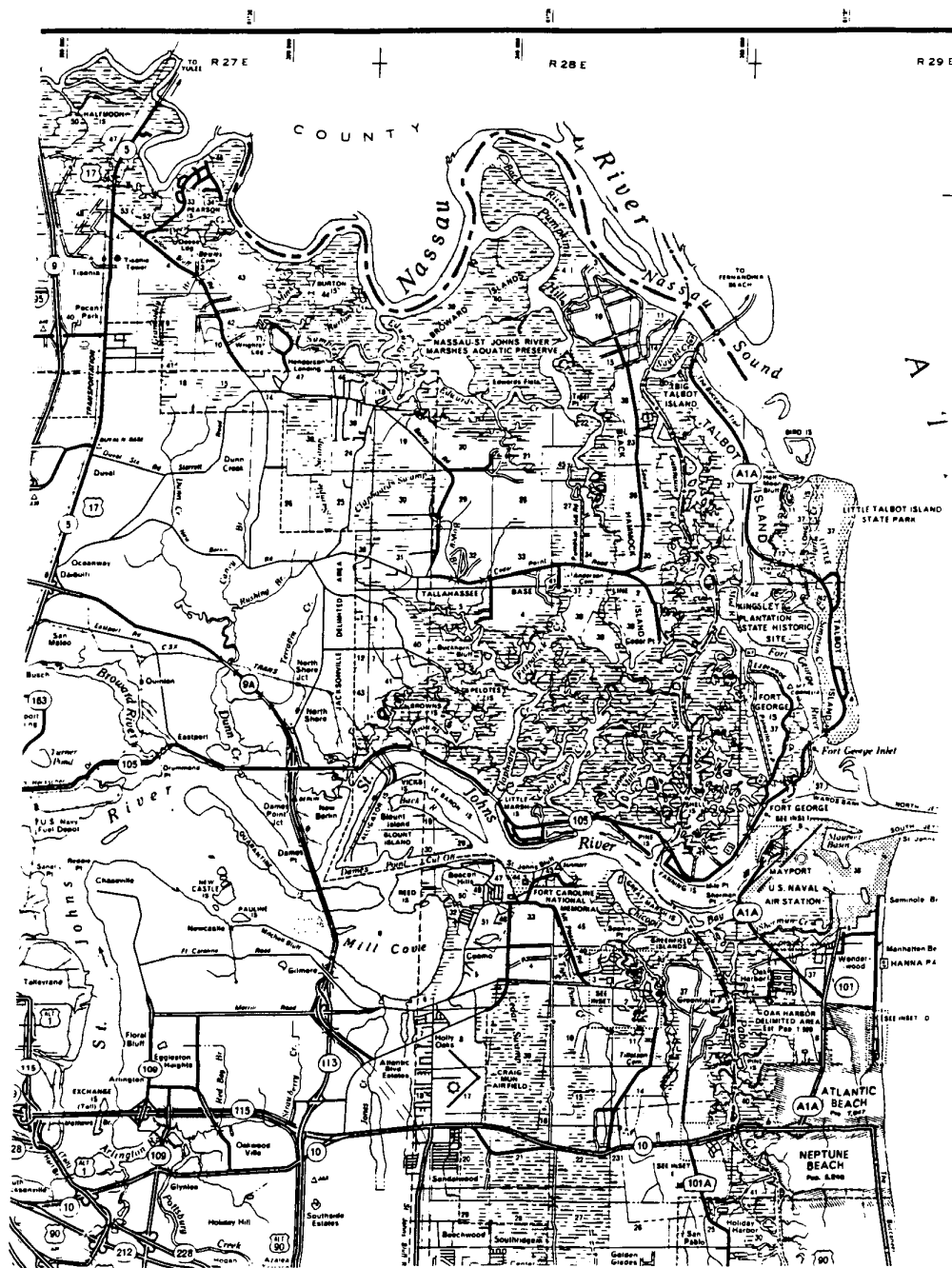
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**Timucuan
Ecological and
Historic Preserve**
United States Department of the Interior
National Park Service
008-20003-July 94-INC

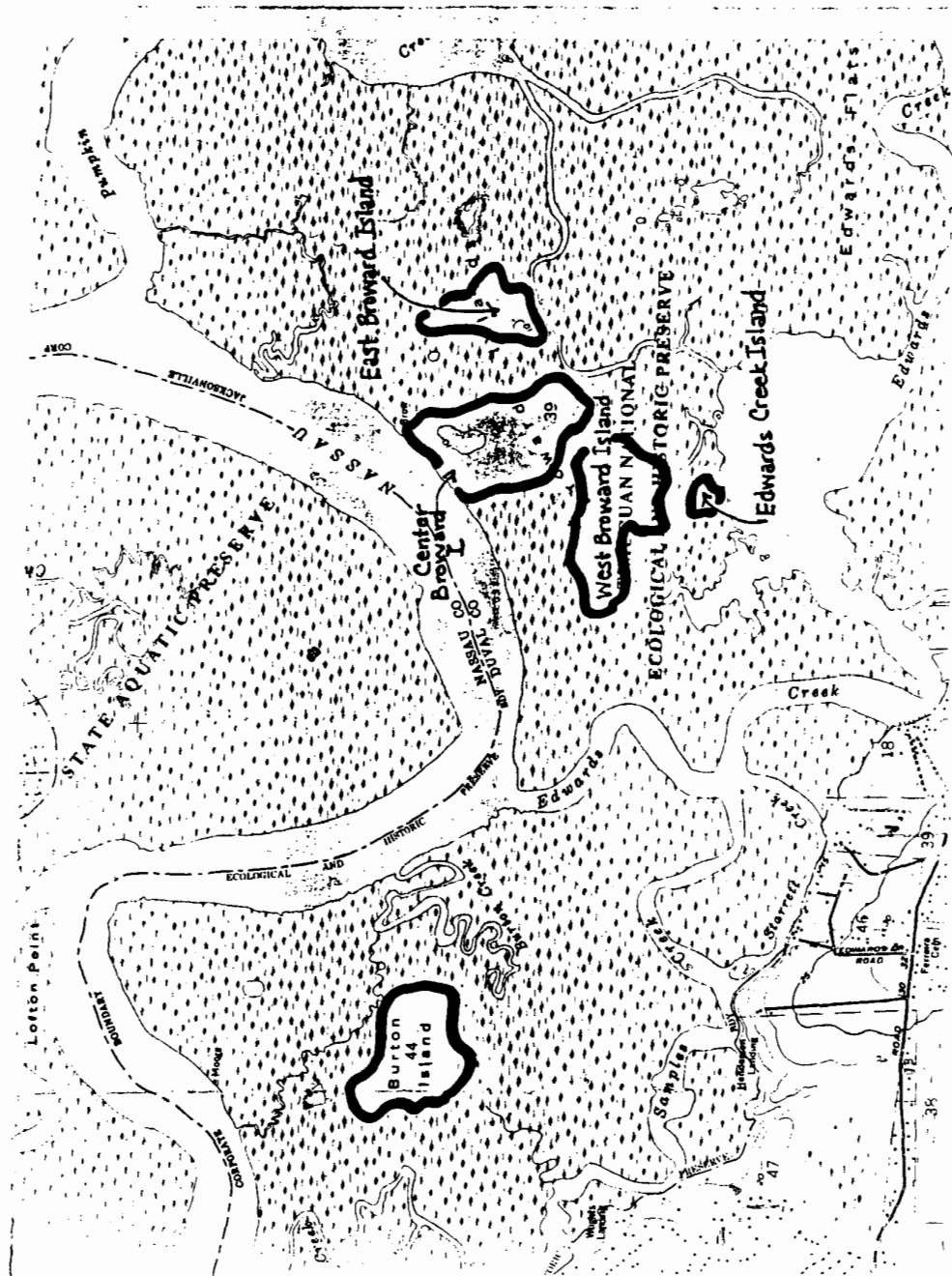
**Conway
Conservation, Inc.**
The Green Infrastructure Team

**Figure 1-1
The Timucuan Ecological and Historic
Preserve (NPS 1994)**



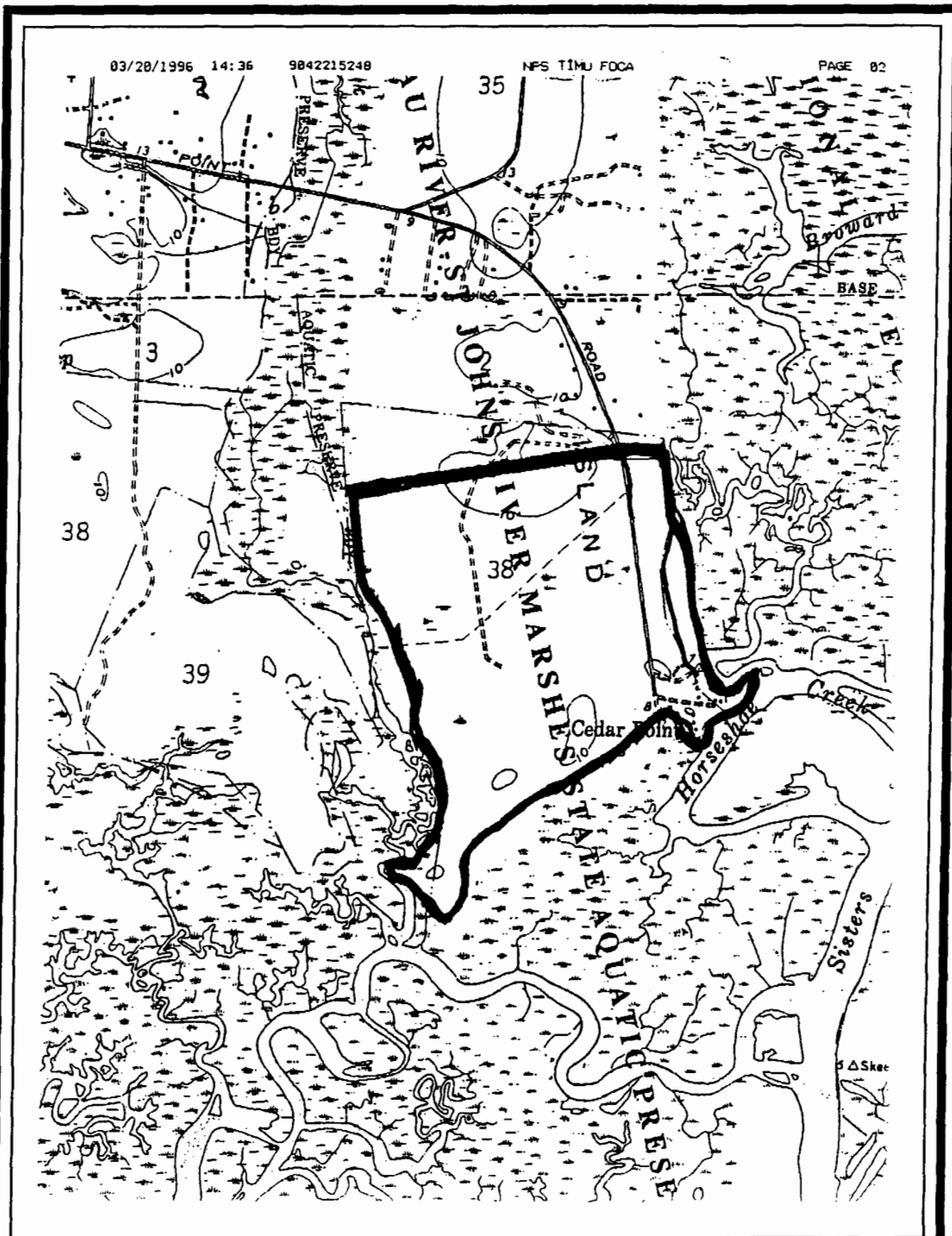
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Figure 1-2
 The Timucuan Area



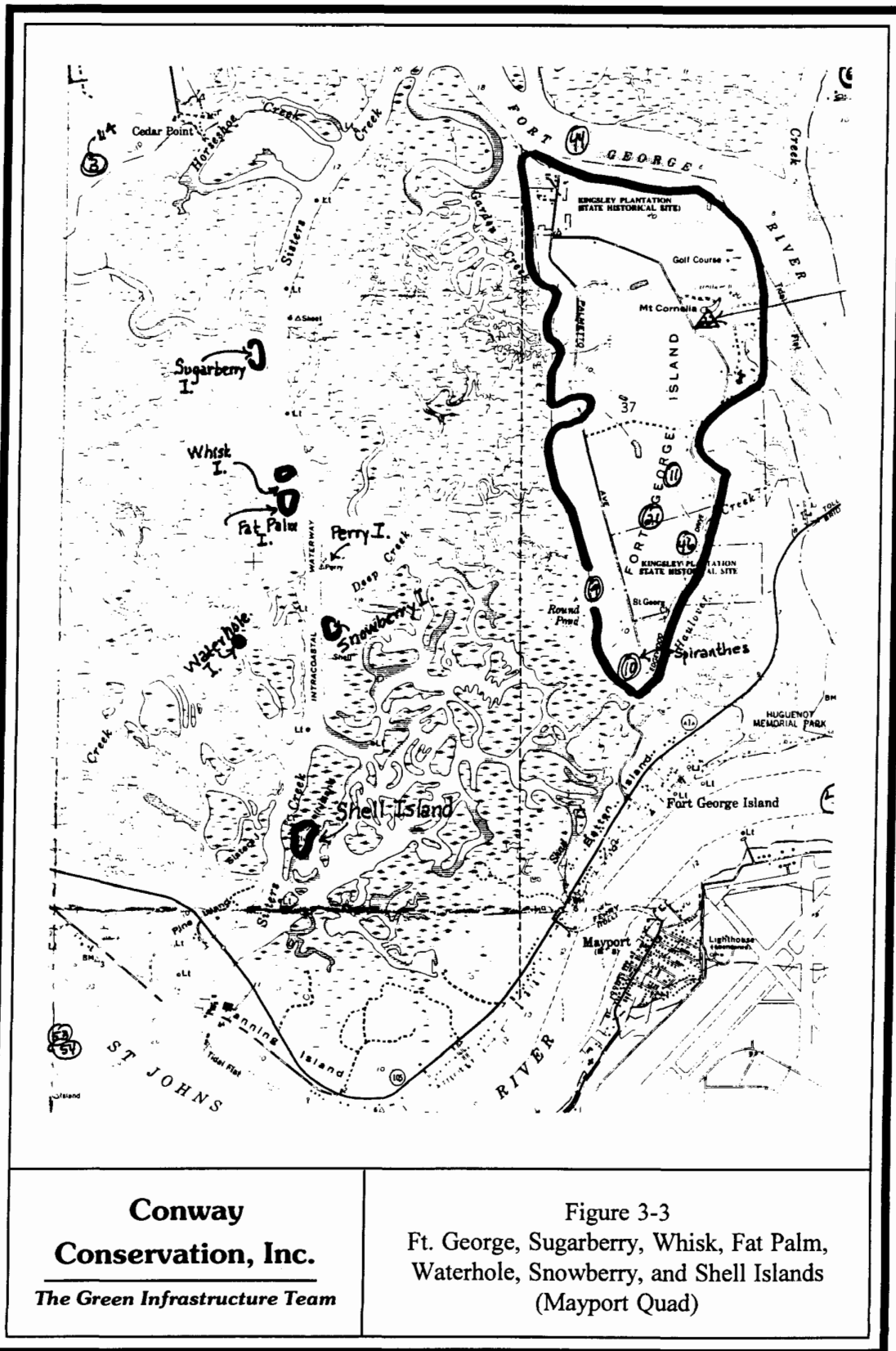
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Figure 3-1
 Burton Island and the Broward Islands
 (Hedges Quad)



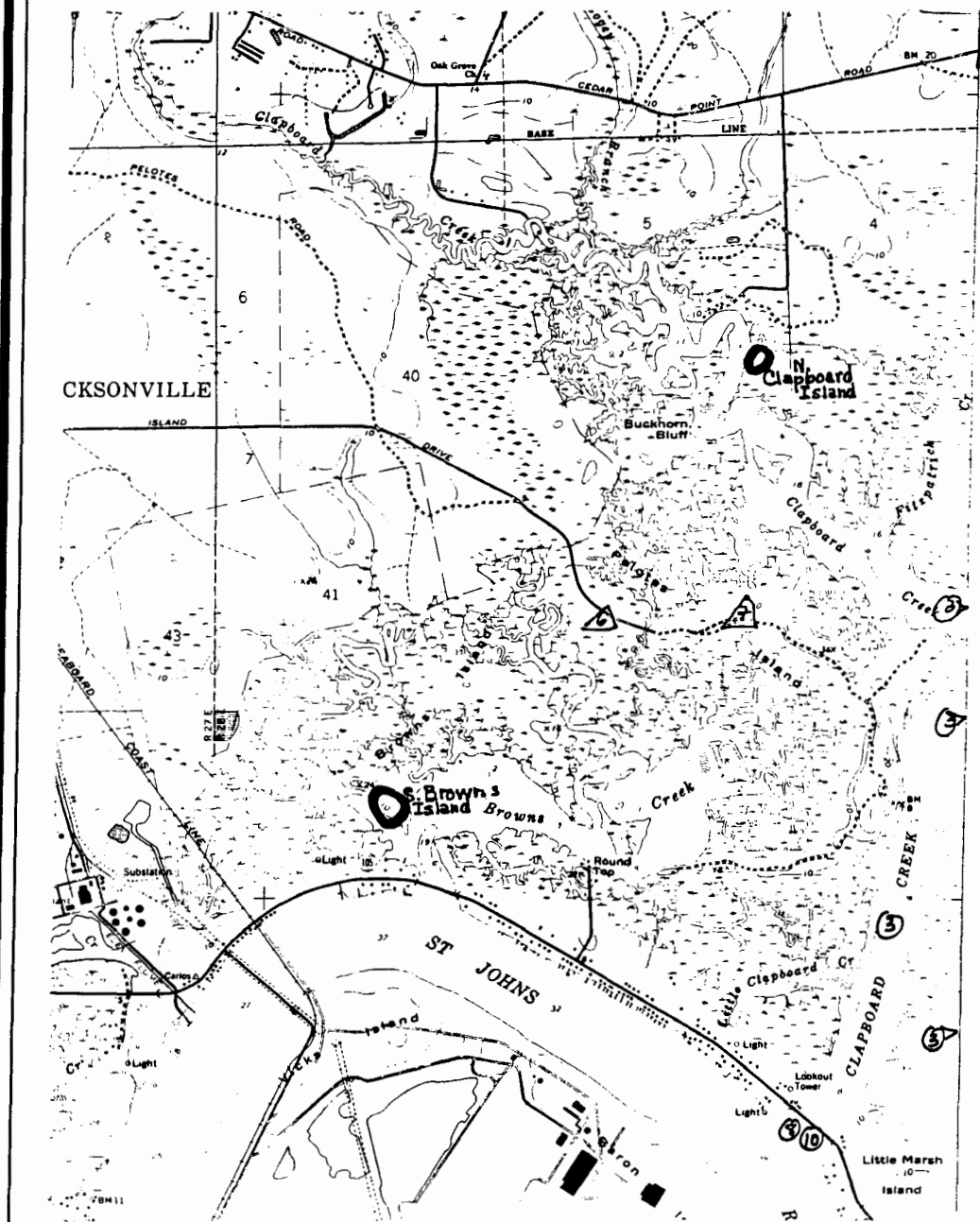
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Figure 3-2
 Cedar Point (Mayport Quad)



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Figure 3-3
Ft. George, Sugarberry, Whisk, Fat Palm,
Waterhole, Snowberry, and Shell Islands
(Mayport Quad)



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Figure 3-4
 South Browns Island and North
 Clapboard Island (Mayport Quad)

APPENDIX A

TABLE OF COMMON AND SCIENTIFIC PLANT NAMES

Scientific and Common Plant Names

94061 6/14/96

Scientific Name	Common Name
<i>Acer rubrum</i>	red maple
<i>Agrimonia incisa</i>	incised groove-bur
<i>Amorpha fruticosa</i>	indigo bush
<i>Andropogon glomeratus pumilus</i>	common bushy beardgrass
<i>Andropogon virginicus var. glaucus</i>	chalky bluestem
<i>Andropogon virginicus var. virginicus</i>	broomsedge
<i>Aralia spinosa</i>	devil's walkingstick
<i>Arisaema dracontium</i>	green dragon
<i>Aristida rhizomophora</i>	florida spiraled three-awn
<i>Aristida spiciformis</i>	bottlebrush threeawn
<i>Aristolochia serpentaria</i>	virginia snakeroot
<i>Arundinaria gigantea</i>	switch cane
<i>Asclepias curassavica</i>	scarlet milkweed
<i>Asimina</i>	pawpaw
<i>Asplenium platyneuron</i>	ebony spleenwort
<i>Aster tenuifolius</i>	perennial saltmarsh aster
<i>Baccharis angustifolia</i>	false willow
<i>Baccharis halimifolia</i>	saltbush
<i>Batis maritima</i>	saltwort
<i>Berchemia scandens</i>	supplejack
<i>Bignonia capreolata</i>	crossvine
<i>Borrichia frutescens</i>	sea oxeye
<i>Bumelia</i>	bumelia
<i>Bumelia anomala</i>	silver buckthorn
<i>Bumelia tenax</i>	tough bumelia
<i>Calamovilfa curtissii</i>	curtiss' sandgrass
<i>Callicarpa americana</i>	beautyberry
<i>Calydorea coelestina</i>	bartram's ixia
<i>Campsis radicans</i>	orange trumpetcreeper

Scientific and Common Plant Names

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Scientific Name	Common Name
<i>Carphephorus odoratissimus</i>	vanilla leaf
<i>Carya glabra</i>	pignut hickory
<i>Castanea pumila</i>	chinkapin
<i>Celtis laevigata</i>	sugarberry
<i>Centella asiatica</i>	coinwort
<i>Cercis canadensis</i>	redbud
<i>Chasmanthium laxum</i>	spike chasmanthium
<i>Cheilanthes microphylla</i>	southern lip fern
<i>Chenopodium ambrosioides</i>	mexican tea
<i>Chiococca alba</i>	snowberry
<i>Cissus trifoliata</i>	marine ivy
<i>Cladium jamaicense</i>	sawgrass
<i>Clematis catesbyana</i>	five-leaf virgin's bower
<i>Cnidoscolus stimulosus</i>	tread softly
<i>Corallorhiza wisteriana</i>	spring coralroot
<i>Cynachum</i>	milkweed vine
<i>Cyperus haspan</i>	sandpond nutgrass
<i>Cyperus polystachyos</i>	texas sedge
<i>Diodia virginiana</i>	buttonweed
<i>Diospyros virginiana</i>	persimmon
<i>Distichlis spicata</i>	seashore saltgrass
<i>Eleocharis vivipara</i>	sprouting spikerush
<i>Epidendrum conopseum</i>	greenfly orchid
<i>Erianthus giganteus</i>	sugarcane plumegrass
<i>Erythrina herbacea</i>	coral bean
<i>Euonymus americanus</i>	strawberry bush
<i>Eupatorium serotinum</i>	late boneset
<i>Eustachys petraea</i>	stiffleaf eustachys
<i>Euthamia minor</i>	flat-top goldenrod
<i>Fimbristylis caroliniana</i>	hairy fimbristylis

Scientific and Common Plant Names

94061 6/14/96

Scientific Name	Common Name
<i>Forestiera godfreyi</i>	godfrey's privet
<i>Forestiera segregata</i>	florida privet
<i>Fraxinus americana</i>	white ash
<i>Galactia elliotii</i>	white milkpea
<i>Galium</i>	bedstraw
<i>Gaylussacia</i>	huckleberry
<i>Gelsemium sempervirens</i>	carolina jessamine
<i>Gordonia lasianthus</i>	loblolly bay
<i>Gratiola</i>	gratiola
<i>Hamamelis virginiana</i>	witch hazel
<i>Hedyotis uniflora</i>	clustered diamondflower
<i>Hypericum hypericoides</i>	st. andrew's cross
<i>Ilex glabra</i>	gallberry
<i>Ilex opaca</i>	american holly
<i>Ilex vomitoria</i>	yaupon
<i>Ipomoea sagittata</i>	glades morning glory
<i>Iva frutescens</i>	marsh elder
<i>Iva imbricata</i>	beach elder
<i>Juncus roemerianus</i>	needlerush
<i>Juniperus virginiana</i>	eastern red cedar
<i>Kalmia hirsuta</i>	wicky
<i>Kosteletzkya virginica</i>	saltmarsh mallow
<i>Lactuca floridana</i>	wild lettuce
<i>Lantana depressa var floridana</i>	yellow lantana
<i>Limonium carolinianum</i>	marsh lavender
<i>Liquidambar styraciflua</i>	sweetgum
<i>Lonicera japonica</i>	japanese honeysuckle
<i>Lonicera sempervirens</i>	coral honeysuckle
<i>Lyonia ferruginea</i>	crookedwood
<i>Lyonia lucida</i>	shiny lyonia

Scientific and Common Plant Names

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Scientific Name	Common Name
<i>Magnolia grandiflora</i>	magnolia
<i>Melia azedarach</i>	chinaberry
<i>Mikania</i>	hempvine
<i>Mikania cordifolia</i>	big hempvine
<i>Mikania scandens</i>	common hempvine
<i>Morus rubra</i>	red mulberry
<i>Muhlenbergia capillaris</i>	hairgrass
<i>Myrica cerifera</i>	wax myrtle
<i>Oplismenus setarius</i>	woodsgrass
<i>Opuntia</i>	prickly pear
<i>Osmanthus americanus</i>	devilwood
<i>Parthenocissus quinquefolia</i>	virginia creeper
<i>Passiflora lutea</i>	yellow passionflower
<i>Peperomia humilis</i>	reddish peperomia
<i>Persea borbonia</i>	redbay
<i>Persea palustris</i>	swampbay
<i>Phlebodium aureum</i>	serpent fern
<i>Phytolacca rigida</i>	pokeberry
<i>Piloblephis rigida</i>	pennyroyal
<i>Pinguicula pumila</i>	small butterwort
<i>Pinus elliotii</i>	slash pine
<i>Pinus palustris</i>	longleaf pine
<i>Pinus taeda</i>	loblolly pine
<i>Polygala</i>	milkwort
<i>Polygala lutea</i>	candyweed
<i>Polygonum</i>	smartweed
<i>Polymnia uvedalia</i>	bearfoot sunflower
<i>Polypodium plumula</i>	plumy rockcap fern
<i>Polypodium polypodioides</i>	resurrection fern
<i>Prunus serotina</i>	black cherry

Scientific and Common Plant Names

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Scientific Name	Common Name
<i>Psilotum nudum</i>	whisk fern
<i>Ptelea trifoliata</i>	hop tree
<i>Pteridium aquilinum</i>	bracken
<i>Pyrus arbutifolia</i>	red chokeberry
<i>Quercus chapmanii</i>	chapman's oak
<i>Quercus geminata</i>	sand live oak
<i>Quercus hemisphaerica</i>	laurel oak
<i>Quercus virginiana</i>	live oak
<i>Rhamnus caroliniana</i>	carolina buckthorn
<i>Rhexia</i>	meadow beauty
<i>Rhus copallina</i>	shining sumac
<i>Rivina humilis</i>	rouge plant
<i>Rubus argutus</i>	highbush blackberry
<i>Ruellia caroliniensis</i>	wild petunia
<i>Sabal palmetto</i>	cabbage palm
<i>Sacciolepis striata</i>	american cupscale
<i>Sageretia minutiflora</i>	shellmound buckthorn
<i>Salicornia virginica</i>	glasswort
<i>Salvia coccinea</i>	scarlet sage
<i>Salvia lyrata</i>	lyreleaf sage
<i>Sambucus canadensis</i>	elderberry
<i>Sapindus marginatus</i>	florida soapberry
<i>Sapium sebiferum</i>	chinese tallow
<i>Schwalbea americana</i>	chaffseed
<i>Serenoa repens</i>	saw palmetto
<i>Setaria geniculata</i>	knotroot foxtail
<i>Smilax</i>	greenbriar
<i>Smilax auriculata</i>	scrub briar
<i>Smilax glauca</i>	sawbriar
<i>Solidago sempervirens</i>	seaside goldenrod

Scientific and Common Plant Names

94061 6/14/96

Scientific Name	Common Name
<i>Spartina alterniflora</i>	spartina
<i>Spartina patens</i>	beach cordgrass
<i>Spiranthes laciniata</i>	lace-lip ladies' tresses
<i>Spiranthes polyantha</i>	green ladies' tresses
<i>Sporobolus virginicus</i>	seashore dropseed
<i>Stenotaphrum secundatum</i>	st. augustine grass
<i>Tillandsia bartramii</i>	grey needleleaf airplant
<i>Tillandsia usneoides</i>	spanish moss
<i>Toxicodendron radicans</i>	poison ivy
<i>Tradescantia ohiensis</i>	spiderwort
<i>Trichostema</i>	bluecurls
<i>Vaccinium arboreum</i>	sparkleberry
<i>Vaccinium corymbosum</i>	highbush blueberry
<i>Vaccinium darrowii</i>	dwarf blueberry
<i>Vaccinium myrsinites</i>	shiny blueberry
<i>Vaccinium stamineum</i>	deerberry
<i>Vernonia gigantea</i>	giant ironweed
<i>Viola affinis</i>	florida violet
<i>Viola septemloba</i>	seven-lobed violet
<i>Vitis rotundifolia</i>	muscadine
<i>Yucca filamentosa</i>	adam's needle
<i>Zanthoxylum clava-herculis</i>	hercules club

APPENDIX B

**TABLES OF POTENTIAL RARE PLANT SPECIES AND
DRAFT FOCAL SPECIES LIST FOR TIMUCUAN
ECOLOGICAL AND HISTORIC PRESERVE**

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID. 6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEIIP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Agrimonia incisa</i>	incised groove-bur			G3/S2						C	Upland wiregrass associate. FNAI (1990) says habitats are sandhill, upland pine forest, upland hardwood edges.
<i>Arisaema dracontium</i>	green dragon						OB	OB			Extensive lit review in Fairfield appendix. Not rare.
<i>Aristida rhizomophora</i>	florida spiraled three-awn			G2/S2				EX		C	Wet pine flatwoods along FL E coast. Difficult to ID unless pointed out in the field; twisting of blades is distinctive from several strides away.
<i>Aristolochia tomentosa</i>	dutchman's pipe		T					EX	EX		Need to clarify taxonomy. A. serpentaria confirmed on Pelotes. Only A. pentandra is FNAI SP. but tomentosa was on Fairfield notable list.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID. 6/6/96

SCIENTIFIC NAME	CONSERVATION STATUS				LOCAL OCCURRENCE RECORDS				Preliminary Comments
	USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix
<i>Asclepias viridula</i>	C2	T	G2/S2			EX			C FL-endemic wet flatwoods species regarded as ranging from Gulf County to Jefferson County along gulf coast (Coile 1993), but confirmed from both Duval & Nassau cos. by FNAI (1990). Do not confuse with <i>A. viridiflora</i> .
<i>Asplenium heteroresiliens</i>	C2	T	G2/S1S2		EX	EX			Deleted from focal species list because FL occurrences are in Panhandle.
<i>Asplenium platyneuron</i>		T			OB	OB	OB		Extensive lit review in Fairfield appendix. Not rare.
<i>Asplenium plenum</i>	C2	T	G1/S1		EX	EX			Deleted from focal species list because FL occurrences are in W central FL.
<i>Athyrium asplenoides</i>		T			EX	EX			
<i>Azolla caroliniana</i>					EX	EX			
<i>Balduina atropurpurea</i>	3C		G2G3/S2						C Wet flatwoods.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID. 6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Botrychium biternatum</i>	southern grape fern		T			OB	OB	OB			Extensive lit review in Fairfield appendix Not rare.
<i>Calamovilfa curtissii</i>	curtiss' sandgrass	C2	E	G2/S2						R	FL endemic. Flatwoods, wet prairies.
<i>Calopogon barbatus</i>	bearded grass pink		T		II	EX					There are taxonomic problems w/ Calopogons. (See Dressler pers. comm. 10/16/93.) Dorset Trapnell, UGA, is studying.
<i>Calopogon multiflorus</i>	many-flowered grass pink		T		II	EX					There are taxonomic problems w/ Calopogons. (See Dressler pers. comm. 10/16/93.) Dorset Trapnell, UGA, is studying.
<i>Calopogon pulchellus</i>	common grass pink		T		II	EX					There are taxonomic problems w/ Calopogons. (See Dressler pers. comm. 10/16/93.) Dorset Trapnell, UGA, is studying. Luer considers pulchellus the same as tuberosus.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt 1D.

6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Calopogon tuberosus</i>	common grass pink		T		II	EX		OB			There are taxonomic problems w/ Calopogons. (See Dressler pers. comm. 10/16/93.) Dorset Trapnell, UGA, is studying. Luer considers pulchellus the same as tuberosus.
<i>Calydorea coelestina</i>	bartram's ixia	3C	E	G2/S2		EX				C	Wet flatwoods & prairies.
<i>Cheilanthes microphylla</i>	southern lip fern		E	G5/S3		OB	OB	OB		C	Extensive lit review in Fairfield appendix.
<i>Cissus trifoliata</i>	marine ivy						OB	EX			Extensive lit review in Fairfield appendix. Not rare, but uncommon this far N.
<i>Cleistes divaricata</i>	rosebud orchid		T		II	EX	EX	EX			
<i>Clematis catesbyana</i>	five-leaf virgin's bower			G4G5/S3?				EX			Clewell and Wunderlin treat as a synonym of C. virginiana, but Godfrey (1988) separates from that spp. w/ 3 leaflets. Does FNAI SP pertain only to Godfrey's distinct spp.?
<i>Corallorhiza wisteriana</i>	spring coralroot		T		II	OB	OB	OB			Extensive lit review in Fairfield appendix.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Ctenium floridanum</i>	florida toothache grass	3C		G2/S2						C	FNAI (1990) says confirmed from Duval Co. & reported from Nassau. Wet flatwoods & prairies. FNAI also lists Scrubby Flatwoods (xeric).
<i>Drosera intermedia</i>	water sundew	N	T	G5/S3		EX					FL occurrences are along W coast.
<i>Dryopteris ludoviciana</i>	sword fern		T			OB	OB				
<i>Encyclia tampensis</i>	butterfly orchid		T		II		OB				Common in S FL, but extremely rare this far N.
<i>Epidendrum conopseum</i>	greenfly orchid		T		II	OB	OB	EX			Extensive lit review in Fairfield appendix.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID. 6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS					Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEIIP	Fairfield	Pelotes	Roosevelt	FNAI Matrix		
<i>Forestiera godfreyi</i>	godfrey's privet					OB	OB	EX			Does this belong on focal list? Not on NLSPN (1982) or in most manuals. Godfrey (1988) recognizes from NC FL, but not Jacksonville area. Bob Simons knows. WAR (1985) said a newly described species known from a half dozen FL sites. What is now known? Why not an FNAI SP? Found on Ft. George shell mounds.	
<i>Gymnopogon chapmanianus</i>	chapman's skeletongrass			G2S2							C Mesic-xeric pinelands & prairies. If reconnaissance does not reveal suitable xeric habitat within study area, drop from focal list.	
<i>Habenaria odontopetala</i>	green cross orchid		T		II	EX	EX					
<i>Habenaria quinqueseta</i>	michaux's orchid		T		II	EX	EX	EX				
<i>Habenaria repens</i>	water spider orchid		T		II	OB	OB				Extensive lit review in Fairfield appendix. Not rare.	
<i>Hartwrightia floridana</i>	hartwrightia	C2	T	G2/S2						C	Wet flatwoods; seepage slopes; baygall clearings.	

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS					Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix		
<i>Hedyotis nigricans</i> var. <i>pulvinata</i>	narrow-leaved diamondflower	C2		G5T1Q/S1			EX					Listed spp. not in manuals or NLSPN (1988). Occurs on disturbed coquina ion beach dunes in St. Johns & Flagler cos.
<i>Helianthus carnosus</i>	lakeside sunflower	C2	E	G1G2/S1S2							R	Wet flatwoods & seepage slopes. Reported from Duval Co.; confirmed from adjacent cos. to S.
<i>Helianthus debilis</i> ssp. <i>cucumerifolius</i> var. <i>tardiflorus</i>	smooth beach sunflower			G5T1T2/S1S2								Rare ssp. has not been reported from this area, but this is within ssp. range and spp. was reported from Fairfield surveys. NLSPN (1982) lists cucumerifolius and tardiflora both as ssp. of H.debilis. Check FNAI info; should this be on focal list? Does habitat include saltmarsh margins?
<i>Helianthus debilis</i> ssp. <i>vestitus</i>	hairy beach sunflower	C2		G5T2/S2								Very unlikely. Rare ssp. has not been reported from this area; FL records all from SW. However, this is within ssp.range & species was reported from Fairfield surveys. Habitat includes disturbed saltmarsh margins.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID. 6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Hexalectris spicata</i>	crested coralroot		E		II	EX	OB	OB	OB		Coile told LCD about Roosevelt observation. Extensive lit review in Fairfield appendix.
<i>Hymenocallis latifolia</i>	broad-leaved spiderlily	3C		G4/S2S3			OB				Hymenocallis are taxonomically difficult. Fed status 3C means "more abundant or widespread than previously believed", so not on 10/93 FL USFWS list. FL occurrences are all S FL.
<i>Ilex amibigua</i>	carolina holly		T			EX					
<i>Ilex cassine</i>	dahoon		CE			EX	OB	OB			Common species.
<i>Ilex opaca</i>	american holly		CE			EX	OB	OB			Common species throughout region. Extensive lit review in Fairfield appendix.
<i>Lilium catesbaei</i>	catesby lily	N	T	G4/S3		EX		EX		C	
<i>Listera australis</i>	southern twayblade		T		II	EX	EX				
<i>Lycopodium alopecuroides</i>	foxtail club moss		T			EX					

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt ID: 6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS					Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix		
<i>Lycopodium appressum</i>	southern club moss		T			EX						
<i>Lycopodium carolinianum</i>	slender club moss		T			EX						
<i>Lycopodium cernuum</i>	nodding club moss		T			EX						
<i>Malaxis spicata</i>	florida adder's mouth		T		II	EX	OB	EX				Extensive lit review in Fairfield appendix.
<i>Matelea floridana</i>	florida spinypod	C2	E	G2/S2						C		Upland hammocks. Coile told LCD she found a rare Matelea on Roosevelt. Review FNAI info on Mateleas to determine which species(s) should be on focal list. Mateleas are difficult to ID.
<i>Monotropis reynoldsiae</i>	pigmy pipes	C2	E	G1Q/S1			EX		OB			FL endemic. Confirmed from St. Johns & Volusia cos. (FNAI 1990). Upland hardwoods, growing on Cornus florida roots. Delete from focal list if dogwood is not common in Cedar Point hammock.
<i>Nolina atopcarpa</i>	florida beargrass	C2	E	G3/S3			EX					Confirmed from St. Johns, Volusia, & Brevard cos. (FNAI 1990).

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Ophioglossum crotalophoroides</i>	bulbous adder's tongue		T			EX	OB				
<i>Ophioglossum nudicaule</i>	tiny adder's tongue fern		T			EX					Lakela & Long only list var. tenerum in Ferns of Florida.
<i>Ophioglossum petiolatum</i>	adder's-tongue lawn fern		T				OB				
<i>Osmunda cinnamomea</i>	cinnamon fern		CE				OB	OB			
<i>Osmunda regalis</i> var. <i>spectabilis</i>	?royal fern		CE			EX	OB	OB			
<i>Pavonia spinifex</i>	yellow hibiscus			G4G5/S2S3						C	
<i>Peltandra sagittifolia</i>	spoonflower			G3G4/S3			EX	EX		C	This appears to be a widespread/uncommon spp.
<i>Peperomia humilis</i>	reddish peperomia		E	G5/S2			OB	OB		C	Extensive lit review in Fairfield appendix. Perkins & Hall (WAR 1985) say that if P. humilis and P. leptostachya are separated, the Ft. George plants belong to P. leptostachya.
<i>Peperomia obtusifolia</i>	florida peperomia	N	E	G5/S2		EX					FL occurrences are all in S FL.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Phlebodium aureum</i>	serpent fern		T			EX	OB	OB			Extensive lit review in Fairfield appendix. Abundant in S Florida, but rare this far N.
<i>Physostegia leptophylla</i>	slender-leaved dragonhead	3C	E	G4G5/S3S5			EX			C	
<i>Pinguicula caerulea</i>	blue butterwort		T					EX			
<i>Pinguicula lutea</i>	yellow butterwort		T					EX			
<i>Pinguicula pumila</i>	small butterwort		T					EX			
<i>Platanthera ciliaris</i>	yellow fringed orchid		T		II	EX		EX			Luer (1972) documents this spp. from Nassau Co. He says it "occurs in low moist meadows and damp pine woods, but not too commonly".
<i>Platanthera cristata</i>	goldcrest orchid		T		II			EX			
<i>Platanthera flava</i>	gypsy spikes		T		II	EX	EX				

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Platanthera integra</i>	orange fringeless orchid	3C	T	G3G4/S3S4	II			EX		C	P. integra is not on 10/93 FL fed list, although FNAI's 5/93 list says it's USFWS 3C. P. integrilabia (no common name given) is C2 on 10/93 FL USFWS list.
<i>Platanthera nivea</i>	snowy orchid		T		II			EX			Luer (1972) documents this spp. from Nassau Co. He says it occurs in open bogs & sunny, wet meadows.
<i>Pogonia ophioglossoides</i>	rose pogonia		T		II			EX			Luer (1972) documents this spp. from Nassau & Duval counties. He says it is frequent in open wet meadows, sphagnum bogs, & roadside ditches.
<i>Polypodium plumula</i>	plumy rockcap fern		T				EX	OB			Extensive lit review in Fairfield appendix. Occurrences Blake observed on Ft. George no longer there; Perkins & Hall believe extirpated (WAR 1985).
<i>Ponthieva racemosa</i>	shadow witch		T		II	EX	EX				

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Psilotum nudum</i>	whisk fern		T			EX	OB				Extensive lit review in Fairfield appendix. Not a rare species in S Florida, but scarce this far N. Collected on Ft. George in 1936 & 1951, but not observed during Fairfield surveys.
<i>Psychotria nervosa</i>	glossy wild coffee						OB	OB			Extensive lit review in Fairfield appendix. Not a rare species, but uncommon this far N.
<i>Pteris vittata</i>	ladder brake fern		T			EX	OB				
<i>Pycnanthemum floridanum</i>	florida mountain-mint			G3/S3						C	FNAI's 5/93 list says this is USFWS 3C, but spp. is not on 10/93 FL fed list.
<i>Rhododendron viscosum</i>	swamp azalea		T							EX	
<i>Rhynchosia cinerea</i>	brown-haired snoutbean			G3/S3						R	FNAI's 5/93 list says this spp. is USFWS 3C, but it is not on 10/93 FL fed list.
<i>Rivina humilis</i>	rouge plant						OB				Extensive lit review in Fairfield appendix. Not rare.

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Rudbeckia nitida</i>	st. john's susan	C2	E	G3T1T3/S1S2		NL					FNAI, FGFWFC, & USFWS list as <i>R. nitida</i> var. <i>nitida</i> , but FDA (Coile 1993) calls that a synonym. Wet flatwoods & prairies, roadside ditches. Confirmed from multiple locations in Clay & St. Johns cos.
<i>Sabal minor</i>	blue palmetto		T			EX	EX	EX			Widespread/common inland along N FL floodplain edges.
<i>Salvia coccinea</i>	scarlet sage						OB	OB			Extensive lit review in Fairfield appendix. Not rare.
<i>Salvinia rotundifolia</i>	water spangles		T			EX	EX	EX			<i>S. rotundifolia</i> is synonym for <i>S. auriculata</i> (NLSPN 1982).
<i>Sapindus marginatus</i>	florida soapberry						OB	OB			Extensive lit review in Fairfield appendix. NLSPN (1982) treats this as a synonym for <i>S. saponaria</i> , but Godfrey (1988) and Clewell recognize only <i>marginatus</i> in Florida and do not mention <i>saponaria</i> .

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt 1D.

6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Sarracenia minor</i>	hooded pitcherplant		T		II	EX		OB			Tentatively identified specimen reported from Pelotes.
<i>Schwalbea americana</i>	chaffseed	E	E	G2/S1						C	Wet flatwoods.
<i>Selaginella apoda</i>	meadow spikemoss	N	T	G5/S3S4		EX	EX			C	
<i>Selaginella ludoviciana</i>	gulf spikemoss		T	G4G5/S3S4		EX	EX			C	
<i>Selaginella plana</i>	robust spikemoss		T			EX	EX				S. plana is synonym for S. mutica (NLSPN 1982).
<i>Smilax smallii</i>	jackson vine					EX	EX				
<i>Spiranthes brevilabris</i> var. <i>brevilabris</i>	texas ladies' tresses		T		II	EX	EX				
<i>Spiranthes brevilabris</i> var. <i>floridana</i>	florida ladies' tresses		T		II	EX	EX				
<i>Spiranthes cernua</i> var. <i>odorata</i>	fragrant ladies tresses		T		II	OB	OB	EX			
<i>Spiranthes gracilis</i>	slender ladies' tresses		T		II	EX	EX	EX			

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Spiranthes grayi</i>	little ladies' tresses					EX	EX				Not on USFWS, FDA, or FNAI lists, though all orchids should be on FDA & CITES lists. Why missing? Recognized by Luer (1972), who says its "relative rarity" may be because it is "exceedingly difficult to see" in grassy flatwoods habitat. Also grows in "shady woods".
<i>Spiranthes laciniata</i>	lace-lip ladies' tresses		T		II	EX	EX				
<i>Spiranthes longilabris</i>	long-lip ladies' tresses		T		II	EX	EX				
<i>Spiranthes ovalis</i>	oval ladies' tresses		T		II	EX	EX				
<i>Spiranthes polyantha</i>	green ladies' tresses	C2	E	G1G3/S1S2	II	OB	OB	EX		C	Extensive lit review in Fairfield appendix Rockland hammocks.
<i>Spiranthes praecox</i>	giant ladies' tresses		T		II	EX	EX	EX			FDA spells it praeox.
<i>Spiranthes vernalis</i>	spring ladies' tresses		T		II	OB	OB	EX			
<i>Thelypteris ovata</i>	rocky woods shield fern		T			EX					

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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6/6/96

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Thelypteris augescens</i>	abrupt-tip maiden fern		T			EX	EX				
<i>Thelypteris dentata</i>	downy shield fern		T			OB	OB	EX			
<i>Thelypteris kunthii</i>	southern shield fern					EX	EX	EX			T. normalis is synonym.
<i>Thelypteris palustris</i>	marsh fern		T			OB	OB	EX			
<i>Thelypteris quadrangularis</i> var. <i>versicolor</i>	hairy maiden fern		T			EX	EX				Clewell says = T. hispidula. Lakela & Long do not list hispidula in Ferns of Florida. Wunderlin lists hispidula, w/ this spp. as synonym. FDA lists both spp., but does not include ssp. NLSPN (1982) says T.h.v. = T.q.v. Treated = here.
<i>Thelypteris torresiana</i>	mariana maiden fern						OB				THIS IS AN EXOTIC SPECIES! Included here only to alert field staff that it was documented in a wax myrtle seep on Ft. George (WAR 1985).

Table 1. POTENTIAL RARE PLANT SPECIES OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

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SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS					LOCAL OCCURRENCE RECORDS				Preliminary Comments
		USFWS	FDA	FNAI	CITES	TEHP	Fairfield	Pelotes	Roosevelt	FNAI Matrix	
<i>Tillandsia bartramii</i>	grey needleleaf airplant		T			EX	OB				One plant reportedly seen on Ft. George. Extensive lit review in Fairfield appendix. Locally common around SE U.S.
<i>Verbesina heterophylla</i>	variable-leaf crownbeard	C2		G2/S2			EX			C	Sandhill & mesic flatwoods. Flowers after fire. Confirmed from Duval & adjoining counties, reported from Nassau (FNAI 1990).
<i>Vittaria lineata</i>	shoestring fern		T			EX	OB				Extensive lit review in Fairfield appendix. Not rare further S.
<i>Woodsia obtusa</i>	blunt-lobed cliff fern		T	G5/S3S4		EX	EX				FL records are all in Panhandle.
<i>Woodwardia areolata</i>	netted chain fern		T			EX	OB	OB			
<i>Woodwardia virginica</i>	virginia chain fern					EX	OB	OB			
<i>Zamia umbrosa</i>	east coast coontie		CE		II	EX	OB	EX			Coonties are taxonomically difficult. NLSPN (1982) lists <i>Z. umbrosa</i> as synonym of <i>Z. pumila</i> . <i>Z. pumila</i> is spp. listed as observed in Fairfield survey.

Table 2. DRAFT FOCAL SPECIES LIST FOR RARE PLANT SURVEY OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

94061 Rpt 1D.

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SCIENTIFIC NAME	COMMON NAME	USFWS	FNAI	FNAI Matrix	Preliminary Comments
<i>Aristida rhizomophora</i>	florida spiraled three-awn		G2/S2	C	Wet pine flatwoods along FL E coast. Difficult to ID unless pointed out in the field; twisting of blades is distinctive from several strides away.
<i>Asclepias viridula</i>	southern milkweed	C2	G2/S2	C	FL-endemic wet flatwoods species regarded as ranging from Gulf County to Jefferson County along gulf coast (Coile 1993), but confirmed from both Duval & Nassau cos. by FNAI (1990). Do not confuse with <i>A. viridiflora</i> .
<i>Balduina atropurpurea</i>	purple balduina	3C	G2G3/S2	C	Wet flatwoods.
<i>Calamovilfa curtissii</i>	curtiss' sandgrass	C2	G2/S2	R	FL endemic. Flatwoods, wet prairies.
<i>Calydorea coelestina</i>	bartram's ixia	3C	G2/S2	C	Wet flatwoods & prairies.
<i>Ctenium floridanum</i>	florida toothache grass	3C	G2/S2	C	FNAI (1990) says confirmed from Duval Co. & reported from Nassau. Wet flatwoods & prairies. FNAI also lists Scrubby Flatwoods (xeric).
<i>Forestiera godfreyi</i>	godfrey's privet				Does this belong on focal list? Not on NLSPN (1982) or in most manuals. Godfrey (1988) recognizes from NC FL, but not Jacksonville area. Bob Simons knows. WAR (1985) said a newly described species known from a half dozen FL sites. What is now known? Why not an FNAI SP? Found on Ft. George shell mounds.
<i>Gymnopogon chapmanianus</i>	chapman's skeletongrass		G2S2	C	Mesic-xeric pinelands & prairies. If reconnaissance does not reveal suitable xeric habitat within study area, drop from focal list.
<i>Hartwrightia floridana</i>	hartwrightia	C2	G2/S2	C	Wet flatwoods; seepage slopes; baygall clearings.

**Table 2. DRAFT FOCAL SPECIES LIST FOR RARE PLANT SURVEY OF THE
TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE**

94061 Rpt 1D.

6/6/96

SCIENTIFIC NAME	COMMON NAME	USFWS	FNAI	FNAI Matrix	Preliminary Comments
<i>Helianthus carnosus</i>	lakeside sunflower	C2	G1G2/S1S2	R	Wet flatwoods & seepage slopes. Reported from Duval Co.; confirmed from adjacent cos. to S.
<i>Helianthus debilis</i> ssp. <i>cucumerifolius</i> var. <i>tardiflorus</i>	smooth beach sunflower		G5T1T2/S1S2		Rare ssp. has not been reported from this area, but this is within ssp. range and spp. was reported from Fairfield surveys. NLSPN (1982) lists <i>cucumerifolius</i> and <i>tardiflora</i> both as ssp. of <i>H.debilis</i> . Check FNAI info; should this be on focal list? Does habitat include saltmarsh margins?
<i>Matelea floridana</i>	florida spinypod	C2	G2/S2	C	Upland hammocks. Coile told LCD she found a rare <i>Matelea</i> on Roosevelt. Review FNAI info on <i>Mateleas</i> to determine which species(s) should be on focal list. <i>Mateleas</i> are difficult to ID.
<i>Monotropsis reynoldsiae</i>	pigmy pipes	C2	G1Q/S1		FL endemic. Confirmed from St. Johns & Volusia cos. (FNAI 1990). Upland hardwoods, growing on <i>Cornus florida</i> roots. Delete from focal list if dogwood is not common in Cedar Point hammock.
<i>Rudbeckia nitida</i>	st. john's susan	C2	G3T1T3/S1S2		FNAI, FGFWFC, & USFWS list as <i>R. nitida</i> var. <i>nitida</i> , but FDA (Coile 1993) calls that a synonym. Wet flatwoods & prairies, roadside ditches. Confirmed from multiple locations in Clay & St. Johns cos.
<i>Schwalbea americana</i>	chaffseed	E	G2/S1	C	Wet flatwoods.
<i>Spiranthes polyantha</i>	green ladies' tresses	C2	G1G3/S1S2	C	Extensive lit review in Fairfield appendix. Rockland hammocks.

**Table 2. DRAFT FOCAL SPECIES LIST FOR RARE PLANT SURVEY OF THE
TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE**

94061 Rpt 1D.

6/6/96

SCIENTIFIC NAME	COMMON NAME	USFWS	FNAI	FNAI Matrix	Preliminary Comments
<i>Verbesina heterophylla</i>	variable-leaf crownbeard	C2	G2/S2	C	Sandhill & mesic flatwoods. Flowers after fire. Confirmed from Duval & adjoining counties, reported from Nassau (FNAI 1990).

APPENDIX C
ELEMENT STEWARDSHIP ABSTRACTS

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PMORC2B0S0

Scientific Name: *Spiranthes polyantha*

Common Name: green ladies' tresses

TNC Global Rank: G1G3

General Description: Inconspicuous terrestrial orchid with 1-3 satiny grey-green oval basal leaves up to 4 1/2 in long and a slender leafless flowering stalk 12-16 in tall growing from little tuberous roots. The flower-spike is very frail, exhibiting a rather disorganized column of minute, greenish-brown, tubular flowers without a distinct spiral. Fruit is an ellipsoid capsule less than 1/4 in long.

Technical Description: Terrestrial orchid with basal leaves and a leafless flowering stalk, generally to 15-70 cm tall. Roots are composed of a few short, fleshy, fasciculate tubers. Leaves are few (1-3), basal, densely pubescent, grey-green, petiolate, entire, elliptic to oblanceolate with obtuse to acuminate tips, 3-11 cm long and 1-3 cm wide, often inconspicuously hidden in leaf litter and usually withering away by flowering. Flowering stalk is slender, purplish-tinged, loosely to densely many-flowered (10-40 flowers) and bearing floral bracts which decrease in size from the base to the tip of the flowering portion. Floral bracts wholly to partially sheathing the stalk, greenish-brown, lanceolate, 4-8 mm long. Flowers in a spike, greenish-brown to brown, resupinate, tubular with widely spreading to strongly recurved tips. Each flower is subtended by a floral bract. Calyx composed of 2 lateral sepals and 1 dorsal sepal; lateral sepals grey-green, somewhat falcate, linear-lanceolate to linear oblanceolate, 4-5 mm long; dorsal sepal rose, linear lanceolate to oblanceolate, to 4-5 mm long. Corolla greenish-grey, greenish-brown to brown, composed of 2 lateral petals and a lip; lateral petals linear to linear-lanceolate or linear-oblanceolate, generally about 1 mm wide and 3-5 mm long; lip grey-green blending to rose or brown at the base, elliptic to lanceolate, generally about 1.5 mm wide and 4-6 mm long. The lip bears only minute basal callosities. Column cylindric, 1-5 mm long with one 2-celled anther attached to the back bearing a pair of pollinia. Fruit an ellipsoid capsule, 4-6 mm long.

Search Image: In thin, rocky or shelly oak or oak-cedar hammock, in summer, look for groups of 1-3 satiny oval grey-green leaves nestled in rock crevices and leaf litter. Plants are leafless when in bloom February-March.

ID Features: Flowering stalk purplish-tinged and smooth. The floral parts recurve at their tips, exposing a delicate rose shading toward the center of a tiny, silvery, green and tan cornucopia. Petals

are greenish-purple or brown to greenish-brown. Lateral sepals are grey-green and corolla is greenish-grey. The basal leaves readily fall off when handled. Be careful not to confuse with *Corallorhiza wisteriana*.

Diagnostic Characters: Greenish-brown flowers. Floral spike not clearly spiraled. Floral lip without basal callosities (except perhaps extremely minute ones).

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: Prevent disturbance in the vicinity of colonies; prohibit vehicles and limit foot traffic. Buffer zones should be established around colonies.

Historic Range: Caribbean, Central America, possible Peninsular Florida. A former population on Siesta Key in Sarasota County was destroyed by a residential development around 1990 (Luer 1995).

Current Range: North and central peninsular Florida southward (confirmed from Citrus, Dade, Duval and Martin counties, reported from Hernando and St. Johns counties); Central America, Greater Antilles, and Bahamas.

Habitat Description: Thin oak or oak-cedar hammocks on limerock or shell. In the tropics it is reported to be found on rocky hillsides, low coppices, rocky pinelands, on springy bluffs and ledges, and in leaf mold in coniferous and hardwood forests. In Mexico occurrences have been reported from elevations up to 8,500 ft.

Microhabitat Description: Cracks and crevices in the rocky substrate.

Associated Species: Southern red cedar.

Soil Types:

Comments on Soils/Geology: Limestone or shell at surface.

Biology/Ecology Summary:

Phenology: Plants are leafless when in bloom February-March. Fruits are produced in March and April. Leaves are present in summer.

Reproduction: Don Blake estimates that fruit set has been about 50 percent in the Ft. George population.

Transplanting Considerations: Believed easy to transplant within habitat. Blake (1984) reports that they will grow in pots if planted in the same calcareous coquina or limestone soil they grew in and mulched with red cedar litter.

Seed Propagation:

Vegetative Propagation: Spiranthes can be propagated by careful division of the roots before growth begins (Chittenden 1965).

Restoration Strategies:

Conservation Problems:

Conservation Status/Trends Discussion: This is a very inconspicuous species and therefore may be more common than is recognized.

Restoration/Recovery Potential:

Preserve Design Considerations:

Management Requirements:

Management Programs:

Monitoring Methods:

Monitoring Programs: Don Blake has been informally and irregularly following the population on Ft. George Island in the TEHP. He reports that this population of about 50 individuals is successfully reproducing. This monitoring effort needs to be documented and maintained through TNC and NPS.

Research Programs:

Research Needs:

References: Perkins and Hall 1985; Ames, Oakes and Correll 1952; Correll 1950; Correll and Correll 1982; Garay and Sweet 1974; Garay 1982; Luer 1972; Blake 1984; Chittenden 1965; Everett 1982; Long and Lakela 1976; Wunderlin 1982; Coile 1993; Hall 1993; The Nature Conservancy 1995; FNAI 1990; Duever 1996.

Contact Names: Don Blake, Carlyle Luer, Leslie Garay, Bob Dressler

Source Codes: 484PRU01

ELEMENT STEWARDSHIP ABSTRACT

ELCODE:

Scientific Name: *Forestiera godfreyi*

Common Name: godfrey's privet

TNC Global Rank:

General Description: Deciduous shrub or small tree with the main stem arching or leaning and the branches rigid. Young stems, petioles, and lower leaf surfaces look silvery due to many soft, grey hairs; upper blade surfaces very sparsely short-haired. Opposite leaves with slender petioles less than 1/2 inch long. Mature leaves ovate, lance-ovate, or elliptic with margins finely serrate from about their middles nearly to the tips. Fruits 1/2 inch long and 1/4 inch in diameter, smooth and dark blue beneath a greyish bloom. Smooth, light grey bark. Distinctive down-curving spine-like twigs along most larger stems.

Technical Description: Shrub or small tree with arching or leaning stems and branches rigid and divariate. Larger blades of mature leaves are ovate, lance-ovate, or elliptic, abruptly tapered basally, usually a little decurrent on the petioles, if the petioles are very short then winging the petiole to their bases. Sometimes bases scarcely tapered at all; upper surfaces glabrous or with minute hairs along the midribs, the lower uniformly pubescent, the hairs shorter and less dense than on the young blades. Functionally staminate inflorescence with 6 basal bracts, the outer 4 largest, ovate-reiniform, fringed apically, flowers 12-15; stalks of the inflorescence 0.25 mm long, flower stalks 0.3-0.6 mm long, sepals 4-5, 0.2-0.9 mm long, unequal in length. Sometimes one sepal is much longer than the others and petaloid; stamens 3-5 per flower, the petaloid sepals, if present usually associated with tiny rudimentary pistils. Functionally pistillate inflorescences with 6 basal bracts, with 7-10 flowers, some borne singly, others in 3-flowered umbels; sepals 0.3-0.5 mm long; abortive stamens 2-4 per flower. Fruiting stalks 2.5-7 mm long, flower stalks 5-7 mm long, drupes lance-ovoid for a considerable time in preripening, finally ripening very quickly, then slightly ovoid, or ovoid-ellipsoid, 10-12 mm long and 6-9 mm in diameter, surfaces smooth, dark blue beneath a greyish bloom.

Search Image: In rich calcareous hammocks, look for a deciduous shrub-tree with main stem arching or leaning and down-curving spine-like twigs along most larger stems.

ID Features: Leaf blades uniformly pubescent beneath. Margins of leaves finely serrate from about their middles nearly to the tips.

Diagnostic Characters: Leaf blades uniformly pubescent beneath.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary:

Historic Range:

Current Range: North and central peninsular Florida: Alachua, Gadsden, Gilchrist, Jackson, Levy, Liberty, Jefferson, and Duval counties; southward (confirmed from Citrus, Dade, Duval and Martin counties, reported from Hernando and St. Johns counties); Central America, Greater Antilles, and Bahamas.

Habitat Description: Rich, mesic, calcareous hardwood forest.

Microhabitat Description:

Associated Species:

Soil Types: Calcareous.

Comments on Soils/Geology:

Biology/Ecology Summary: Grows in mesic calcareous hardwood forests. Flowers in very early spring on previous season's twigs before new growth appears. Separate male and female flowers.

Phenology: Flowers in very early spring on previous season's twigs before new growth appears.

Reproduction: Separate male and female flowers.

Transplanting Considerations:

Seed Propagation:

Vegetative Propagation:

Restoration Strategies:

Conservation Problems:

Conservation Status/Trends Discussion:

Restoration/Recovery Potential:

Preserve Design Considerations:

Management Requirements:

Management Programs:

Monitoring Methods:

Monitoring Programs:

Research Programs:

Research Needs:

References: Foote and Jones 1989; Godfrey 1988; Coile 1993; Duever 1996; Simons 1995.

Contact Names: Loran Anderson, Robert Godfrey, Bob Simons, Ann Johnson

Source Codes:

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PDAFC12280

Scientific Name: *Asclepias viridula*

Common Name: southern milkweed

TNC Global Rank: G2

General Description: Perennial forb with one (or, infrequently, several) slender wandlike stem(s) rising from a long, woody/fleshy, tuberous rootstock. Small opposite leaves. Lowermost 1-3 pairs of leaves minute and bract-like, others are narrowly linear, 1.5-2.5 in long. Several clusters of flowers in upper leaf axils. Upper surfaces of flowers are green, lower brownish purple. Fruit is smooth, erect, narrowly fusiform, and approximately 3-4 in long. Seeds broadly oval, about 1/2 in long and naked.

Technical Description: Perennial herb from a large, elongate-oblong, vertical rootstock. Stems are spreading or erect, one to several, slender and wand-like, 3-6 dm long, greenish or tinted with purple toward the base, terete, smooth other than for a vertical line of low, weak, whitish hairs between nodes. Leaves are opposite, linear 5-10 cm long, mostly 2-3 mm broad, spreading-ascending, broadening slightly toward the acute tips, smooth or with some roughening toward and along the margin above, single-nerved. Inflorescence umbels (usually 3 or more) from axils of all or most upper leaf pairs, on slender, sparsely puberulent peduncles between 1 and 2 cm long, with involucre bracts 2-3 mm long, narrowly triangular, scabrous-margined, with rays numerous, between 1-2 cm long, angulate, purplish on the backs, greenish and puberulent on a line within. Flowers are symmetrical, smallish, the calyx lobes 5, narrowly ovate, reflexed, 2.5-5.0 mm long, glabrous, the upper (inner) surface pale green, the lower (outer) surface darker green tinted with maroon. A short (1 mm) unit of column arises from the calyx and from it the five petals arise, the boat-shaped hoods pouched toward the base, narrowly ovate or slightly obovate, 3-4.5 mm long, the tips narrowly or broadly rounded, the margins with a triangular auricle toward base, the backs yellowish or whitish green with a purplish mid-rib zone; from within the petal "pouch" arises a flat, narrow, yellowish or greenish-white, incurved horn about as long as the hood. Anther head about 1 mm long, 1.5 mm broad. The fruit follicles are smooth, erect, narrowly fusiform, 8-10 cm long.

Search Image: Inconspicuous in grassy fire-maintained very wet flatwoods. Grows in black, highly organic sand. Look for a milkweed with very narrow leaves. Most visible when pale purplish-green flowers are present April-July after a burn. Search for silk-filled seedpods later in the summer.

ID Features: Stem purplish at the base and smooth, except for weak whitish hairs below the nodes. Very narrow leaves. Milky white sap. Flowers have pale purplish-green petals bent downward and long hoods with horns equally long.

Diagnostic Characters: Similar to *A. longifolia* in habit, leaf character, and flower size, but that species has an anther head longer than the corolla.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: Needs prescribed burning.

Historic Range: Portions of north Florida.

Current Range: Endemic to two disjunct areas: coastal counties in the eastern part of Florida Panhandle and northeast Florida. Documented from Franklin, Gulf, Liberty, Wakulla, St. Johns, and Nassau counties; reported from Bay, Duval, Baker, Bradford, and Flagler. Also occurs at Rock Hill Preserve in Washington County and Gadsden Glades area in Gadsden County.

Habitat Description: Open slash or longleaf flatwoods. Understory may be dominated by grasses and sedges or shrubby with a mix of saw palmetto, gallberry, and wax myrtle or, in wetter places, with shrubby *Hypericum* or titi and blackgum.

Microhabitat Description:

Associated Species: *Verbesina chapmanii*, *Verbesina heterophylla*, *Justicia crassifolia*, *Euphorbia telephoides*, *Scutellaria floridana*, *Cuphaea viscosa*, *Aristida beyrichiana*, *Marshallia ramosa*.

Soil Types:

Comments on Soils/Geology: Humified, wet-moist, blackish, fine sand.

Biology/Ecology Summary: This species requires a long hydroperiod and periodic fire. Burning appears to be essential for flower production. *A. viridula* is always of scattered occurrence, even in the best habitats in the heart of its range.

Phenology: On burned sites, flowering occurs from April through July.

Reproduction: Evidence suggests that this species may not flower significantly except a few months after a fire.

Transplanting Considerations:

Seed Propagation:

Vegetative Propagation:

Restoration Strategies:

Conservation Problems:

Conservation Status/Trends Discussion:

Restoration/Recovery Potential: Difficult recovery if site has been prepped intensely for forestry management, there is fire suppression and an alteration of hydrology.

Preserve Design Considerations:

Management Requirements: Requires prescribed burning.

Management Programs:

Monitoring Methods: At Rock Hill, the total number of flowering individuals are counted in each burn unit. Sampling a subset of the area/population would probably be inappropriate for this species, which is never abundant. It is important to gather population data that can be related to burn records. Marking and tracking individual plants would help clarify trends in reproduction and survival.

Monitoring Programs: TNC monitors this species on the Rock Hill Preserve. This program revealed a precipitous decline from 1992 (71 individuals) to 1993 (4, in a different burn unit); no later reports in FNAI file as of 4/95.

Research Programs:

Research Needs: Document response to fire. Determine effects of silviculture practices.

References: Cooper 1984; Woodson 1954; Small 1933; Clewell 1985; Kral 1983; The Nature Conservancy 1995; Olmstead and Thomas 1993; Godfrey and Wooten 1981; Hall 1993; FNAI 1990; Coile 1993; Rickett 1966; Duever 1996.

Contact Names: Deb White, Cynthia Olmstead, Kevin Thomas, Greg Seamon, Angus Gholson, Linda Duever

Source Codes: B800FS01

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PMPOAOKOZO

Scientific Name: *Aristida rhizomophora*

Common Name: florida spiraled three-awn

TNC Global Rank: G2G3

General Description: Wiry perennial bunchgrass up to 2-3 ft tall. The twisted leaf blades are flat or folded, 1/16 in wide, and up to 18 in long. They are dark green on the upper side, lighter green on underside. The leaf sheath is smooth, rounded, and open. Stems are round, smooth, usually with 1-3 nodes, 2-4 in above ground. The seedhead is a slender tawny panicle 7-14 in long with 1/2 in awns.

Technical Description: Perennial; culms tufted, erect 65-80 cm tall, producing well-developed scaly rhizomes; blades firm, flat or folded, 7-10 cm long, 1-2 mm wide, those of the innovations flexuous, as much as 30 cm long; panicle flexuous, 20-30 cm long, the distant branches somewhat spreading, few-flowered, spikelet-bearing from near the base; glumes acuminate, usually awned, the first 8-14 mm long, the second 12-17 mm long (including the awn), lemma 9-12 mm long, the callus 1 mm long, the awns flexuous, curved or loosely twisted at base, spreading, the central often reflexed by a semicircular bend, 18-28 mm long, the lateral 15-20 mm long. Ligule is absent or minute. Awns about 1 cm long and of equal length.

Search Image: Grows in wetter areas of wiregrass flatwoods. Looks like more wiregrass to casual observer, but the trained eye can easily pick out clumps with twisted blades from several strides away. Look for flowering stalks and seedheads in recently burned areas in May and September.

ID Features: Looks like wiregrass except that leaf blade is two-dimensional instead of round and has a characteristic spiral or twist. Roots are knotty, scaly rhizomes that send out runners, not fibrous masses like wiregrass. *A. rhizomophora* has awns on glumes, whereas wiregrass does not.

Diagnostic Characters: Well developed scaly rhizomes, which are unusual in *Aristida*.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: Requires prescribed burning.

Historic Range: East Florida, extending into extreme SE Georgia.

Current Range: NE and central coast of Florida W of Atlantic coastal ridge. Frequent in St. Lucie, Martin, and Palm Beach counties; also documented from Baker, Duval, and Volusia, as well as Highlands and Osceola counties. May occur between these areas, but Yarlett believes occurrence is spotty in N Florida. Range extends into extreme SE Georgia (Leithead, Yarlett and Shiflet 1971). Occurs on Cecil Field NAS, Avon Park AFR, and the PALMAR CARL project.

Habitat Description: Wetter spots in wiregrass flatwoods.

Microhabitat Description: Clearings, roadsides, pond margins.

Associated Species: *Pinus elliottii*, *Pinus serotina*, *Andropogon brachystachys*, *Andropogon capillipes*, *Aristida beyrichiana*, *Aristida affinis*, *Aristida spiciformis*, *Ctenium aromaticum*, *Sorghastrum secundum*, *Xyris ambigua*, *Xyris caroliniana*, *Hypericum tetrapetalum*

Soil Types:

Comments on Soils/Geology: Acid, sandy soils.

Biology/Ecology Summary: Requires wet-mesic soils and periodic fire. May dominate groundcover in appropriate habitat, especially at southern end of range.

Phenology: Growth starts in late January or February. Leaf blades maximum length in May. Leithead, Yarlett and Shiflet (1971) say it flowers in May and again in September on burned sites, whereas on unburned sites, it may produce a few flowers in August or September. Based on flowering time of specimens from Florida herbaria, the FNAI matrix (1990), says it flowers and produces seed July, August, and October.

Reproduction: Vegetative growth from thick knotty rhizomes at base. Flowers only after fire or disturbance. Leithead, Yarlett and Shiflet (1971) say it flowers in May and again in September on burned sites, whereas on unburned sites, it may produce a few flowers in August or September. Based on flowering time of specimens from Florida herbaria, the FNAI matrix (1990), says it flowers and produces seed July, August, and October.

Transplanting Considerations:

Seed Propagation:

Vegetative Propagation:

Restoration Strategies:

Conservation Problems: Drainage, residential development and urban sprawl, and conversion to citrus groves are rapidly eliminating the best habitat at the southern end of range. Occurrences further north are threatened by similar, but less intense, suburbanization and conversion to pine plantations. Drainage and site preparation are probably reducing populations on timberlands. This is a fire-dependent species that will eventually be lost on any site where burning is not permitted.

Conservation Status/Trends Discussion: At the southern end of its range, this species is common in appropriate wet flatwoods habitat. Historically, sparse records from St. Lucie, Martin, and Palm Beach counties have probably been due more to the untrained observer's difficulty in recognizing it than to scarcity of the grass. However, due to drainage and suburban development, wet flatwoods are fast disappearing in these counties and the species cannot be expected to persist in this region outside of fire-maintained preserves. Further north, where flatwoods are under somewhat less development pressure, *A. rhizomophora* may never have been abundant.

Restoration/Recovery Potential:

Preserve Design Considerations:

Management Requirements:

Management Programs:

Monitoring Methods:

Monitoring Programs:

Research Programs:

Research Needs: Effects of drainage and site prepping need to be determined.

References: Leithead, Yarlett and Shiflet 1971; Hitchcock 1950; FNAI 1990; The Nature Conservancy 1995; Duever et al. 1992; Duever 1996.

Contact Names: Sally Black, Lew Yarlett, Ann Johnson, David Hall, Roy Woodbury, Nancy Bissett, Steve Orzell, Linda Duever

Source Codes: PNDBLA01, U89BLA01

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PMPOA18030

Scientific Name: *Calamovilfa curtissii*

Common Name: curtiss' sandgrass

TNC Global Rank: G2

General Description: A perennial grass with long fine leaves, forming dense clumps that may expand up to 79 inches in diameter. The 1/4 inch wide leaf blade widens and thickens at the base where the stems arise from short, thick, knotty rhizomes covered by old sheath bases. Culms may grow 79 inches tall. The single flowering stem up to 79 in tall is topped by a narrow panicle initially hidden by the uppermost leaf.

Technical Description: Culms are erect or ascending, one to few from a rhizome, stiffish, toward base ca. 5 mm thick, a lustrous yellow-green, brownish in the region of the swollen nodes, the lowermost internodes sometimes excurved. Leaves are up to 9 dm long; lowermost sheathes strongly overlapping, fully 1 cm broad at the gray-brown base, backs rounded, upwardly becoming stramineous and lustrous; median and upper sheathes more cylindrical, usually as long as or longer than the internodes, stramineous, lustrous; all sheathes apically rounded-auriculate, entire or sparingly pilose; ligule a low, puberulent and ciliolate ridge; blades dull green to 5 mm wide, very firm, the lowermost sometimes flat, but most usually strongly involute even at base, tapering to very elongate, spreading-recurved, flexuous, filiform, scabrid tips, the margins scabrid. Inflorescence, a narrow rather dense panicle 3-5 dm long, at first concealed in the uppermost subtending leaf, later well exceeding it, the spikelets numerous on the overlapping, erect or ascending panicle branches on smooth erect peduncles mostly 3-10 mm long, the panicle branches terete, smooth producing spikelets nearly their whole length or as much as the lower half naked. Spikelets in outline lanceolate, pale green with maroon tints, 4-5 mm long; glumes 2, lanceolate, keeled smooth, acuminate to acute, the single scabrid nerve often excurrent as a short mucro, the first glume 3-4 mm long, the second ca. 4-5 mm long; floret solitary on a short rachilla joint, this at its apex pilose with silvery-silky erect hairs; lemma and palea thin, pale green lanceolate, narrowly acute or acuminate, subequal, ca. 5 mm long, the lemma mostly crisped-white-pilose toward its base, the palea similarly pilose at least along the 2 keels. Stamens 3.

Search Image: Large clumps of dense, fine, light green grass with leaves that trail over the ground and curl at the ends growing in pure stands or with finer-textured wiregrass. Look in open wet-mesic flatwoods, in coastal swales, or in scrub or sandhill depressions. Mowed right-of-ways and roadside

ditches and zones between titi and saw palmetto are especially likely spots. Numerous narrow flowering panicles may be visible July-November in burned or disturbed areas, but few blooms are to be expected elsewhere. Light green signature is distinctive on color aerals.

ID Features: Large, clumping, light green grass with long fine, firm, dull green leaves, thickened and reddish at the base. Stems lustrous yellow-green, brownish around swollen nodes. Rhizomes thick and knotty. Very narrow panicle with short strongly ascending branches. Spikelets pale green with maroon tints. Inexperienced observers may confuse seed panicles with *Uniola*; examine seed differences carefully.

Diagnostic Characters: Very narrow panicle with short strongly ascending branches. Spikelet one-flowered, awnless. Lemmas sparsely to abundantly pilose on the back; callus hairs relatively few. Calamovilfas, and especially this species, resemble certain *Calamogrostis* and *Ammophila* species. Unlike *Calamogrostis*, this species' glumes are not longer than the lemma. It has a shorter rachilla joint than *Ammophila*. Also looks like *Sporobolus floridanus*, but that species has a hairy ligule and wider, shorter, more erect leaves.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: This species requires fire and/or continual cutting or thinning of the tops and overstory. It may be dependent on specific hydrologic conditions that make it vulnerable to drainage.

Historic Range: North and east Florida. Kral (1983) reported this species from Volusia, St. Johns, and Duval counties, but Johnson and Schultz (1993) were unable to locate any occurrences in this region.

Current Range: Atlantic and Gulf populations localized and disjunct. Known from Brevard County on central E coast of Florida peninsula and from Santa Rosa, Okaloosa, Walton, and Bay counties in the W Panhandle. Recently confirmed peninsular sites all on Merritt Island. Panhandle sites concentrated on Gulf Breeze and Moreno peninsulas. Mostly coastal (below 50 ft contour), but found up to 10 mi inland on Eglin AFB.

Habitat Description: Flatwoods with an overstory of slash and/or longleaf pine and an understory dominated by saw palmetto intermixed with ericads such as fetterbush and tarflower over a

wiregrass groundcover. May occupy ephemeral depression marshes surrounded by scrub or sandhill.

Microhabitat Description: Typically found along ecotone between mesic and hydric flatwoods. May grow as a band around ponds, often forming the zone between titi and saw palmetto.

Associated Species: Andropogon, Panicum, Aristida, Polygala, Xyris, Rhexia cubensis, Eriocaulon, Lachnocaulon, Eryngium aromaticum

Soil Types: Leon Sand, Immokalee Sand, Myakka Sand, St. Johns.

Comments on Soils/Geology: Moist sand or sandy peat.

Biology/Ecology Summary: Requires fire or mechanical destruction of upper portions for flowering. Requires sunny site; easily shaded out by shrubs or trees on sites where succession is allowed to proceed.

Phenology: Flowers from July to October.

Reproduction: Flowers well only after fire or mechanical disturbance. Only location where young plants have been observed is Merritt Island, where site is burned on three-year rotation.

Transplanting Considerations:

Seed Propagation:

Vegetative Propagation:

Restoration Strategies:

Conservation Problems:

Conservation Status/Trends Discussion: The known Merritt Island populations are all within the boundaries of Kennedy Space Center/Merritt Island National Wildlife Refuge and therefore generally protected. Many panhandle sites are slated for development.

Restoration/Recovery Potential: Once eliminated from an area, this species may be limited in its ability to recolonize.

Preserve Design Considerations: Requires fire. Sensitive to drainage alteration.

Management Requirements: Should be burned frequently. A three-year fire interval has successfully promoted reproduction on Merritt Island. Mowing seems to favor the species and might be substituted for fire if necessary. Burning, thinning, or cutting of the overstory must be utilized to prevent it from being shaded out by titi, gallberry, etc.

Management Programs:

Monitoring Methods:

Monitoring Programs:

Research Programs:

Research Needs:

References: Kral 1983; Godfrey and Kral 1958; Hitchcock 1950; Scribner 1899; Vasey 1884; Vasey 1892; The Nature Conservancy 1995; Johnson and Blyth 1988; Johnson 1993; Clewell 1985; Thieret 1966; Godfrey and Wooten 1979; Coile 1993; Wunderlin 1982; Duever 1996.

Contact Names: Ann Johnson, Amelie Blyth, Gary Schultz, Carolyn Kindell, Robert Kral, John Thieret, Paul Schmalzer, Vickie Larson, David Hall

Source Codes: A88JONO1, U93JOH08, B83KRA01

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PDAST4N0A0

Scientific Name: *Helianthus carnosus*

Common Name: lakeside sunflower

TNC Global Rank: G2

General Description: Smooth fleshy perennial with a single stem 20-40 in tall rising erect from a slightly curved base emerging from one side of a thick basal crown. Simple, entire, linear or oblong-linear basal leaves 3-6 in long, generally wider towards the tip, often accompanied by several shorter and broader leaves. Stem leaves mainly alternate, but the lower two or four opposite by pairs, the succeeding ones narrowly linear and sessile. Reddish brown stems. The daisy-like flower head is solitary with 12-20 bright yellow rays and a duller yellow 1/2 in disc; the flower is 2-4 in across at maturity.

Technical Description: Perennial herb from a short caudex, the roots fleshy, increasing by short lateral offshoots, these forming overwintering rosettes. One to few stems, 1 m long, erect or with bases slightly arching to the root, round in cross section or low-ribbed, reddish brown, glabrous or with a few distant multicellular hairs toward the tip. Rosette and lower leaves lineal, mostly elliptic-linear, oblanceolate-linear, or spatulate, mostly 8-15 cm long, rarely more than 1.5 cm broad, obtuse to acute, sometimes callus-tipped, the margins entire, the base attenuate to a short petiole or sessile, the surfaces smooth, yellow green, and only the mid-rib evident. Stem leaves ascending, scattered, the lowest opposite, progressively shortening and narrowing upward, sessile, uppermost ones the most distant and the very upper decimeter or so of stem naked. Inflorescence heads usually solitary or 2 at the stem tip, about 3 cm broad across the phyllaries, up to 8 cm broad from ray tip to ray tip. Phyllaries firm, flat, but loosely imbricated, the longest about 1.5 cm or less, mostly narrowly ovate, oblong or lanceolate, with acuminate to spinulose tips, entire, glabrous, mostly 5-nerved. Receptacle slightly elevated, the chaff strongly bowed at base, strongly nerved, acuminate, yellowish, smooth or minutely and distantly spreading-puberulent. Ray corollas spreading, bright yellow. Disc corollas a deeper, dull yellow, narrowly funnelform from a short, sometimes puberulent tube. Achenes oblong-prismatic, somewhat narrowed proximally, about 4 mm long, somewhat compressed in a plane parallel to the head center, bearing 2-4 narrow, chaffy deciduous scales but at maturity subtruncate, or with a pair of low thick teeth, smooth, grey-brown.

Search Image: In open wet flatwoods with highly organic black peaty sand, look for single all-yellow daisies on tall stems June to

September. Fleshy rosettes visible in winter. Edges of ponds or ditches are especially likely spots.

ID Features: Flowering stem rises from one side of bulbous base; rosette of very narrow leaves from the other. Light brownish lines on flower rays. Dark purple anther tubes protrude from disc corollas, but disc still looks yellow, unlike *H. heterophyllus*, which has a purplish-brown disc.

Diagnostic Characters: Looks similar to *Helianthus heterophyllus*, but that species has a purplish-brown disc, firmer tissues, broader basal leaves, and rigid pubescence extending all the way to the flower head, including the narrower involucral bracts.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: Maintain hydrology and prevent shading.

Historic Range: NE Florida. Type specimen collected in 1897 was from San Pablo, E of Jacksonville in Duval Co.

Current Range: NE Florida: Duval, Clay, Volusia, Putnam, St. Johns counties.

Habitat Description: Open, wet flatwoods. (Small's note naming this species calls it a "sea-beach *Helianthus*" and says it was growing "in sand" near San Pablo; however, San Pablo is in a flatwoods area along the saltmarsh edge about 2 1/2 miles inland from the coast at Jacksonville, not on the barrier island with the beach -- although Jacksonville Beach was called Pablo Beach at that time.)

Microhabitat Description: Always in open, sunny spots. Sometimes along roadsides. Often near ponds.

Associated Species: *Lycopodium*, *Sarracenia*, *Xyris*, *Agalinis*.

Soil Types:

Comments on Soils/Geology: Black, highly organic sandy peats.

Biology/Ecology Summary: This species is always found in open, sunny areas that stay wet. It persists in pastures only where protected along fences.

Phenology: Flowers in late summer and fall.

Reproduction:

Transplanting Considerations:

Seed Propagation:

Seed Propagation:

Vegetative Propagation: Can be propagated from crown buds.

Restoration Strategies:

Conservation Problems:

Conservation Status/Trends Discussion:

Restoration/Recovery Potential:

Preserve Design Considerations:

Management Requirements: Needs prescribed burning or mechanical clearing of overstory to maintain open, sunny habitat.

Management Programs:

Monitoring Methods:

Monitoring Programs:

Research Programs:

Research Needs:

References: The Nature Conservancy 1995; Coile 1993; Godfrey and Wooten 1981; FNAI 1990; Rickett 1966; Ward 1978; Kral 1983; Heiser 1969; Small 1902; Small 1933, Cronquist 1980, Duever 1996.

Contact Names: Dan Ward, Linda Duever

Source Codes:

ELEMENT STEWARDSHIP ABSTRACT

ELCODE: PDVEROCO42

Scientific Name: *Lantana depressa* var *floridana*

Common Name: yellow lantana

TNC Global Rank: G2T2

General Description: Sprawling shrub less than 79 in tall. Elliptic to ovate leaves up to 1 1/2 in long with tapered bases. Small yellow flowers in flat-topped heads. Flowers are pure yellow and turn orange with age.

Technical Description: Leaves elliptic to ovate, serrate to crenulate, scabrous, pubescent beneath. Flowers in heads on slender axillary peduncles about 4-5 cm long, bracts not forming an involucre, corolla tubes 5-6 mm long. Drupes subglobose, to 3.5 mm.

Search Image: Look for smaller all-yellow flowers on lantanas growing on calcareous soils in maritime hammock, coastal strand, beach dune, and other coastal communities, as well as in same ruderal habitats as common *Lantana camara*: roadsides and other brushy, weedy areas on shell or limerock. Disturbed maritime hammocks are particularly likely places. Grows in canopy openings, but not necessarily in full sun.

ID Features: Oval, blunt-toothed leaves that fold upwards along the midvein. Small, all-yellow flowers. This species has few stem prickles, whereas the common *L. camara* has distinctly prickly stems. Stems of this sprawling shrubby variety are reclining or recumbent, not low and spreading like the herbaceous variety, *L. depressa* var. *depressa*, or erect like the shrub, *L. depressa* var. *sanibelensis*. (*L. depressa* var *floridana* is lower-growing and more spreading in full sun on dunes than when growing in hammock openings.)

Diagnostic Characters: Shrubby reclining plant with unarmed stems. Oval leaves that taper to base and fold upwards along midvein. Small pure yellow flowers.

EOSPECS:

ARANKSPECS:

BRANKSPECS:

CRANKSPECS:

DRANKSPECS:

Stewardship Summary: Greatest threat is lack of recognition by managers, so education of preserve personnel is highest priority. This species grows on roadsides and disturbed sites in high human activity areas and closely resembles the weedy

panropical *Lantana camara*. Managers are very likely to regard *L. depressa* as a weed and inadvertently damage or destroy populations in the course of construction or maintenance activities. Where they occur together, *L. depressa* and *L. camara* hybridize extensively, and it is possible that the *L. depressa* genome may be swamped by *L. camara*. *L. depressa* does not appear to disperse and establish new populations as readily as *L. camara* does. Other landscape lantanas, including other subspecies of *L. depressa* are likely to pose similar threats. Because the species look much alike, it is probably wiser to leave populations of questionable identity alone rather than attempt to selectively weed out other species/varieties -- especially if the labor is to be done by personnel lacking in botanical expertise.

Historic Range: Portions of peninsular Florida, including central ridge and most of east coast.

Current Range: S and E Florida: Lee, Collier, Dade, Hendry, Broward, Palm Beach, Martin, Brevard, Volusia, and Duval counties.

Habitat Description: Restricted to native vegetation on dunes, shell mounds, coastal prairies, and limestone ridges.

Microhabitat Description:

Associated Species:

Soil Types:

Comments on Soils/Geology: Calcareous.

Biology/Ecology Summary:

Phenology: Flowers May-November.

Reproduction:

Transplanting Considerations:

Seed Propagation:

Vegetative Propagation: Can be propagated from cuttings.

Restoration Strategies:

Conservation Problems: Worst problem is ignorance. This variety is seldom correctly identified or recognized as a rare plant. Populations may be inadvertently destroyed in the course of maintenance activities or efforts to eradicate exotic species. The panropical "exotic" *L. camara* is similar in appearance and sometimes grows in similar habitats, especially in disturbed areas. Where they occur together, *L. depressa* and *L. camara* hybridize extensively, and it is possible that the *L. depressa* genome may be swamped by *L. camara*. Similar threats to the integrity of var. *floridana* may result from

expanding landscape use of hybrids, *L. ovatifolia*, and other "native" (to Florida) *L. depressa* varieties outside natural range.

Conservation Status/Trends Discussion: Suspected to be quietly disappearing due to lack of recognition and hybridization with introduced species and varieties.

Restoration/Recovery Potential: Good, if need is addressed before hybridization with other lantanas destroys genetic integrity of subspecies. Plants could easily be propagated and introduced into suitable habitat.

Preserve Design Considerations: Look for this species in weedy/brushy disturbed areas before finalizing facility or improvement/maintenance plans.

Management Requirements: Don't allow canopy to fully close and shade out populations.

Management Programs:

Monitoring Methods:

Monitoring Programs: Don Blake has been informally and irregularly following the population on Ft. George Island in the TEHP. This effort needs to be documented and maintained through TNC and NPS.

Research Programs:

Research Needs:

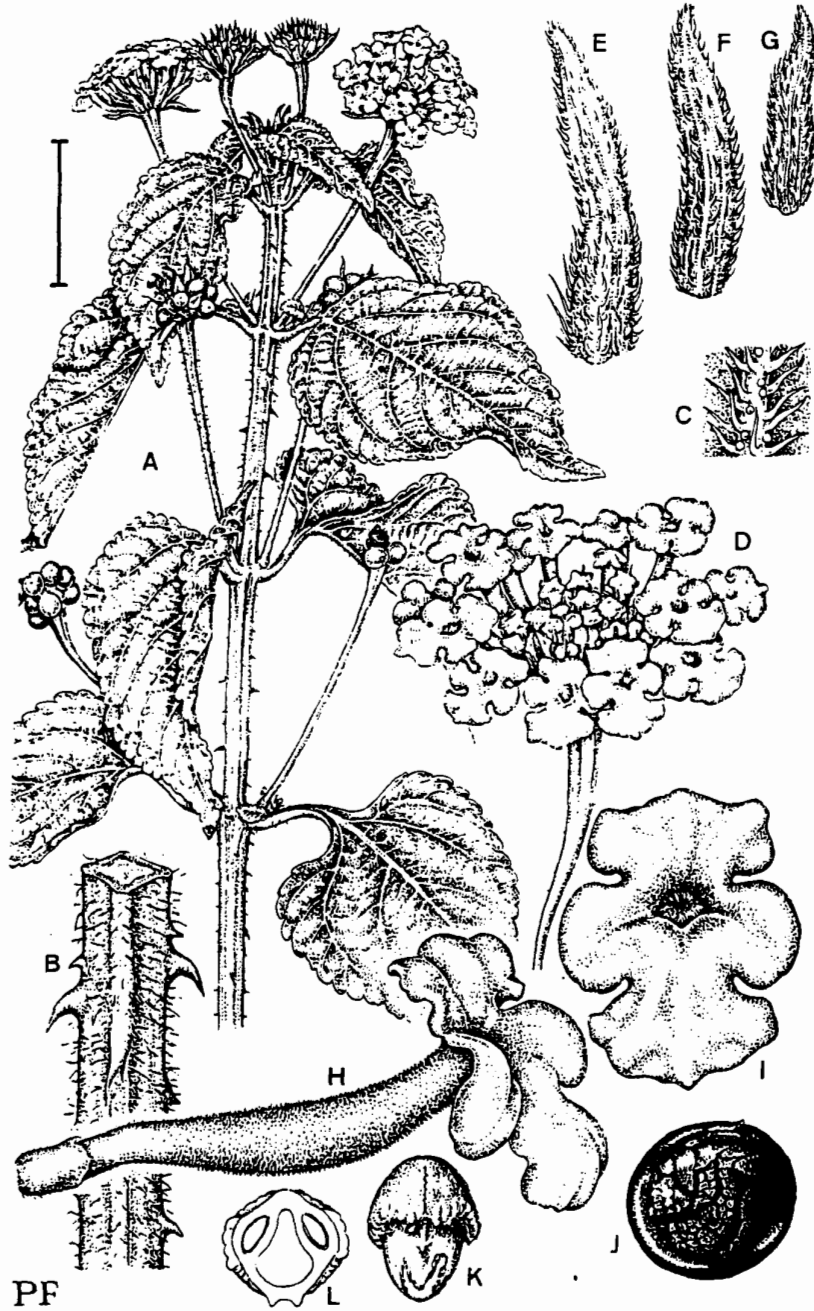
References: Johnson 1991; Hall 1993; Long and Lakela 1976; Small 1993; Sanders 1987; Duever 1996.

Contact Names: Don Blake, Ann Johnson, Roger Sanders, Ted Hendrickson, Linda Duever

Source Codes:



Lantana depressa var. *floridana*
(Sanders 1987)



Conway
Conservation, Inc.
 The Green Infrastructure Team

Lantana camara (Sanders 1987)

APPENDIX D

**CONTACT LIST AND INFORMATION SOURCES
RELEVANT TO THE RARE PLANTS OF THE TIMUCUAN
ECOLOGICAL AND HISTORIC PRESERVE**

**CONTACT LIST AND INFORMATION SOURCES RELEVANT TO RARE
PLANTS OF THE TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE**

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APPENDIX E
FIELD SURVEY REPORTS

Field Survey Report

Site Name: Snowberry Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Creek. Deep water right to island even at low tide.

Site Location Detail: About 2 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River, there is a chain of islands alongside the E bank of the Intracoastal Waterway. Snowberry Island is the northernmost of the chain of closely associated islands. Perry Island is across the marsh to the N.

Field Survey Date: 6/12/95

Survey Hours: early morning

Survey Staff: Linda Duever, Don Blake

Survey Route: We walked around whole island, but did not explore associated islands to the S.

Site Description: Shelly substrate. Irregular canopy of low, spreading red cedars. A few emergent black cherries. Forestiera and yaupon prominent in sparse midstory, with some shining sumac, beautyberry. Bare ground covered with cedar leaf litter in many areas. Patchy groundcover dominated by snowberry with scattered 1-2 ft hercules clubs, a little dichondra, patches of bluecurls, rouge plant.

Observations: This may be a dredge-spoil enhanced island with interesting depauperate flora due to limited recolonization by bird-dispersed species.

Natural Community Occurrence Records:

Plant Notes: Snowberry is rare and sparse elsewhere in the preserve -- and throughout north Florida. Noteworthy that it dominates groundcover and is abundant here at what may be an extension of northern limit of its range. Very woody, shrubby batis near Intracoastal.

Plant Occurrence Records:

Animal Notes: Rabbit pellets. White butterflies on sea oxeye around island edge.

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

Field Survey Report

Site Name: West Broward Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Hedges

Township: 1N

Range: 28E

Section: 39

Site Access Directions: May be reached by a difficult walk across saltmarsh from Center Broward Island, the N side of which is accessible by boat from Nassau River at any tide. Can also be accessed by taking a johnboat to Edwards Creek Island via Edwards Creek, then walking across that island and the narrow land bridge that joins it to West Broward Island.

Site Location Detail: On S side of Nassau River. This is the large island that sits back in the saltmarsh SW of Center Broward Island.

Field Survey Date: 8/11/95

Survey Hours: midday

Survey Staff: David Heuberger

Survey Route: Entered S side of island via land bridge from Edwards Creek Island and walked around island.

Site Description: The N and central parts of this island support very dense pine forest with a heavy understory 5-10' tall. This is a virtually impenetrable thicket of saw palmetto, interspersed with yaupon, gallberry, and wax myrtle and entangled with greenbriar. No open groundcover. Along the S shore of the W end of the island, this forest is very poorly drained and includes numerous loblolly bay and swamp bay trees. Along the SE and SW shorelines is relatively open pine/cabbage palm forest with a thick leaf mat; the sparse groundcover is dominated by common *Pluchea*, *Hypericum* and *Asclepias* species. On the broad peninsula at the S end of the island there is a forest of red cedar and cabbage palm that extends over the narrow land bridge joining this island and Edwards Creek Island. At the center of this cedar-palm forest is a patch of the same type of dense pine forest that characterizes the island's interior. At the W tip and along the NW shore is a maritime hammock, which does not appear to be very old or diverse. It is composed primarily of slash pine, live oak, and cabbage palm, with common understory species like saw palmetto, greenbriar, and muscadine.

Observations: The heavy fuel buildup on this island will eventually result in a devastating fire that will kill most of the pines and leave a depauperate groundcover like that on Burton Island. Archaeological site DU7462 is in the SE part of the island, but we did not locate it.

Natural Community Occurrence Records:

Plant Notes: There was a patch of about 20 scarlet milkweed plants flowering and seeding in the open pine-palm forest near the SE corner of the island. This showy wildflower is generally regarded as an exotic originating in tropical America, but it occurs at scattered locations on disturbed sites throughout Florida and around the gulf coast. Perhaps it could be interpreted as native to naturally disturbed calcareous sites in Florida.

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Survey Report

Field Research Needs: Find and check archaeological site in SE part of island.

Office Research Needs:

Field Survey Report

Site Name: Waterhole Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Creek. Boat can get within easy 50' walk of island at low tide via unnamed channels off Intracoastal.

Site Location Detail: About 2 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River, there is a chain of islands alongside the E bank of the Intracoastal Waterway. Snowberry Island is the northernmost of the chain of closely associated islands. Perry Island is across the marsh to the N. From the Intracoastal alongside Snowberry Island, three islands can be seen off to the W set back from the other side of the Intracoastal. Waterhole Island, due W of Snowberry Island, is the southernmost of these three islands.

Field Survey Date: 6/12/95

Survey Hours: early morning

Survey Staff: Linda Duever, Don Blake

Survey Route: We walked around whole island.

Site Description: Sparse canopy of mixed low, spreading red cedars and large specimens of *Forestiera segregata*. *Forestieras* here are multi-trunked small trees that look like large crepe myrtles. Groundcover virtually absent. One snowberry. Fresh(?) water pool in shallow 10'x30' depression in center. Common maritime prickly pear around island edges with sea lavender.

Observations: Campsite with blue tarp. There were a few patches of moss. Don collected samples.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

Field Survey Report

Site Name: Fat Palm Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Creek. Boat can get within easy 25' walk of island at low tide via Intracoastal.

Site Location Detail: About 2.5 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River, there is a chain of islands alongside the W bank of the Intracoastal Waterway. Fat Palm is the triangular southernmost island.

Field Survey Date: 6/12/95

Survey Hours: mid-morning

Survey Staff: Linda Duever, Don Blake

Survey Route: We entered island at NE corner and explored most of it, concentrating on highest ground, which appeared to be N central portion.

Site Description: Irregular canopy dominated by cabbage palms. Relatively young ones are extraordinarily vigorous with champion-class dbh. Forestiera, yaupon, some beautyberry, saltbush, wax myrtle, tough bumelia in midstory. A few yuccas. A little snowberry, rouge plant, virginia creeper, greenbriar, Hypericum, ebony spleenwort.

Observations:

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Research Needs: Island could be explored more thoroughly, but this is not likely to yield rare species and is not a priority.

Office Research Needs:

Field Survey Report

Site Name: Whisk Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Creek. Boat can get within easy 25' walk of island at low tide via Intracoastal.

Site Location Detail: About 2.5 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River, there is a chain of islands alongside the W bank of the Intracoastal Waterway. Whisk is the three-lobed middle island immediately N of Fat Palm Island.

Field Survey Date: 6/12/95

Survey Hours: mid-morning

Survey Staff: Linda Duever, Don Blake

Survey Route: We entered island from the SE and explored center up to constriction between N and center lobes.

Site Description: Cabbage palm dominates mixed canopy. Midstory has forestiera, yaupon, beautyberry, with some saltbush, wax myrtle, devilwood, carolina holly, american holly. Groundcover includes snowberry, rouge plant, virginia creeper, poison ivy, greenbriar, yucca, blackberry, Hypericum, ebony spleenwort.

Observations: Japanese honeysuckle beginning to invade center lobe of island.

Natural Community Occurrence Records:

Plant Notes: Colony of whisk fern abundant in an area 50' across. All growing terrestrially in heavy duff, whereas species is usually epiphytic. This is noteworthy because this species (ranked threatened by FDA) is scarce this far N and has not been observed elsewhere in preserve since 1956. (Subsequently encountered on Shell Island also.)

Plant Occurrence Records:

Animal Notes: Armadillo sign?

Animal Occurrence Records:

Field Research Needs: Island could be explored more thoroughly, especially N end.

Office Research Needs:

Field Survey Report

Site Name: Sugarberry Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Cr. Boat can get to island via Intracoastal.

Site Location Detail: About 3 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River, there is a chain of islands alongside the W bank of the Intracoastal Waterway. Sugarberry Island is the largest and northernmost of these. It is an elongate island made up of 3-6 ill-defined segments aligned N-S. It lies just S of the channel that connects to Cedar Point Creek.

Field Survey Date: 6/12/95

Survey Hours: midday

Survey Staff: Linda Duever, Don Blake

Survey Route: We entered E side of island where concentration of sugarberry trees can be seen from Intracoastal and walked N to pine tree.

Site Description: Low, sparse mixed maritime hammock canopy with live oak and black cherry. Sugarberry dominates one area. Midstory includes forestiera, elderberry, and exceptionally large yaupon and beautyberry. Areas of understory look disturbed and weedy with lots of blackberry and wild lettuce. One big slash pine.

Observations: Japanese honeysuckle gaining a foothold. It will seriously degrade understory of these islands and eliminate habitat for most rare plant species if not kept under control.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes: Cardinals, redstart.

Animal Occurrence Records:

Field Research Needs: Lower-canopied parts of island could be explored.

Office Research Needs:

Field Survey Report

Site Name: Cedar Point

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 28E

Section: 38

Site Access Directions: Follow Cedar Point Rd. to the end. Use aerial photos and 1996 Cedar Point Avian Program Overlay Map to navigate from there. The forest here is dense and the aerials don't permit features to be distinguished very well. The avian overlay map is immensely helpful in making sense of the maze of trails.

Site Location Detail: S end of Black Hammock Island. Irregular Section 38 boundary is essentially site boundary.

Field Survey Date: 3/22/96

Survey Hours: mid-morning -
late afternoon

Survey Staff: Linda Duever, Joanne
Duffy

Survey Route: These directions relate to trails and place names on 1996 Cedar Point Avian Program Overlay Map. Walked N from fish camp boat landing and made large irregular circle through maritime hammock, then crossed to W side of Cedar Point Road and walked through hammock to Firebreak Connector. Followed firebreak N, then returned S to Down Tree Trail. Followed it around Down Tree to Gate Path. Walked W to and through Clearing, then a short distance N on Roger's Loop. Explored paths to W to City Stop and Duck Pond, then walked Carl's Loop and returned to Cedar Point Rd via Gate Path.

Site Description: Hammock E of Cedar Point Rd and N of 1st drive into fish camp boat launch area near tip of island is a rich maritime hammock with extensive shell mound areas. Canopy was live oak and cabbage palm with redbay, red cedar, black cherry, pignut hickory, white ash, sugarberry, and red mulberry. Understory shrubs included yaupon, beautyberry, strawberry bush, devilwood, florida privet, shellmound buckthorn, devil's walkingstick, saw palmetto, and hop tree. Prominent vines were cross vine, orange trumpet creeper, and supplejack. The groundcover included Uniola, spiderwort, lyreleaf sage, wild petunia, milkweed vine, Smilax, st. augustine grass, switch cane, florida violet, Viola cf septemloba, and ebony spleenwort. Lots of poison ivy. Yellow passionflower unusually abundant. On W side of Cedar Point Road opposite drive into fish camp ramp, hammock looked younger, more disturbed, and less diverse. Laurel oak dominated canopy, which included water oak, cabbage palm, and live oak. Muscadine was prominent. At the N end of the Firebreak Connector trail, there was a patch of stressed-looking pines with a wet, grassy understory. The Clearing was a disturbed grassy area; no evidence of original pineland groundcover.

Observations: The maritime hammock E of Cedar Point Rd incorporates archaeological sites DU64 and DU7498. There are at least a dozen other sites within the Cedar Point boundaries, but we found them difficult to locate without a trails map. Numerous young (5-10', 10-20 yrs?) palms in hammock understory on both sides of Cedar Point Rd suggest that this area may have been grazed (or partially mowed or or lightly burned) in the past. Something happened to cause this many palms to become established at once. (The understory on much of Pelotes Island suggests a similar history.)

Natural Community Occurrence Records: Hammock E of Cedar Point Rd merits mapping as an EO, but it is virtually impossible to determine which portions should be

Field Survey Report

mapped as Shell Mound and which as Maritime Hammock. There are numerous higher shelly areas within a rich maritime hammock matrix.

Plant Notes: One colony of *Corallorhiza wisteriana* with seed capsules forming under old hickory trees on a shell mound near N end of hammock. Unidentified *Matelea* on shell mound near center of this hammock. There was an exotic ivy vine cloaking one of the trees near the boat ramp; it should be removed. Until this is done, it may be necessary to continue mowing this area so that the ivy does not creep into the hammock. *Asimina cf triloba* in flower N of Down Tree.

Plant Occurrence Records: One *Clematis catesbyana* vine observed near S end of hammock E of Cedar Point Rd.

Animal Notes:

Animal Occurrence Records:

Field Research Needs: Use new avian survey trails map it to locate and survey all shell mound or tabby areas, as well as canopy openings, wetlands, and other anomalies.

Office Research Needs:

Field Survey Report

Field Survey Date: 5/23/96 **Survey Hours:** mid-morning - mid-afternoon **Survey Staff:** Linda Duever, Don Blake

Survey Route: These directions relate to trails and place names on 1996 Cedar Point Avian Program Overlay Map. Parked at end of Cedar Point Rd and walked W around Down Tree to Gate Path. Cut through The Clearing and turned N onto Roger's Loop. Followed it N to fenceline, then walked fenceline E to Cedar Point Rd and returned S to vehicle along road shoulder.

Site Description: The Clearcut: Wet flatwoods at the S end grade unevenly into scrubby flatwoods at the N. Giant ironweed, which is a typical hammock opening species, was abundant at the S end. Other species growing with it included broomsedge, which is an early successional species, and chalky bluestem, which also frequently grows in disturbed areas. A colony of *Spiranthes cf lacinata*. was observed in the center of the road here. Further N, more classic pine flatwoods species become relatively more abundant and the shrub layer becomes scrubby. Chapman's oak, sand live oak, crookedwood, saw palmetto, shiny blueberry, dwarf blueberry, shiny lyonia, st. andrew's cross, sawbriar, scrub briar, candyweed, small butterwort, a white-flowered polygala, a yellow polygala, wicky, gratiola, and pennyroyal were growing in this area. Vanilla leaf was unusually abundant. A few very lush chinkapins were in full flower near the N end of the area. Additional plants along Cedar Point Rd shoulder included a pale yellow *Linum* and a *Dichromena*.

Observations: The whole area has been clearcut and ditched, but the understory is still reasonably natural. With fire, the full complement of native species could be expected to become reestablished. The area we surveyed along Roger's Loop has obviously been pineland for a long time; it does not have the weedy character of a hammock clearcut and planted to pine. Past a transition zone at the S end (which ends somewhere in the vicinity of Avian Monitoring Point #CP11), the species here are typical pine flatwoods groundcover plants that do not invade rapidly. It is almost certain that botanical surveys of this site would confirm the presence of at least a few moderately rare plant species here if this area were burned. These species and most of the others we observed will be extirpated or restricted to trailsides if fire is not used to maintain this area as open pineland. The large population of vanilla leaf would exhibit masses of purple flowers and make this area very scenic the fall following a burn. Hoofprints along the road shoulder indicate that the Cedar Point area is used by horseback riders.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes: Lots of deerflies!

Animal Occurrence Records:

Field Research Needs: Areas E and W of Roger's Loop need more exploration, but this would probably be a waste of time until the area is burned. Plans should be made to conduct regular botanical surveys the year following the next fire. The North Hammock and areas along Westside Path should be examined, but there is no reason to expect that these areas will be botanically interesting. Area that are or were good hammock should be mapped so that firebreaks can be designed to protect them when the areas to be maintained as pine flatwoods are burned.

Office Research Needs:

6/7/96

94061

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Conway Conservation, Inc.

Field Survey Report

Office Research Needs:

Field Survey Date: 6/12/95 **Survey Hours:** early afternoon **Survey Staff:** Linda Duever, Don Blake

Survey Route: These directions relate to trails and place names on 1996 Cedar Point Avian Program Overlay Map. We landed at Westside Boat Launch, then walked NE along Carl's Loop to Fort Ruins (Fitzpatrick Plantation?) and examined that area carefully. Returned to boat via same route with occasional side trips into hammock alongside road.

Site Description: Mixed maritime hammock. Canopy included cabbage palm, live oak, laurel oak, pignut hickory. Coral bean noted in the understory. Vines included poison ivy and five-leaf virgin's bower. In open grassy area along the trail, there was indigo bush, lyreleaf sage, wild petunia, ironweed, St. Augustine grass, and spiderwort.

Observations:

Natural Community Occurrence Records:

Plant Notes: No unusual ferns on tabby walls. Unidentified Matelea and some scarlet sage observed there, but not elsewhere. We saw one small hop tree.

Plant Occurrence Records: Vigorous vines of Clematis catesbyana common. Some have 3-part leaves, some 5.

Animal Notes:

Animal Occurrence Records:

Field Research Needs: There are almost certainly Maritime Hammock and Shell Mound areas in the forest W of Cedar Point Rd large enough to qualify as EOs. These should be defined through more detailed exploration and mapping and documented.

Office Research Needs:

Field Survey Report

Site Name: Burton Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Hedges

Township: 1N

Range: 27E

Section: 44

Site Access Directions: For 2 hrs before and 2 hrs after high tide, boats can get to N shore via shallow channel that forks to W and N off Burton Creek. There is no other reasonable access. Island has thick palmetto and lots of downed timber from severe fire so walking is difficult except in hammock at NW corner.

Site Location Detail: S of Nassau River and N of Samples Creek.

Field Survey Date: 12/12/95

Survey Hours: morning - early
afternoon

Survey Staff: Linda Duever, Joanne
Duffy

Survey Route: Began at boat landing on N side of island and wandered S around E and S sides of island at varying distances in from shore, then walked diagonally SW-NE across hammock and followed N shore back to boat landing.

Site Description: Severely burned slash pine - cabbage palm forest with heavy saw palmetto understory. Groundcover varied from minimal under thick shrub layer to dense and weedy in open areas. More open around the E edge of the island. Understory plants included saltbush, dog fennel, Uniola, Dicanthelium, broomsedge, needlerush, Eupatorium, glades morning glory. There were stands of bays (loblolly and swamp bay) and open wetland areas in the SW part of island. The W end of the island did not burn in the fire that devastated the central and E sections; there was still well-developed maritime hammock there.

Observations: There was a small channel that looks like an old ditch extending from hammock high area to SW coast. Access to or drainage for an old homesite? (Did not look big/deep enough for a canoe.) The only archaeological site recorded on Burton Island is DU7467, which is near the center of the island. It is very difficult to navigate through the dense palmetto in this area; it is possible that the archaeologists mapped this site a little too far E and we were not as far W as we thought when we encountered the hammock; this site could be the same hammock we found. Post-burn aeriels were not available, but the canopy signatures on the 1":400' 1988 blue-line photo we used suggest that this is plausible.

Natural Community Occurrence Records: Unburned hammock at W end could be mapped as maritime hammock. Portions may be shell mound.

Plant Notes: Small chinese tallow tree observed near SE end of island.

Plant Occurrence Records:

Animal Notes: Hog rooting at E and W ends of island.

Animal Occurrence Records:

Field Research Needs: Explore SW part of island more thoroughly. Use GPS unit for mapping.

Office Research Needs:

6/7/96

94061

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Conway Conservation, Inc.

Field Survey Report

Office Research Needs:

Field Survey Date: 6/13/95 **Survey Hours:** late morning **Survey Staff:** Linda Duever, Don Blake

Survey Route: We walked SW into island, then NW along palmetto barrier and W through it into slight slough along hammock edge, then followed that NW into unburned hammock, returning to boat landing at cedar tree roughly the same way.

Site Description: Severe fire burned most of island about 1993. It drastically thinned slash pine canopy, leaving mixed pine-palm canopy and burned snags with saw palmetto shrub layer and weedy (but native) depauperate groundcover including dog fennel, wild lettuce, etc. Rich maritime hammock with loblolly pine at W end of island. Many live oaks with spreading branches carrying heavy loads of resurrection fern. Lots of american holly, cabbage palm, some magnolia, muscadine, cross vine.

Observations: Depauperate weedy flora in burned areas suggests site had gone so long without fire that few pineland groundcover propagules were viable (and/or that fire was so intense it killed them). This presents a management problem. Left alone, site will be a mix of common pine and hardwood species of little biodiversity significance. It will probably never grow into mature hammock because of flammable palmetto understory. If burned again promptly and enhanced with groundcover propagules from a diverse nearby pineland (such as from JEA ash landfill site or development lands near Nassau River) prior to several rainy months, it might, with frequent prescribed burns, become a biologically valuable flatwoods.

Natural Community Occurrence Records: Hammock at W end is good enough to be mapped as Maritime Hammock EO if it meets size criteria.

Plant Notes: Within hammock there was a 50' diameter area where groundcover was dominated by large, vigorous green dragon. This is noteworthy in that it is absent or scattered elsewhere on preserve. Some have green stems, others grade into blackish purple. (Could hogs be a factor? Green dragon bulbs contain irritating calcium oxalate crystals that might repel hogs.) Don says some of bracken is pseudocaudatum instead of common form; more that looked like common kind. No greenfly orchid observed, although habitat looked ideal. Aristolochia that seems to fit description of A. serpentaria in hammock. Unidentified tall forbs in bud photographed in burned out pineland near boat landing. One might be Pluchea. The other looks like a Eupatorium.

Plant Occurrence Records:

Animal Notes: Cardinals. Hog rooting observed in low area. at W end of island.

Animal Occurrence Records:

Field Research Needs: S and W parts of island could be explored more thoroughly. Hammock at W end is fairly rich and might yield interesting species if examined repeatedly at different seasons. Open areas at E end are a little more diverse than those at north; might be worth checking in spring or fall.

Office Research Needs:

Field Survey Report

Site Name: Center Broward Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Hedges

Township: 1N

Range: 28E

Section: 39

Site Access Directions: N side accessible by boat from Nassau River at any tide. Good landing at NW corner of island.

Site Location Detail: On S side of Nassau River.

Field Survey Date: 10/30/95

Survey Hours: midday

Survey Staff: Nina Raymond, Jim Kelly

Survey Route: Walked SE from boat landing at NW corner and through E side of island on a transect about 200' inland. Field survey was cut short because NPS personnel called staff back due to a broken-down boat at 1:30 PM. Walked back to the NE corner of the island along the E shoreline.

Site Description: SE part of island was mostly mesic pine flatwoods with overstory dominated by 60' slash pine. Cabbage palm occasional to common. Understory a thicket of 7' saw palmetto, interspersed with shrubs such as gallberry, wax myrtle, and *Lyonias*. The groundcover was sparse and lacking in diversity, dominated by bracken, sawbrier, scrub briar, *Dicanthelium*, and other common plants. At the SE corner of the island there was a shell mound dominated by cabbage palm, with some live oak, laurel oak, and slash pine in the canopy and yaupon, wax myrtle, crookedwood, devil's walkingstick, persimmon, and muscadine in the understory. Groundcover species included bushy beardgrass, flattop goldenrod, *Pluchea*, hairgrass, white milkpea, *Dicanthelium*, scrub briar, milkweed vine, and knotroot foxtail. The zone between the flatwoods and the upper salt marsh included yaupon, saltbush, false willow, black needlerush, flattop goldentod, perennial saltmarsh aster, hairy fimbriatylis, seaside goldenrod, glades morning glory, and sawgrass. The upper saltmarsh along the center part of the island's E shoreline was characterized by sea oxeye, marsh elder, sea lavender, glasswort, saltwort, and saltgrass (and/or seashore dropseed). The lower saltmarsh here was dominated by *Spartina alterniflora*.

Observations: Shell mound at SE corner is not documented in Florida Site Files; may merit archaeological examination.

Natural Community Occurrence Records:

Plant Notes: Unidentified ericaceous shrub on shell mound at SE corner: very green branches throughout; numerous subtle white lenticels; alternate chartaceous leaves with irregular, slightly serrate margins and hirsute midribs.

Plant Occurrence Records:

Animal Notes: A marsh wren was observed near the shell mound at the SE corner of the island.

Animal Occurrence Records:

Field Research Needs: More thorough examination of shell mound area at SE corner of island might be worth

Field Survey Report

while.

Office Research Needs:

Field Survey Date: 8/11/95 **Survey Hours:** midday **Survey Staff:** David Heuberger

Survey Route: Entered by walking across saltmarsh from NE part of West Broward Island. Walked north into maritime hammock and returned on a different transect.

Site Description: The NW 1/3 of this island is a maritime hammock, which does not appear to be very old or diverse. It is composed primarily of slash pine, live oak, and cabbage palm, with common understory species like saw palmetto, greenbriar, and muscadine. The SE 2/3 of the island supports a very dense pine forest with a heavy understory 5-10' tall. This is a virtually impenetrable thicket of saw palmetto, interspersed with yaupon, gallberry, and wax myrtle and entangled with greenbriar. Along the center part of the SW shoreline is a relatively open pine/cabbage palm forest with a thick leaf mat; the sparse groundcover is dominated by common species such as *Pluchea*, *Hypericum* and *Asclepias*.

Observations: The heavy fuel buildup in the pine forest here will eventually result in a devastating fire that will kill most of the pines and leave a depauperate groundcover on the S part of this island.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

Field Survey Report

Field Survey Date: 6/13/95 **Survey Hours:** early afternoon **Survey Staff:** Linda Duever, Don Blake

Survey Route: Landed at NW corner and walked to E towards high part of island, returning same general route. Uncertain whether highest ground was reached/surveyed.

Site Description: Shelly near boat landing. At least NW part of island has low diversity common groundcover and looks like it could be second growth forest on old agricultural site. Slash pine, live oak, cabbage palm, some saw palmetto, with greenbriar, muscadine, cross vine, supplejack, orange trumpet creeper. Wild petunia, spiderwort, tread softly in groundcover. Hammock on higher ground to SE (vicinity of 10' contour on quad) appeared older and more diverse.

Observations: Redbud, chinaberry, and pawpaw near landing suggest human habitation. This is archaeological site DU7463.

Natural Community Occurrence Records: Older hammock on higher ground may merit mapping as Maritime Hammock or Shell Mound.

Plant Notes: Cylindrical prickly pear on bluff along shore. Aristolochia that fits description of *A. serpentaria* in hammock, as well as an unidentified *Matelea*; easy to confuse or mistake for crossvine. Unidentified bean photographed; probably not uncommon. Encountered one clump of a large cornlike grass Don called "teosinthe"; presumably this was a *Euchlaena* species, perhaps escaped from cultivation. Massive supplejack vine in hammock.

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Research Needs: Need to better define second-growth pine/palm vs. older hammock areas and survey remaining older hammock, describing as maritime hammock EOR if justified.

Office Research Needs:

Field Survey Report

Site Name: Ft. George Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State: FL

Quad: Mayport

Township: 1S

Range: 29E

Section: 37

Site Access Directions: Follow signs to Kingsley Plantation and turn N off Heckscher Dr. near center of Batten Island between Sisters Creek and Ft. George River.

Site Location Detail: N of mouth of St. Johns River and W across Ft. George River from Little Talbot Island. Irregular Section 37 boundary is essentially site boundary.

Field Survey Date: 6/12/95

Survey Hours: late afternoon

Survey Staff: Linda Duever, Don Blake

Survey Route: Along main roads.

Site Description: Maritime hammock with park facilities, historical sites, a few homes, an abandoned golf club, and shell mounds.

Observations: This island was surveyed thoroughly during the Fairfield development period. Rare plant populations observed during those studies are documented in Pruitt (1985). Don Blake is familiar with all the significant rare plant populations recorded at that time and has been following them since.

Natural Community Occurrence Records:

Plant Notes: *Lantana depressa* still growing and blooming along roadside where previously documented. This is the only place in the preserve where Don has seen it. It is not "frequent" as was reported in Pruitt (1985). Marine ivy is still growing in a yard.

Plant Occurrence Records: *Lantana depressa* var. *floridana*. *Cheilanthes microphylla* EO #.002 and *Spiranthes polyantha* EO #.001 need to be monitored. *Peperomia humilis*, *Clematis catesbyana*, and *Forestiera godfreyi* reported in Pruitt (1985) should be documented in FNAI database.

Animal Notes:

Animal Occurrence Records: Gopher tortoises were surveyed during Fairfield studies.

Field Research Needs: Need to check current status of all rare plant populations previously documented on Ft. George.

Office Research Needs: Get EOs for rare plants reported in Pruitt (1988) into FNAI database.

Field Survey Report

Field Survey Date: 5/23/96 **Survey Hours:** late afternoon **Survey Staff:** Linda Duever, Don Blake

Survey Route: -Drove slowly and checked roadsides along W side of island for Lantana depressa.

Site Description: Maritime hammock with park facilities, historical sites, a few homes, an abandoned golf club, and shell mounds.

Observations:

Natural Community Occurrence Records:

Plant Notes: Lantana depressa var. floridana was still growing along road shoulders where Strangler Bay Rd intersects Palmetto Ave. This is along the W fork just a hundred yards or so N of where the two roads to the N end of the island split near the island's S tip. Pink-flowered Lantana camara was observed along yard edges on E side of island. Greenfly orchids in canopy on E side of island.

Plant Occurrence Records: Lantana depressa var. floridana

Animal Notes: Motorist observed assisting large female gopher tortoise crossing Palmetto Ave W-E near N end.

Animal Occurrence Records:

Field Research Needs: Monitor lantanas.

Office Research Needs:

Field Survey Report

Site Name: East Broward Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State:

Quad: Hedges

Township: 1N

Range: 28E

Section: 39?

Site Access Directions: May be reached at low tide by walking across saltmarsh from Center Broward Island, the N side of which is accessible by boat from Nassau River at any tide. Cross saltgrass flat from centerpoint of E side of Center Broward Island to centerpoint of W edge of East Broward Island. (There are no real tidal creeks between the islands in this section of the marsh, just a 2'-wide channel that appears to carry water only at high tide.) From this point, the easiest way to get to the shell mound is to walk S, then E around the edge of the island. Appears to be accessible by canoe from 15'-wide tidal creek to S.

Site Location Detail: Broward Islands. This is medium-size island E of large center island. Immediately N of small creek that joins Pumpkin Hill Creek and Edwards Creek.

Field Survey Date: 10/31/95

Survey Hours: late morning -
mid-afternoon

Survey Staff: Nina Raymond, Jim Kelly

Survey Route: From the centerpoint of the island's W edge, we walked a short distance N, then into the center of the island, then N onto the islets at the N end. We travelled SE, then SW a few hundred yards inland from the E and S sides of the island until we reached the shell mound on the S shore. After exploring that area, we followed a footpath around the SW corner of the island to return to the saltgrass flat to cross over to Center Broward Island.

Site Description: Most of the interior was dense mesic pine flatwoods dominated by slash pine 50'-60' tall over a thicket of saw palmetto. Yaupon, wax myrtle, and gallberry were everpresent in the understory. Occasional woody species included redbay, cabbage palm, red cedar, highbush blueberry, highbush blackberry, muscadine, and scrub briar. Sweetgum stands (up to 35' tall) and young live oaks coming in in places. The minimal groundcover included st. andrew's cross, bracken, Andropogons, meadow beauty, Rhynchospora cf. fascicularis, Pluchea, sugarcane plumegrass, Dicranthelium, spike chasmanthium, big hempvine, and white milkpea. Heavy buildup of litter (about 4" deep). More open areas along the saltmarsh fringes at the NW and NE edges of the island had better developed groundcover composed of a variety of grasses, sedges, and forbs. In these areas, the canopy was composed of slash pine and cabbage palm, with the midstory mostly wax myrtle, and the groundcover dominated by sawgrass and needlerush. Understory species included saltbush, false willow, red maple, hempvine, Pluchea, Andropogon glomeratus, hairy fimbriatylis, hempvine, flattop goldenrod, seaside goldenrod, poison ivy, hairgrass, knotroot foxtail, milkwort, clustered diamondflower, Chenopodium cf. ambrosioides, st. andrew's wort, texas sedge, and bottlebrush threeawn. The 2 small islets that extend N of the main body of East Broward Island are hammocks dominated by live oak, red cedar, and cabbage palm with an open understory of sparse saw palmetto (4'-6' tall) and yaupon concentrated around the periphery. Groundcover is minimal, but there is some Dicranthelium, texas sedge, adam's needle, and stiffleaf eustachys. These open forests are carpeted with compacted leaf litter and are easy to walk through. The saltmarsh between the islets and between them and the main body of the island is dominated by beach cordgrass and needlerush. There is a shell mound at the center of the S edge of East Broward Island that appears to have been a homesite. Live oak dominated the 50' canopy there. Saw palmetto grew around the perimeter of the mound, but

Field Survey Report

not in the interior. Other woody plants in this hammock included pignut hickory, american beautyberry, devil's walking stick, red mulberry, winged sumac, tough bumelia, and grape species. The diverse groundcover includes woodsgrass, late boneset, bedstraw, wild petunia, pokeberry, and poison ivy. The leaf litter was 1/2" thick. Adjacent to and N of the shellmound is a freshwater marsh occupying a depression that appears to have been hand dug many years ago. This marsh held about 8" of water and was dominated by sawgrass with some american cupscale, sandpond nutgrass, sprouting spikerush, smartweed, common hempvine, buttonweed, meadow beauty, and goldenrod. Woody species included red maple, swamp bay, and a few saplings of persimmon near the upper edges.

Observations: There is evidence of fire throughout the island. The trunks of the pines and palms in the interior are charred up to 1-4' high. Fire sign was evident up to 2' up on palm trunks on the hammock islets N of the main island. The fire scars extended up to 2' on the oaks on the shell mound. Brick that looked like tabby was found on the shell mound, which is archaeological site DU7464. An 18' chinese tallow tree was observed in the middle of the marsh; this exotic may spread through the marsh if this tree is not removed. A spot apparently used a campsite was found along the footpath at the SW corner of the island; there were a few red bricks here as well as the remains of a campfire.

Natural Community Occurrence Records: The Shell Mound might merit mapping.

Plant Notes: We collected a large Polygala thought to be *P. lutea* from an open spot in the flatwoods edge just N of the center of the W edge of the island. This might be *P. rugelli*, but that species has yellow flowers, whereas these were distinctly orange. This plant was only observed in one small patch (2' diameter). The specimen's long inflorescence is noteworthy. Near the NE corner of the island we found a young fern that might have been a serpent fern. The *Chenopodium* had narrowly linear leaves 1 cm long x 2 mm wide, which is a little smaller than they should be for *C. ambrosioides*. An unidentified *Matelea* was observed on the shell mound..

Plant Occurrence Records: A clematis assumed to be *C. catesbyana* (G4G5/S3?) was observed on the shell mound, but no EOR was prepared because the field crew did not make a positive ID.

Animal Notes: One bobcat or racoon skeleton found.

Animal Occurrence Records:

Field Research Needs: It might be worthwhile to do a more thorough survey of the shell mound. Field staff reported a 40' shining sumac from the shell mound, but this size sounds unbelievable for the species; next field crew should check ID and, if correct, evaluate as a potential champion tree. They reported 35' devil's walkingsticks from same area; these would also be enormous. The difficult-to-access small island to the east should eventually be explored. There are two archaeological sites there (DU7465 and DU7466), so rare shell mound species are a possibility.

Office Research Needs:

Field Survey Report

Site Name: Edwards Creek Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State:

Quad: Hedges

Township: 1N

Range: 28E

Section: ?

Site Access Directions: Can be reached by johnboat via Edwards Creek at high tide. Probably could be accessed by a difficult walk across the saltmarsh from Center Broward Island (the N side of which is accessible by boat from Nassau River at any tide) and fover the narrow land bridge from West Broward Island.

Site Location Detail: Broward Islands. Small island N of Edwards Creek and S of West Broward Island.

Field Survey Date: 8/11/95

Survey Hours: morning and
afternoon

Survey Staff: David Heuberger

Survey Route: Landed johnboat at S side of island, walked around it to West Broward Island crossing. Explored that island, then walked back through this site returning to boat.

Site Description: Center of island is very dense pine forest with a heavy understory 5-10' tall. This is a virtually impenetrable thicket of saw palmetto, interspersed with yaupon, gallberry, and wax myrtle and entangled with greenbriar. No open groundcover. On the SE tip and along the W edge of the island is relatively open pine/cabbage palm forest with a thick leaf mat; the sparse groundcover is dominated by common Pluchea, Hypericum, and Asclepias species. The north end of the island is joined to West Broward Island by a narrow land bridge forested with red cedar and cabbage palm. There is a small marshy area dominated by saltmarsh mallow where this bridge joins to Edwards Creek Island.

Observations: The heavy fuel buildup on this island will eventually result in a devastating fire that will kill most of the pines and leave a depauperate groundcover like that on Burton Island.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes:

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

Field Survey Report

Site Name: South Browns Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State:

Quad: Eastport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat via Browns Creek to landing on SW side of island.

Site Location Detail: On W bank of Browns Creek 1/3 mi N of where creek joins the St. Johns River.

Field Survey Date: 5/24/96

Survey Hours: late morning

Survey Staff: Linda Duever, Don Blake

Survey Route: We entered SE side of island and made a circle W, then N, then E, and back to the SW around the eastern end of the island.

Site Description: High quality, diverse maritime hammock without strong shell mound characteristics. Canopy pignut hickory, cabbage palm, magnolia, redbay, and live oak. The understory is very open at the SE point; it gets much heavier, even dense, to the west. The shrub layer here is 10-12' high with a thin canopy of pines and live oaks maybe 20-30' above it. Perhaps this site was burned long ago? Slash pine, loblolly pine, and a few longleaf are all present. Understory is dominated by saw palmetto towards the edge of the island. It includes *Forestiera segregata*, serviceberry, tough bumelia, coral bean, devil's walkingstick, carolina buckthorn, wax myrtle. Occasional vines include carolina jessamine, muscadine, virginia creeper. The groundcover is sparse, but, for a hammock, diverse. In open spots it includes white milkpea, *Smilax*, *Dicanthelium*, and tread-softly. Poison ivy, which seems to prefer shelly mounds, is conspicuously absent.

Observations: Campsite with panoramic view of Brown's Creek at SE corner of island. There was a deep old brick well further up on this high mound. No tabby or other signs of old homesite. Perhaps once a moonshiner's water supply?

Natural Community Occurrence Records: This maritime hammock is of EO quality.

Plant Notes: Unidentified grape with large leaves near boat landing. *Tillandsia bartramii* grows here; the only other known observation of this epiphyte in the preserve was one plant seen on Ft. George during the Fairfield surveys.

Plant Occurrence Records: *Tillandsia*.

Animal Notes: No deerflies! (They were thick on Cedar Point the day before) Several gopher tortoise burrows, which further suggest that the substrate here is more sandy than shelly. No sign of squirrels; fallen pine cones still had seeds in them. One red-bellied woodpecker.

Animal Occurrence Records:

Field Research Needs: Although this island was not promising for shell mound species, the W end should be explored, as should other parts of the Browns Island complex -- especially the high ground on N Browns Island.

Office Research Needs:

Field Survey Report

Site Name: North Clapboard Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State:

Quad: Eastport

Township: 1S

Range: 28E

Section: 5,4

Site Access Directions: By boat via Clapboard Creek. Small creek that connects Clapboard and Fitzpatrick creeks may provide a view of portions of north shoreline, but it does not appear passable all the way through and good landings are not evident.

Site Location Detail: On E side of Clapboard Creek opposite and slightly N of Buckhorn Bluff.

Field Survey Date: 5/24/96

Survey Hours: midday

Survey Staff: Linda Duever, Don Blake

Survey Route: Took boat halfway around N side to view shoreline, then returned to W side to land. Walked in a short distance from W shore and returned to boat.

Site Description: Canopy composed of live oak, laurel oak, slash pine, magnolia, redbay, cabbage palm, pignut hickory. Moderately dense saw palmetto understory with some yaupon, sparkleberry, highbush blueberry, crookedwood, devilwood, wax myrtle, deerberry, huckleberry, witch hazel, Smilax, and white milkpea.

Observations: This is an Orange period midden, which indicates a very ancient shell mound that could have a well-developed vegetation. This island may have supported a rich shell mound hammock at one time, but it appears to have burned and grown into pineland. Some live oaks are growing on hummocks 2' above surrounding forest floor, suggesting that a fire may have burned out a deep accumulation of organic soil. Large specimens of flatwoods shrubs indicate that the understory was exposed to the sun not too many decades ago. Diversity of these shrub species indicates that the pineland phase persisted for a long time. Now succession is taking the forest back into hammock, but the hammock flora is not yet very diverse.

Natural Community Occurrence Records:

Plant Notes:

Plant Occurrence Records:

Animal Notes: Two large osprey or eagle nests observed from a distance along N shore of island. Periwinkles at boat landing.

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

Field Survey Report

Site Name: Shell Island

Managed Area: Timucuan Ecological and Historic Preserve

County: Duval

State:

Quad: Mayport

Township: 1S

Range: 28E

Section: na

Site Access Directions: By boat, which can be launched from Sisters Creek Park and Boat Ramp where Heckscher Dr. crosses Sisters Creek.

Site Location Detail: About 1 mi N of Fanning Island, where Sisters Creek empties into the St. Johns River.

Field Survey Date: 5/24/96 **Survey Hours:** early afternoon **Survey Staff:** Linda Duever, Don Blake

Survey Route: Landed on E shore of N island. Walked onto and around N island, then crossed saltgrass between centers of islands to S island and walked through center of it. Returned to boat roughly the same route.

Site Description: N island has hardly any groundcover or litter over shell substrate. Lots of *Forestiera segregata*. S. island has a thin layer of cedar litter over the shell in most places. Red cedar dominates canopy. Open interior supports very sparse yaupon, young hercules club, dayflower, bluecurls, poison ivy, and a colony of whisk fern. Sea oxeye surrounds edges of both islands.

Observations: These islands have a substrate of virtually pure shell. They have apparently been used as sources of construction shell, as well as dredge spoil deposition sites over the years, so it is unlikely that much, if any, of the original vegetation remains. We found coal steamship "clinkers" (some sparkly and jet-like), old red brick, old pieces of iron machinery, misc. junk mixed with shell, but no evidence of archaeological significance. Pothunter holes. *Forestiera* dropping green leaves due to drought stress (5th driest May in Jacksonville history).

Natural Community Occurrence Records:

Plant Notes: *Psilotum nudum* abundant and fruiting at N end of S island. Between the islands on nearly pure shell there was a patch of unusually small saltgrass. Don Blake says J.K. Small reported *Cheilanthes microphylla* from these islands, but we saw none and assume it was removed by dredge and fill activities. There was one patch of unidentified bedstraw on the S island. No *Rivina*, which is in most similar habitats nearby. We observed two distinctly different *Opuntias* growing on bare shell around the edge of the N island. One was the low-growing cylindrical-padded "jumping cactus" that is common in such habitats throughout the preserve. The other was a large upright prickly pear about 3' tall. Don says this large one is indian fig (*Opuntia ficus-indica*), which he has not observed elsewhere on the preserve. He considers this cactus a native, but others regard it as a pan-tropical of Mexican origin. Florida cactus taxonomy is very confused, however. Small (1925) recognized more varieties than subsequent authors have. He commented that in "...the vicinity of the mouth of the St. Johns River...both kinds and individuals of prickly pear rival or excel any other local cactus development in the state." He identified three distinct varieties on Ft. George. Current *Opuntia* taxonomy doesn't account for coastal variations in this region.

Plant Occurrence Records:

Field Survey Report

Animal Notes: Broken shells of birds' eggs. Probably from mockingbird heard singing. Lots of bagworm cases on cedars. Large mealybug with scale insects.

Animal Occurrence Records:

Field Research Needs:

Office Research Needs:

APPENDIX F

ELEMENT OCCURRENCE RECORDS

Element Occurrence Record

Filename: CCAT2EO.DOC

«EOCODE» PDRAN08060
«EONUM»
«IDENT» Y
«SNAME» *Clematis catesbyana*
«SCOMNAME» five-leaf virgin's bower
«NATION» US
«STATE» FL
«SITECODE»
«SITENAME» Cedar Point
«SURVEYSITE»
«PRECISION» S
«COUNTYCODE» FLDUVA
«COUNTYNAME» Duval
«QUADNAME» Mayport
«QUADCODE» 3008144
«MARGNUM»
«DOTNUM»
«TENTEN»
«LAT» N
«LONG» W
«S» N
«N» N
«E» W
«W» W
«TOWNRANGE» 001S028E
«SECTION» 38
«MERIDIAN» TA
«TRSNOTE»
«DIRECTIONS» Follow Cedar Point Rd. to the end. Use aerial photos and 1996 NPS Cedar Point Avian Program Overlay Map to navigate from there. Take the W trail from the end of Cedar Point Rd and keep bearing left to reach the area where the population is most concentrated.
«PHYSPROV»
«WATERSHED»
«SURVEYDATE» 1995-06-12
«LASTOBS» 1996-05-23
«FIRSTOBS» 1995-06-12
«EORANK» A
«EORANKDATE» 1995-06-12
«EORANKCOM»
«EODATA» Vines scattered through hammock. Luxuriant in a few sunny places along trail.
«CONTACTID»

«CONTACT.NAME»
«CONTACT.NOTE»
«EOTYPE»
«GENDESC» Maritime Hammock with areas of Shell Mound. Canopy live oak and cabbage palm with redbay, red cedar, black cherry, pignut hickory, white ash, sugarberry, and red mulberry. Laurel oak and water oak in disturbed areas. Understory shrubs include saw palmetto, yaupon, devilwood, florida privet, devil's walkingstick, coral bean, and hop tree. Muscadine and cross vine prominent. Groundcover is sparse under dense canopy and heavier along trails. Species include poison ivy, Uniola, spiderwort, lyreleaf sage, wild petunia, greenbriar, and ebony spleenwort.
«MINELEV» 2
«MAXELEV» 10
«SIZE» 100
«MACODE»
«MANAME» Timucuan Ecological and Historic Preserve
«MATYPE»
«CONTAINED»
«MORELAND» N
«MOREPROT» N
«MOREMGMT» N
«TNCINVOLVE»
«MGMTCOM»
«PROTCOM»
«OWNER»
«OWNERINFO» Y
«OWNERCOM»
«COMMENTS» Some with 3 leaflets, some with 5.
«DATASENS»
«BOUNDARIES» N
«PHOTOS» N
«BESTSOURCE» Don Blake
«SOURCECODE»
«SPECIMENS»
«TRANSCRIBR» 1996-06-05 LCD
«CDREV»
«MAPPER»
«QC»
«LEADRESP»
«EDITION»
«EDAUTHOR»
«MANUAL.FILE.NOTE»