

Flora and Threatened and Endangered Plants of Canaveral National Seashore, Florida

Executive Summary

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Abstract

Canaveral National Seashore (CANA) incorporates ca. 23, 335 ha of land and shallow lagoons in east central Florida. This study was conducted as part of the National Park Service Inventory and Monitoring Program for the Southeast Coast Network to document the vascular flora as one baseline for scientifically-based natural resource management and long-term ecological monitoring.

We examined existing plant collections in the CANA and KSC herbaria and annotated them where necessary. There were 258 taxa documented from CANA in these collections at the beginning of this study. We conducted field surveys in 20 terrestrial sites and one lagoon site between the fall of 2002 and the fall of 2004; sites were sampled one to ten times during this period. We collected 1040 specimens representing 557 taxa. The final floristic list includes 651 taxa, an increase of ca. 150%. Of this total, 559 are native and 92 are introduced.

We identified 13 taxa considered endangered (SE) or threatened (ST) by the state of Florida. Those listed as endangered in Florida include *Chamaesyce cumulicola*, *Glandularia maritima*, *Lantana depressa* var. *floridana*, *Lechea divaricata*, *Nemastylis floridana*, *Ophioglossum palmatum*, *Tephrosia angustissima* var. *curtissii*, *Tillandsia fasciculata* var. *densispica*, and *Tillandsia utriculata*. Plants listed as threatened in Florida include *Myrcianthes fragrans*, *Opuntia stricta*, *Pteroglossaspis ecristata*, and *Scaevola plumieri*. Five plants are listed by the state of Florida as commercially exploited: *Encyclia tampensis*, *Epidendrum conopseum*, *Osmunda cinnamomea*, *O. regalis*, and *Zamia pumila*. *Argusia gnaphalodes* (SE) and *Harrisia simpsonii* (SE) that previously occurred on CANA appear to have been eliminated by freezes in the 1970s-1980s. *Asclepias curtissii* (SE) and *Lechea cernua* (ST) previously occurred within CANA but were not relocated in this survey; both persist in the region.

Fifteen Category I and 10 Category II invasive exotic plants (as designated by the Florida Exotic Pest Plant Council) are now known to occur within the Seashore. Most of these do not appear to be widespread occurring at only one (of 20) survey areas. Control efforts in recent years have reduced but not eliminated *Schinus terebinthifolius* and *Casuarina* spp. *Lantana camara* is a threat to the native *Lantana depressa* var. *floridana* (SE) through hybridization. *Imperata cylindrica* has the potential to invade upland ecosystems.

Exotic animals also damage native flora. Feral pigs (*Sus scrofa*) cause damage to wetlands and hammocks. Both listed species of *Tillandsia* may be threatened by an introduced bromeliad weevil, *Metamasius callizona*. An introduced cactus moth, *Cactoblastis cactorum*, may be a threat to *Opuntia stricta*.

Management issues relevant to the native flora of CANA include prescribed burning of fire-dependent ecosystems (scrub, flatwoods, marshes), control of

exotic plants and animals, and restoration of abandoned agricultural areas and other disturbed areas.

The temperate and subtropical plants within CANA are sensitive to climatic fluctuations, suggesting that it could be a useful site for monitoring biotic responses to short and long-term climatic change.

Introduction

Location

Canaveral National Seashore (CANA, National Park Service) is located on the east coast of Central Florida and extends from approximately 28°40'N to 28°57'N and from 80°37'W to 80°45'W. The Seashore includes part of the Merritt Island-Cape Canaveral barrier island complex and is bordered by the Atlantic Ocean and the Mosquito Lagoon (Figure 1). The Seashore was created in 1975 by Public Law 93-626. The Seashore incorporates a total of about 23,335 ha (57,662 ac) of land and shallow lagoons. Of this area about 16,187.5 ha (40,000 ac) are within Kennedy Space Center (KSC, NASA); many of these lands are managed jointly with the U.S. Fish and Wildlife Service, Merritt Island National Wildlife Refuge (MINWR). The Seashore also includes ca. 7,147.6 ha (17,662 ac) of lands formerly owned by the State of Florida or formerly privately held lands.

Climate

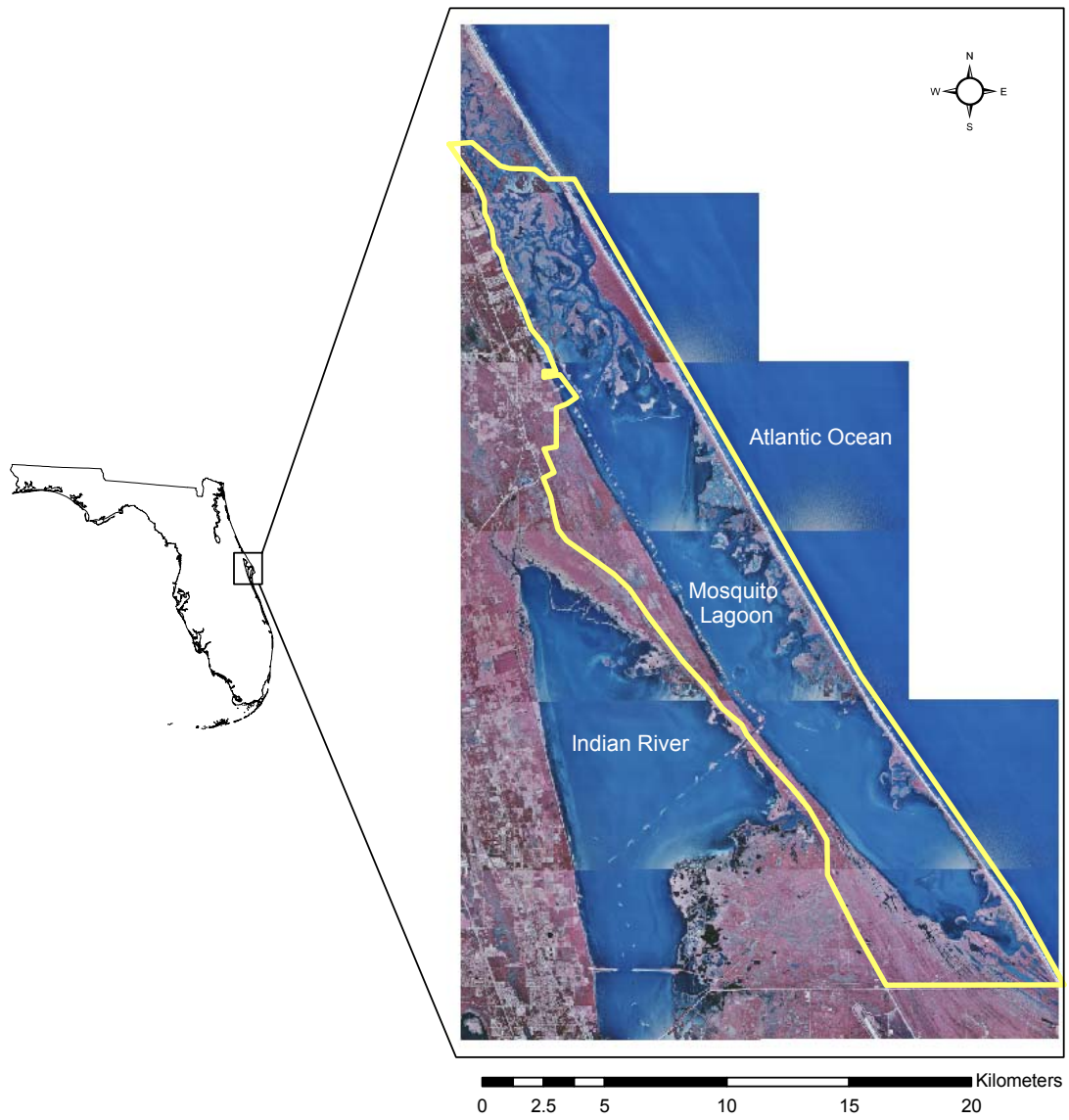
The climate is warm and humid with mean annual precipitation of 136.6 cm (Mailander 1990). The wet season extends from May to October and the rest of the year is relatively dry. Freezing temperatures may occur in winter but do not persist; severe freezes do however damage sensitive biota (Provancha et al. 1986). Hurricanes are also a periodic disturbance event (Winsberg 2003). Thunderstorms are common in the summer months, and lightning strikes are frequent (Eastern Space and Missile Center 1989). Long-term precipitation data indicate high year-to-year variability and periodic occurrences of drought (Mailander 1990).

Geology

Florida has a complex geologic history (Randazzo 1997, Scott 1997). To simplify, the geology beneath CANA consists of a limestone plateau of Eocene age overlain by Miocene clays, phosphatic limestone, and phosphorite, and unconsolidated beds of fine sand, shells, and clay of late Miocene or Pliocene age. Surface strata are primarily unconsolidated white to brown quartz sand containing beds of sandy coquina of Pleistocene and Holocene age (Cooke 1945, Brown et al. 1962).

The alternating high and low sea stands of the Pleistocene and Holocene shaped the surface of the region. The outer barrier island and Cape Canaveral formed after sea levels rose when the Wisconsinan glaciers retreated (Davis 1997). It is considered Holocene in age, with its formation beginning about 7,000 years ago (Brooks 1972, 1981). Cape Canaveral is part of a prograding barrier island complex (White 1958, 1970) with alternating periods of deposition and erosion (Chaki 1974).

Figure 1. Location of Canaveral National Seashore in Florida.



Merritt Island also formed as a prograding barrier island complex, earlier than Cape Canaveral (White 1958, 1970). Multiple dune ridges apparently represent successive stages in this growth. The western portion of Merritt Island is substantially older than the east (Brooks 1972, Clapp 1987).

Soils

The soil pattern of Merritt Island-Cape Canaveral is complex (Huckle et al. 1974, Baldwin et al. 1980) with 58 soil series and land types represented. Topography has a dramatic effect on soil formation here. Relatively small elevation changes cause substantial differences in the position of the water table that, in turn, affect leaching, accumulation of organic matter, and formation of soil horizons. In addition, proximity to the lagoon systems influences soil salinity.

The primary source of parent material for these soils is sand of mixed terrestrial and biogenic origin. The terrestrial material originated from southern rivers carrying sediments eroded from highly weathered Coastal Plain and Piedmont soils; these sediments are quartzose with low feldspar content (Milliman 1972). The biogenic carbonate fraction of the sand is primarily of mollusk or barnacle origin (Milliman 1972). Some differences in soil parent material do occur, particularly that between soils formed in deposits over limestone or coquina compared to those formed in sand.

Soils on Cape Canaveral, False Cape, and the barrier island on the east side of Mosquito Lagoon are younger and less weathered than those of Merritt Island. Well drained soils in these areas retain shell fragments in the upper layers, while those inland on Merritt Island do not. The presence of shell fragments influences soil nutrient levels, particularly calcium and magnesium, and pH. The eastern and western sections of Merritt Island differ in age with the eastern section of Merritt Island retaining marked ridge-swale topography from its formation as a barrier island (Brown et al. 1962).

Schmalzer et al. (2001) grouped soil series into ten classes and showed there were significant differences among these classes for many chemical and physical parameters.

History

Native Americans lived in east central Florida for thousands of years before European contact (Bense 1994). Use of coastal areas and lagoon systems was extensive in some periods as marked by shell mounds and middens. Davison and Bratton (1986) reviewed the history of European and later American settlement and landscape modification that began with Spanish colonization in the 16th century.

Botanical Exploration

Early botanical exploration of east central Florida included trips by John and William Bartram (Bartram 1791, Taylor and Norman 2002) and Andre Michaux (Taylor and Norman 2002). Later observations were made during the Seminole Wars (Motte 1845). In the early 20th century Roland Harper described vegetation of the region (Harper 1921), and J.K. Small collected plants from various locations (Small 1919, 1921, 1922, 1923, 1927).

The first floristic list for the region was compiled in the 1970s by researchers at the Florida Technological University (now University of Central Florida) (Sweet 1976, Poppleton et al. 1977). This list has been revised twice (Schmalzer and Hinkle 1990, Schmalzer et al. 2002) with additions and corrections; however, these lists are not specific to the boundaries of Canaveral National Seashore. The flora of Turtle Mound has been studied (Norman 1976), reexamined after 20 years (Norman and Hawley 1995), and also examined by Stalter and Kinkaid (2004). Surveys have been conducted by Poppleton (1981) for some rare plants and by Johnson et al. (1990) of coastal areas. Krakow (1991) conducted a survey for rare plants within the Seashore.

Studies of plant communities (Stout 1980, Schmalzer and Hinkle 1992b, 1996) and fire ecology (Simon 1986, Schmalzer and Hinkle 1992a, Schmalzer 2003) have been conducted. Regional vegetation maps have been prepared by Provancha et al. (1986) for Kennedy Space Center and by Swain and Larson (1991) for the Indian River Lagoon Basin. Vegetation of part of Canaveral National Seashore was mapped in 1979 by L.K. Kirkman (Southeastern Wildlife Services, Inc. 1979).

Vegetation

The major plant communities occurring within CANA are coastal dunes, coastal strand, coastal scrub, coastal hammock, oak-saw palmetto scrub, scrubby flatwoods, mesic hammock, hardwood swamp, freshwater marshes, salt marshes, and mangroves. There are also former agricultural areas, primarily citrus, and previously cleared areas in various stages of revegetation.

Coastal Dunes. This community occurs on the first dunes. It is dominated by sea oats (*Uniola paniculata*) with other grasses including slender cordgrass (*Spartina patens*) and beach grass (*Panicum amarum*) occurring. Small shrubs such as beach berry (*Scaevola plumieri*), beach elder (*Iva imbricata*) and Gulf croton (*Croton punctatus*) occur along with herbs including dune sunflower (*Helianthus debilis*), railroad vine (*Ipomoea pes-caprae*), and camphorweed (*Heterotheca subaxillaris*).

Coastal Strand. Coastal strand is a shrub community on the barrier island on recent dunes inland from the coastal dunes (sea oats zone). Saw palmetto

(*Serenoa repens*), sea grape (*Coccoloba uvifera*), wax myrtle (*Myrica cerifera*), nakedwood (*Myrsianthes fragrans*), tough buckthorn (*Sideroxylon tenax*), and myrsine (*Rapanea punctata*) are typical shrubs (Schmalzer and Hinkle 1985, Johnson et al. 1990). Shrubs may be dense or sandy openings may be common. If open, herbs such as dune sunflower and camphorweed often occur. Pruning of shrubs by salt spray is common. Soils are typically the excessively well-drained Palm Beach sand or the moderately well-drained Canaveral sand (Huckle et al., 1974).

Coastal Scrub. Coastal scrub is a shrub community on the barrier island inland from coastal strand where oaks become co-dominant or dominant (Johnson and Barbour 1990). The oak is often a coastal form of live oak (*Quercus virginiana*) (Kurz 1942, Johnson et al. 1990). Other shrubs include saw palmetto, wax myrtle, tough buckthorn, myrsine, and Florida privet (*Forestiera segregata*) (Schmalzer and Hinkle 1985). The soil is typically the moderately well-drained Canaveral sand (Huckle et al. 1974). Unlike soils of inland scrub, this soil is alkaline and still retains shell fragments in the upper horizons. Outside of Federal property most has been developed, but some remnants persist (Johnson et al., 1990). Coastal strand and scrub are habitat for several rare plants including *Glandularia maritima*, *Lantana depressa* var. *floridana*, and *Tephrosia angustissima* var. *curtissii* (Schmalzer et al. 1999)

Coastal Hammock. Coastal hammock occurs on wider barrier islands inland from the coastal scrub zone where salt spray pruning is reduced and the stature of the vegetation increases. Live oak is the canopy dominant with red bay (*Persea borbonia*) and cabbage palm (*Sabal palmetto*) often occurring. Shrubs of tropical affinity including nakedwood, lancewood (*Ocotea coriacea*), myrsine, and wild coffee (*Psychotria nervosa*, *Psychotria sulzneri*) may dominate the understory. Coastal hammocks on shell mounds and middens often have a higher proportion of tropical species, as was noted by early botanical explorers such as Andre Michaux (Taylor and Norman 2002) and subsequent work (e.g., Small 1923, Norman 1976, Stalter and Kinkaid 2004).

Oak-Saw Palmetto Scrub. Oak-saw palmetto scrub is a shrubland dominated by scrub oaks (*Quercus myrtifolia*, *Q. geminata*, *Q. chapmanii*), saw palmetto, and ericaceous shrubs including *Lyonia ferruginea*, *L. fruticosa*, *L. lucida*, and *Bejaria racemosa*. Shiny blueberry (*Vaccinium myrsinites*) is a common small shrub, and wiregrass (*Aristida stricta* var. *beyrichiana*) a frequent herb. Soils are typically moderately well-drained Pomello or Orsino sands (Huckle et al., 1974). Oak-saw palmetto scrub is well represented on Merritt Island (Schmalzer and Hinkle 1987, 1992b, Schmalzer et al. 1999).

Pine Flatwoods. Slash pine flatwoods occur on moderately to poorly drained sites on Merritt Island. Scrubby flatwoods have a shrub layer of oak-saw palmetto scrub but an open canopy of pines. On Merritt Island, slash pine (*Pinus elliotii* var. *densa*) is the canopy species (Schmalzer and Hinkle 1985, Breining et al.

1988). Soils are similar to those of oak-saw palmetto scrub. On mesic to hydric sites, saw palmetto has greater dominance and gallberry (*Ilex glabra*) also becomes more important.

Mesic Hammock. The oak-cabbage palm hammock community has a canopy typically dominated by live oak of large size. Cabbage palm, laurel oak (*Quercus laurifolia*), elm (*Ulmus americana*), and red mulberry (*Morus rubra*) also occur in the canopy. Shrubs of tropical affinity including nakedwood, lancewood, myrsine, and wild coffee dominate the understory. In some areas near the lagoons, red cedar (*Juniperus virginiana*) becomes important in the hammocks.

Hardwood Swamp. Locally, hardwood swamps are closed canopy forests dominated by deciduous trees especially red maple (*Acer rubrum*) and elm, but often includes evergreen taxa such as laurel oak and cabbage palm. In the understory, royal fern (*Osmunda regalis*) and Virginia chain fern (*Woodwardia virginica*) occur. On sites with longer hydroperiods and deeper water, willow swamps occur; this community is a swamp of small trees dominated by Carolina willow (*Salix caroliniana*) with some red maple and wax myrtle.

Freshwater Marshes. Swales in scrub and slash pine flatwoods areas contain graminoid communities. Shallow swales or the edges of larger ones may be dominated by several species of beardgrass (*Andropogon* spp.). In areas with longer hydroperiods, sand cordgrass (*Spartina bakeri*) is often dominant. Sawgrass (*Cladium jamaicense*) dominates areas with deeper water and longer hydroperiods. Other species occurring include Virginia chain fern, swamp fern (*Blechnum serrulatum*), bulltongue arrowhead (*Sagittaria lancifolia*), and maidencane (*Panicum hemitomon*). With alterations in hydrology or long exclusion of fire, hardwood species such as willow, red maple, and wax myrtle may invade these areas.

Salt Marshes. Several types of salt marshes occur adjacent to the lagoon systems. The sand cordgrass-black rush community is dominated by sand cordgrass and black rush (*Juncus roemerianus*) with associated species such as leather fern (*Acrostichum danaeifolium*). Scattered shrubs of wax myrtle and groundsel (*Baccharis* spp.) may occur. The mixed salt-tolerant grasses marsh is dominated by one or more species of short grasses including saltgrass (*Distichlis spicata*), seashore paspalum (*Paspalum vaginatum*), and seashore dropseed (*Sporobolus virginicus*) along with herbs such as sea purslane (*Sesuvium portulacastrum*). Patches of the shrub, sea oxeye (*Borrchia frutescens*), may occur in the salt marsh matrix. The saltwort-glasswort community occurs associated with salt marsh vegetation and is dominated by the low shrubs saltwort (*Batis maritima*) and glasswort (*Sarcocornia perennis*). Annual glasswort (*Salicornia bigelowii*) and saltmarsh cordgrass (*Spartina alterniflora*) may also occur.

Mangroves. The mangrove community is dominated by black mangrove (*Avicennia germinans*), white mangrove (*Languncularia racemosa*), red mangrove (*Rhizophora mangle*), and buttonwood (*Conocarpus erecta*) singly or in combination. Other common species include saltwort, glasswort, seashore paspalum, and sea blite (*Suaeda linearis*). Mangrove communities fringe some areas of the lagoons and occur in some impounded wetlands.

Many of the salt marshes fringing the lagoon systems were impounded for mosquito control between ca. 1950-1970 (Carlson and Carroll 1985, Rey et al. 1991). Later some of these dikes were removed, and others have been connected via culverts to the lagoon (Virnstein 1992). Changes in hydrology and salinity have had varying effects on vegetation and flora (Schmalzer 1995, Brockmeyer et al. 1997).

Seagrass Beds. Seagrasses and submerged aquatic vegetation are important in the Indian River Lagoon including Mosquito Lagoon, which is included with the Seashore. Four seagrasses occur in the northern Indian River Lagoon: shoalweed (*Halodule wrightii*), wigeongrass (*Ruppia maritima*), manateeegrass (*Syringodium filiforme*), and Engelmann's seagrass (*Halophila engelmannii*) (Provancha and Scheidt 1999). *Halodule*, *Ruppia*, and *Syringodium* are most frequently encountered in Mosquito Lagoon (Provancha and Scheidt 1999).

Plant Distributions

The climate of coastal central Florida including Canaveral National Seashore is transitional between the warm temperate climate of northern Florida and the subtropical climate of southern Florida with subtropical conditions extending farther north along the coasts (e.g., Winsberg 2003). Greller (1980) showed that distribution of forest zones was related to this climatic gradient with the tropical forest zone/temperate broadleaved forest zone transition extending along the coast through Canaveral National Seashore. The transitional character of the flora is represented by distribution maps that show many northern species at or near the southern limits of their distribution in this region and many subtropical species at or near the northern limits of their distribution (e.g., Little 1978).

Purpose of This Study

This survey of vascular plants of Canaveral National Seashore was conducted as part of the National Park Service Inventory and Monitoring Program. Under this program, each park within the National Park service with significant natural resources is charged with developing current species lists for key taxonomic groups (vascular plants and vertebrates) and documenting 90% of those species through literature reviews, museum searches, and targeted field surveys. Canaveral National Seashore is part of the Southeast Coast Network, one of 32 networks that share similar geographic and natural resource characteristics. Results of this and other baseline inventories are intended to serve as a

foundation of information to conduct scientifically-based natural resource management and design an integrated long-term ecological monitoring program for all parks within the Network.

Methods

Review of Existing Data and Collections

We examined collections in the Kennedy Space Center herbarium to determine if they came from within the boundaries of Canaveral National Seashore. We examined specimens in the CANA reference collection, annotated their nomenclature to follow Wunderlin and Hansen (2003), and corrected misidentifications. Collections at the University of Central Florida Herbarium (FTU) and other institutions were not examined.

Information on known occurrence of rare plants was obtained from the Florida Natural Areas Inventory (FNAI). Status was determined from the Florida Department of Agriculture and Consumer Services list (Coile 2000).

Determining Sample Site Locations

The size of the Seashore and the logistical constraints on accessing parts of it required a sampling strategy. We selected an initial set of sites (Table 1, Figure 2A, 2B) that represented different habitats and geographic regions of the seashore, concentrating on the northern barrier island and northern Merritt Island regions that generally had been less examined in previous work. We revisited known locations of threatened and endangered plants to determine if those populations persisted. Later in the study we added sites in the southern portion of the Seashore (Table 1, Figure 2C). In addition, we collected plants during other studies being conducted in the region.

Field Surveys

We began field surveys in the fall of 2002 and conducted concentrated sampling in the spring, summer, and fall of 2003 and spring of 2004 (Table 1). Less intensive sampling was conducted in the summer and early fall of 2004.

Plant Identification

We used Wunderlin and Hansen (2003) for most plant identification, and nomenclature follows this reference except where noted. Additional references consulted included Flora of North America (1993, 1997, 2000, 2002a, 2002b, 2003a, 2003b), Godfrey and Wooten (1979, 1981), Godfrey (1988), Small (1933), Hitchcock and Chase (1950), Isley (1990), Cronquist (1980), Lellinger (1985), and Wunderlin and Hansen (2000).

Table 1. Sites within Canaveral National Seashore sampled for flora.

Site	Code	Description	County	Agencies	Communities	Dates Sampled
Gomez Grant Line	GG1	Trail along grant line, sand road east of SR 3	Volusia	CANA, KSC, MINWR	Open wet area, hammock, scrub, freshwater marsh	9/26/2002, 3/20/2003, 3/26/2003, 5/14/2003, 6/16/2003, 9/02/2003, 10/04/2003, 10/16/2003, 5/25/2004, 8/25/2004
Northern Kennedy Space Center	KSC1	South of Gomez Grant line, east of SR 3	Volusia	CANA, KSC, MINWR	Scrub, freshwater marsh	10/04/2002, 3/26/2003, 5/14/2003, 6/16/2003, 9/2/2003, 10/16/2003, 5/25/2004, 8/25/2004
Oak Hill 1	OH1	North and south of Gomez Grant line ca. 2.0 km east of SR 3	Volusia	CANA	Hammock, xeric hammock, marsh	9/10/2002, 4/18/2003, 8/25/2003, 5/25/2004
Oak Hill 4	OH4	Ca. 1.7 km east of US 1 along dike road to Mosquito Lagoon	Volusia	CANA	Old field, hammock, salt marsh	9/30/2002, 4/17/2003, 8/26/2003, 6/30/2004
Oak Hill 5	OH5	Unpaved road along Seashore boundary ca. 1.4 km east of US 1	Volusia	CANA	Old field	9/30/2002, 4/17/2003, 8/26/2003, 6/30/2004
Oak Hill 6	OH6	Unpaved road along Seashore boundary ca. 1.5 km east of US 1	Volusia	CANA	Hammock	10/04/2002, 4/17/2003, 8/26/2003, 6/30/2004

Table 1. (continued).

Site	Code	Description	County	Agencies	Communities	Dates Sampled
Pardon Hammock	PH	Barrier island, east of Pardon Slough	Brevard	CANA, KSC, MINWR	Coastal hammock	10/09/2002, 3/27/2003, 9/4/2003
Dune	DUNE	Barrier island, east of Widgeon Bay	Brevard	CANA, KSC, MINWR	Dune, coastal strand, salt marsh	10/09/2002, 3/27/2003, 9/04/2003
Turtle Mound	TM	Shell mound along edge of Mosquito Lagoon	Volusia	CANA	Shell mound hammock	10/22/2002, 4/21/2003, 4/30/2003, 9/11/2003
Orange Island	OI	Island in Mosquito Lagoon west of Eldora	Volusia	CANA	Coastal hammock, salt marsh	10/10/2002
Shipyard Island	SYIS	Island in Mosquito Lagoon west of Turtle Mound	Volusia	CANA	Coastal hammock, salt marsh	10/07/2003
Eldora 2	ELD2	Barrier island along loop road ca. 3.9 km south of the north entrance to Seashore	Volusia	CANA	Coastal strand, hammock	10/10/2002, 4/21/2003, 9/11/2003, 6/30/2004
Eldora 3	ELD3	Barrier island ca. 4.6 km south of the north entrance to Seashore	Volusia	CANA	Coastal dune, coastal strand, hammock	10/22/2002, 4/29/2003, 9/09/2003, 6/30/2004

Table 1. (continued).

Castle Windy Trail	CWT	Barrier island, ca. 5.2 km south of the north entrance to Seashore	Volusia	CANA	Coastal dune, coastal strand, hammock	4/30/2003, 9/10/2003, 6/30/2004
Parking Lot 5 Peninsula	P5Pen	Barrier island, ca. 8.6 km south of the north entrance to Seashore	Volusia	CANA	Hammock on shell bed	3/19/2004
Wilson Hammock	WH	East of SR 3 north of SR 402	Brevard	CANA, KSC, MINWR	Hammock	3/02/2004, 3/10/2004, 4/26/2004
South Ranger Station Scrub	SRSC	Near South Ranger Station, between SR 402 and railroad	Brevard	CANA, KSC, MINWR	Scrub, recently cut and burned	3/02/2004, 4/26/2004
Biolab Road	Biolab	Dike road along the western shore of Mosquito Lagoon	Brevard	CANA, KSC, MINWR	Hammock, salt marsh, and disturbed sites	5/11/2004
Shiloh	Shiloh	East of SR 3	Brevard	CANA, KSC, MINWR	Scrub, flatwoods, old fields	5/07/2004, 5/19/2004, 6/28/2004, 9/21/2004, 9/22/2004, 11/2/2004
Mosquito Lagoon	ML	Lagoon	Brevard	CANA, KSC, MINWR	Seagrass beds	7/08/2004
Other	Other	Various sites along or near roadsides	Brevard, Volusia	CANA, KSC, MINWR	Various	Various

Figure 2A. Location of survey areas in the northern section of Canaveral National Seashore.

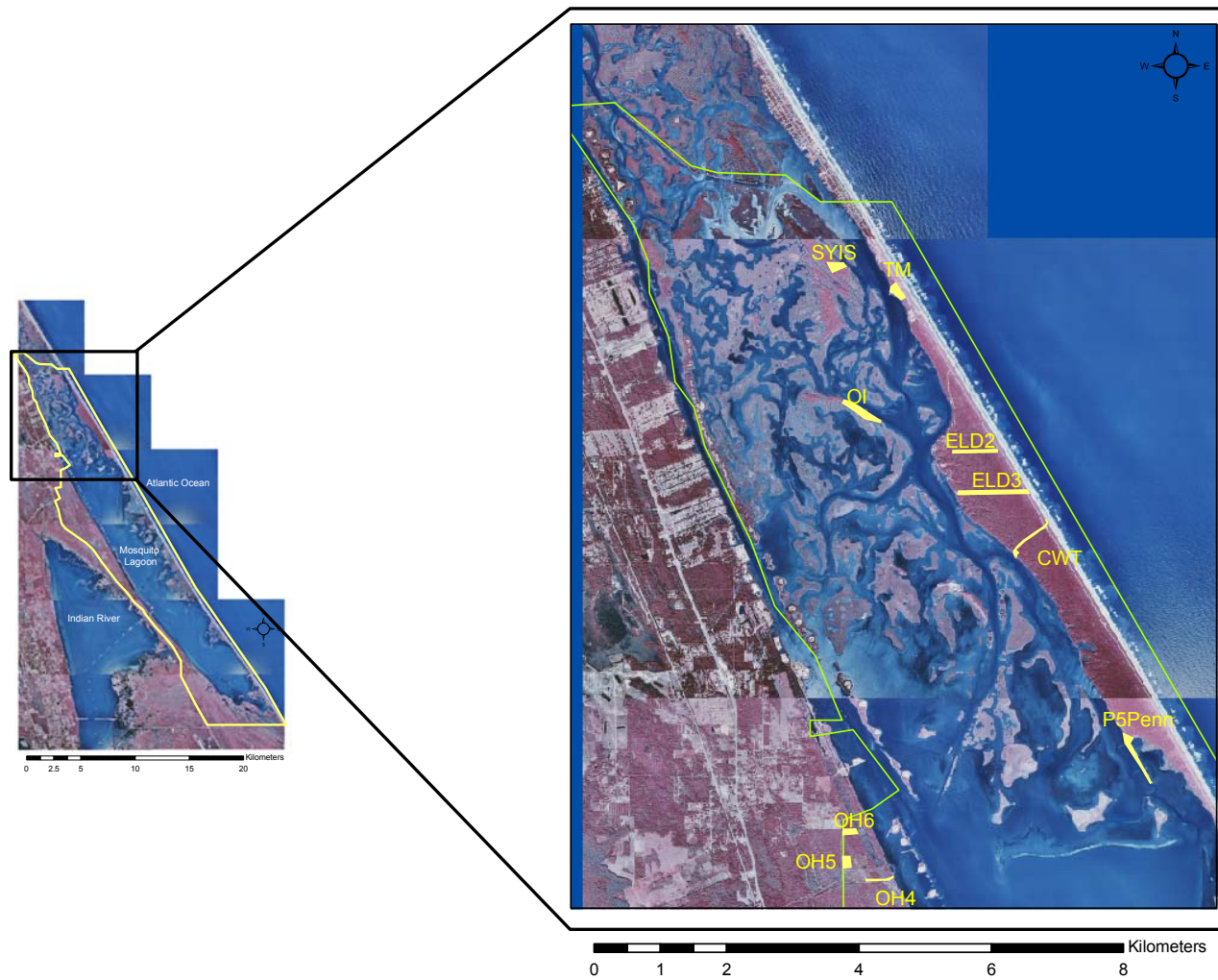


Figure 2B. Location of survey areas in the central section of Canaveral National Seashore.

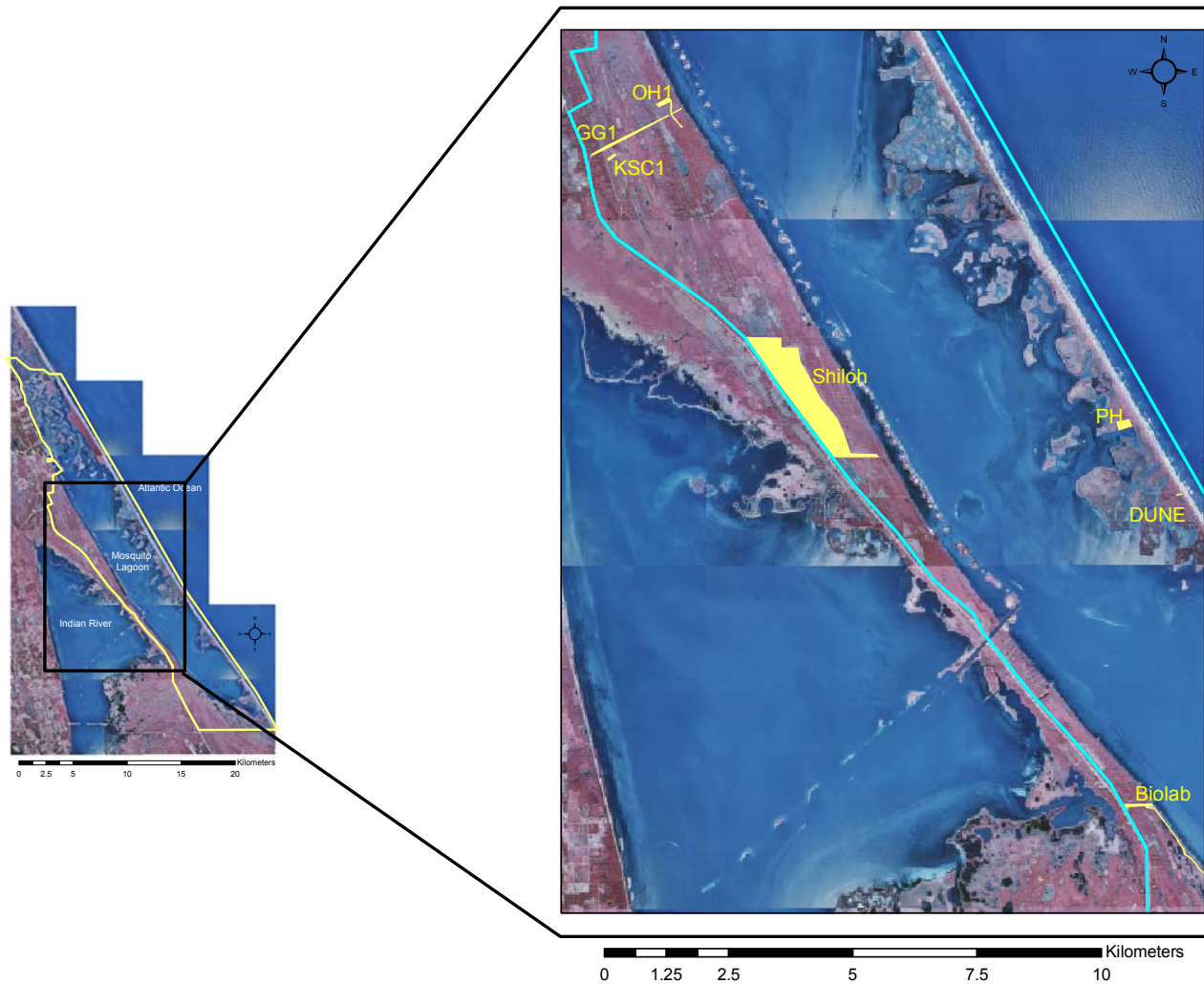
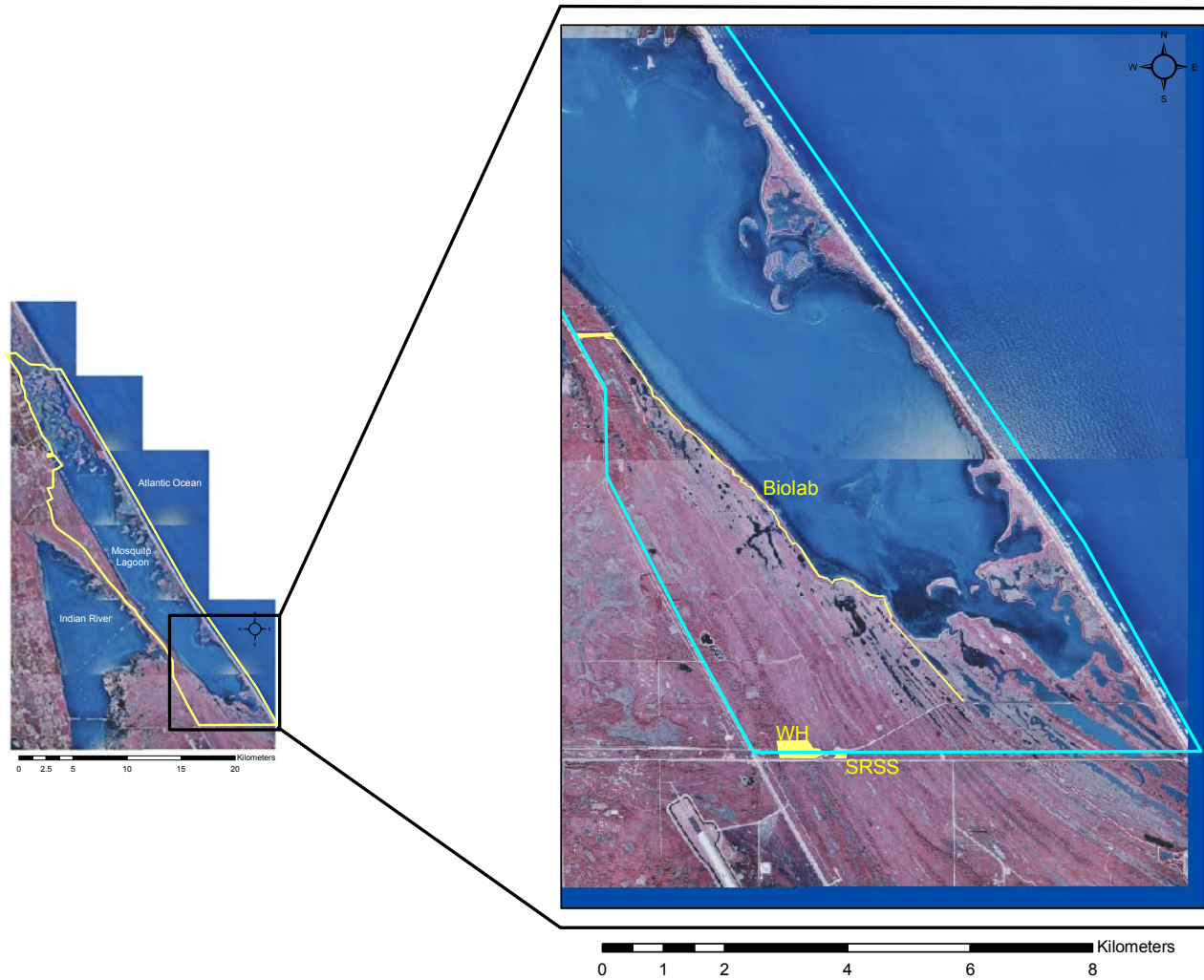


Figure 2C. Location of survey areas in the southern section of Canaveral National Seashore.



Status of plants as native or introduced was determined using Wunderlin and Hansen (2003). Status of invasive exotic plants was determined using the most recent (2003) list prepared by the Florida Exotic Pest Plant Council (<http://www.fleppc.org>). Invasive exotic plants are species introduced to Florida, intentionally or accidentally, from a natural range outside of Florida that are expanding on its own in Florida plant communities. Category I invasive exotics are those that are altering native plant communities by displacing native species, changing community structure or ecological function, or hybridizing with native plants. Category II invasive exotics have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species.

Database Development

Two databases were developed using Microsoft Access, CANA_flora and CANA_voucher. The CANA_flora database was created to inventory all species identified during the survey and the sites at which each species were present. The initial species list for this database was created by grouping together existing flora lists for surrounding areas. This combined list was then reviewed to correct for changes in nomenclature and to remove species outside of known ranges. This database included information on family, genus, species, variety, subspecies, authority, and class along with information on whether the species was introduced for each entry. A column was added to identify specimens present in the KSC herbarium that were collected within the CANA boundary at the beginning of the study. A column was included for the CANA herbarium, indicating all taxa present in that collection. Seagrasses known to occur within CANA boundaries were added as a column to the database. For each of the 20 terrestrial sites and one lagoon site sampled, a column was added to the database and the date each species was identified was listed.

Voucher collections were denoted in a separate column, and the field was updated as more specimens were collected. Abundance information was added to the database; this was determined by the number of sites at which a species was present. Rare species were found at one terrestrial site, uncommon species were found at 2 – 4 terrestrial sites, common species were found at 5 – 9 sites, and abundant species were identified at 10 or more sites.

The CANA_voucher database was created to include all necessary information for developing labels for each specimen. The information in this database included the specimen identification (family, genus, species, variety, authority) along with the county, site, date, collectors and location for each specimen. This database was updated as voucher specimens were collected. GPS locations (State Plane, Florida East, NAD27, feet) were included when available.

Results

Floristic List

We collected 1040 specimens representing 557 taxa during the course of this study. The Kennedy Space Center herbarium contained 132 taxa from within CANA boundaries before this study began. The CANA herbarium contained 296 specimens representing 244 taxa; these collections were made primarily by C. Seymor and J.M. Kunzer. We annotated 43 of these to reflect nomenclatural changes or to correct misidentifications. In total there were 258 taxa documented from CANA in the KSC and CANA collections when this study began. The resulting floristic list includes 651 taxa (Appendix 1), an increase of ca. 150%. Of the 651 taxa, 92 are introduced (14.1%) and 559 are native.

Vouchers will be held in the Kennedy Space Center herbarium collection.

The CANA_flora and CANA_voucher databases have been transferred to the National Park Service for incorporation in the NPSpecies database.

Threatened and Endangered Plants

We have identified 13 taxa considered endangered (SE) or threatened (ST) by the state of Florida (Coile 2000). Those listed as endangered in Florida include *Chamaesyce cumulicola*, *Glandularia maritima*, *Lantana depressa* var. *floridana*, *Lechea divaricata*, *Nemastylis floridana*, *Ophioglossum palmatum*, *Tephrosia angustissima* var. *curtissii*, *Tillandsia fasciculata* var. *densispica*, and *Tillandsia utriculata*. Plants listed as threatened in Florida include *Myrcianthes fragrans*, *Opuntia stricta*, *Pteroglossaspis ecristata*, and *Scaevola plumieri*. Coastal strand and scrub are important for *Lantana depressa* var. *floridana*, *Glandularia maritima*, *Chamaesyce cumulicola*, *Tephrosia angustissima* var. *curtissii*, *Myrcianthes fragrans*, *Opuntia stricta*, and *Scaevola plumieri*. *Lechea divaricata* and *Pteroglossaspis ecristata* occur in oak scrub, particularly areas recently burned. *Chamaesyce cumulicola* also occurs in sandy openings in a few scrub sites. *Ophioglossum palmatum* is epiphytic on *Sabal palmetto* in a few hammocks. *Tillandsia fasciculata* and *T. utriculata* are also epiphytic in hammocks. One population of *Nemastylis floridana* is known. Plants listed by the state of Florida as commercially exploited include *Encyclia tampensis*, *Epidendrum conopseum*, *Osmunda cinnamomea*, *O. regalis*, and *Zamia pumila*. *Argusia gnaphalodes* (SE) and *Harrisia simpsonii* (SE) that previously occurred on CANA appear to have been eliminated by freezes in the 1970s-1980s. *Asclepias curtissii* (SE) and *Lechea cernua* (ST) previously occurred within CANA but were not relocated in this survey; both persist in the region.

Location information on listed species is included in the final report (Schmalzer and Foster 2005) and databases but is not included here.

CANA Plants Listed as Endangered by the State of Florida

Chamaesyce cumulicola (coastal dune sandmat) is a prostrate herb in the Euphorbiaceae (Coile 2000, Wunderlin and Hansen 2003) endemic to Florida (Mueller et al. 1989) that occurs primarily on coastal dunes. Its distribution is primarily in coastal counties but also includes Highlands County (Wunderlin and Hansen 2004). We found this plant in four locations within CANA during this study. Two were on the outer barrier island, and the other two locations were scrub sites on Merritt Island. *Chamaesyce cumulicola* also occurs on Cape Canaveral Air Force Station (Chafin et al. 1996). Recently, we found *Chamaesyce cumulicola* in two scrub sites (Enchanted Forest Sanctuary, Titusville; Criuckshank Sanctuary, Rockledge) on the mainland of Brevard County (Schmalzer and Foster 2004a and unpublished data).

Glandularia maritima (*Verbena maritima*, coastal mock vervain) is a perennial herb in the Verbenaceae primarily found on coastal dunes and in coastal strand (Coile 2000, Wunderlin and Hansen 2003). It is endemic to Florida (Mueller et al. 1989), and its range is primarily along the east coast (Wunderlin and Hansen 2004). *Glandularia maritima* is distributed along most of the barrier island section of CANA occurring on coastal dunes and open areas in coastal strand. This distribution is similar to that reported previously (Johnson et al. 1990, FNAI records). We also found one site inland along the edge of a hammock. *Glandularia maritima* also occurs on Kennedy Space Center (Schmalzer et al. 2003) and Cape Canaveral Air Force Station (Chafin et al. 1996).

Lantana depressa var. *floridana* (Florida shrubverbena) is a shrub in the Verbenaceae. This has been considered one of three varieties within *Lantana depressa* (Sanders 1987, Wunderlin 1998). Wunderlin and Hansen (2003, 2004) place this variety in synonymy with *Lantana camara*; this treatment is not accepted universally (Chafin 2000, Coile 2000, L. Chafin, personal communication). Sanders (1987) noted that the introduced *Lantana camara* hybridizes with *Lantana depressa* (all varieties). The native populations have declined with increased habitat destruction. Habitat alteration favors the invasion of *Lantana camara*, which hybridizes with remnant native populations (Sanders 1987). However, the barrier island section of CANA supports populations that are morphologically consistent with *Lantana depressa* var. *floridana* as described by Sanders (1987), specifically lax or arching shrubs with flowers opening yellow fading to dark yellow or orange and leaves induplicate. The distribution now is consistent with that reported previously (Johnson et al. 1990, FNAI records).

Lantana camara is also present on CANA, particularly near the north entrance, around facilities, parking lots, other disturbed sites, and on some dike roads; it represents a threat to the persistence of the native species. *Lantana depressa* var. *floridana* is present on Cape Canaveral Air Force Station (Chafin et al. 1996) but so is *Lantana camara*.

Lechea divaricata (drysand pinweed) is a perennial herb in the Cistaceae endemic to Florida that occurs in scrub and scrubby flatwoods (Mueller et al. 1989, Chafin 2000, Coile 2000, Wunderlin and Hansen 2003). It occurs in coastal and inland counties of central and south Florida (Wunderlin and Hansen 2004). We found one small population of *Lechea divaricata* within CANA in scrub that had been cut in preparation for burning. *Lechea divaricata* appears to be a scrub opening species similar to others in the genus (Johnson and Abrahamson 1990, Menges and Kohfeldt 1995, Hawkes and Menges 1996). We have found it in recent surveys of scrub on Merritt Island and the mainland of Brevard County (Schmalzer and Foster 2004a, b) often in scrub that has recently been burned. Increased prescribed burning on CANA would probably benefit this species.

Nemastylis floridana (celestial lily) is a perennial herb in the Iridaceae endemic to Florida primarily distributed in the eastern part of the state where it occurs in marshes, wet flatwoods, and other open wet areas (Mueller et al. 1989, Chafin 2000, Coile 2000, Wunderlin and Hansen 2003, 2004). An unusual characteristic of the plant is that flowers only open in late afternoon, ca. 4-6 pm during the flowering season (Chafin 2000), making detection of the plant difficult. We found the plant in one location on CANA in a wet open area.

Ophioglossum palmatum (hand fern) is an epiphytic fern in the Ophioglossaceae. In Florida, its range includes the central and southern parts of the state where it occurs primarily on cabbage palms (*Sabal palmetto*) in maritime and hydric hammocks (Chafin 2000, Coile 2000, Wunderlin and Hansen 2003, 2004). Florida is at the northern limits of the species' range which also includes the West Indies, tropical America, and Southeast Asia (Wunderlin and Hansen 2000). Poppleton (1981) reported two locations for the species on CANA, a maritime hammock near Eldora and a mesic hammock east of SR 3. We relocated the Eldora population and documented a second population in a mesic hammock east of SR 3. In a 1990 survey, Krakow (1991) was unable to relocate the plant. This was the year after the hard 1989 freeze and the population may not have recovered by that time.

Tephrosia angustissima var. *curtissii* (Curtiss' hoarypea) is a perennial herb in the Fabaceae distributed in a few counties in central and south Florida, primarily in coastal areas (Chafin 2000, Coile 2000, Wunderlin and Hansen 2003, 2004). We found the plant in two locations toward the northern end of the Seashore in openings in coastal strand/coastal scrub vegetation.

Tillandsia fasciculata (cardinal airplant) is an epiphytic herb in the Bromeliaceae. Three varieties are present in Florida; those within CANA are var. *densispica* (Wunderlin and Hansen 2003). This species is widely distributed in central and southern Florida (Wunderlin and Hansen 2004) but is considered endangered because of the effects of the introduced weevil *Metamasius callizona* (Chervolat) (Coile 2000). We observed this taxon at five locations in the Seashore. We did not observe any weevil damage to this species within the Seashore.

Tillandsia utriculata (giant airplant) is another epiphytic herb in the Bromeliaceae (Wunderlin and Hansen 2003) and is widely distributed in central and southern Florida (Wunderlin and Hansen 2004) but is affected by the introduced *Metamasius* weevil (Coile 2000). We observed this taxon at three locations within the Seashore. We did not observe any weevil damage to this species within the Seashore.

CANA Plants Listed as Threatened by the State of Florida

Myrcianthes fragrans (twinberry, Simpson's stopper) is a shrub to small tree in the Myrtaceae that occurs in central and southern Florida primarily in coastal counties (Coile 2000, Wunderlin and Hansen 2003, 2004); it also occurs in the West Indies and tropical America. *Myrcianthes* is abundant within CANA occurring in 12 of 20 survey areas. It occurs primarily in coastal strand scrub and hammocks and in the understory of some inland hammocks. Because the plant is widespread within CANA, we did not attempt to map individual locations for it.

Opuntia stricta (erect pricklypear) is a large cactus (Cactaceae) that occurs primarily on coastal dunes, shell mounds, and coastal hammocks distributed in coastal counties throughout Florida (Coile 2000, Wunderlin and Hansen 2003, 2004). It is relatively common in coastal habitats of CANA occurring in 8 of 20 survey areas. Because the plant is widespread within CANA, we did not attempt to map individual locations for it. An introduced cactus moth, *Cactoblastis cactorum* (Berg) (Phycitidae) may be a threat to native *Opuntia* species including *Opuntia stricta* (Zimmermann et al. 2001).

Pteroglossaspis ecristata (giant orchid) is a large terrestrial orchid (Orchidaceae). It is relatively widespread in Florida occurring in scrub, sandhills, oak hammocks, and pine flatwoods (Chafin 2000, Wunderlin and Hansen 2003, 2004); however, Chafin (2000) noted that it was now apparently absent from many areas of historical occurrence. We found this orchid in one location within CANA at a site that has been managed by prescribed burning, which benefits this plant (Chafin 2000). We have found populations of *Pteroglossaspis* in recent surveys of the Malabar, Micco, and Valkaria Scrub Sanctuaries on the mainland of Brevard County that have been restored by prescribed burning or wildfire (Schmalzer and Foster 2004b).

Scaevola plumieri (beachberry, inkberry) is an herb or small shrub in the Goodeniaceae that occurs in coastal counties of central and southern Florida on coastal dunes and coastal strand (Coile 2000, Wunderlin and Hansen 2003, 2004). Brevard County is the northern limit of its reported range. We found the plant along the southern barrier island section of CANA (Brevard County). *Scaevola* also occurs on Cape Canaveral Air Force Station (Schmalzer and Oddy 1995).

Plants Considered Commercially Exploited by the State of Florida

Encyclia tampensis (Florida butterfly orchid) is an epiphytic orchid (Orchidaceae) occurring in hammocks and swamps of central and southern Florida (Coile 2000, Wunderlin and Hansen 2003, 2004). One occurrence of this species within CANA has been documented.

Epidendrum conopseum (green-fly orchid) is an epiphytic orchid (Orchidaceae) occurring in hammocks and swamps of northern and central Florida (Coile 2000, Wunderlin and Hansen 2003, 2004). We documented two occurrences within CANA in hammocks of the Eldora area.

Osmunda cinnamomea (cinnamon fern) and *Osmunda regalis* var. *spectabilis* (royal fern) are both terrestrial ferns in the Osmundaceae and are common ferns of wetlands in Florida (Coile 2000, Wunderlin and Hansen 2003, 2004). We recorded *O. cinnamomea* in 6 of 20 survey areas and *O. regalis* in 3 of 20 survey areas within CANA.

Zamia pumila (Florida arrowroot, coontie) is a cycad in the Zamiaceae found in the Florida peninsula, two counties in Georgia, and the West Indies (Coile 2000, Wunderlin and Hansen 2003, 2004). We found the plant in 3 of 20 survey areas within CANA, all near the northern end of the Seashore.

Listed Plants Apparently No Longer Present in CANA

Argusia gnaphalodes (*Tournefortia gnaphalodes*, sea rosemary, sea lavender) is a shrub in the Boraginaceae whose historical distribution in Florida was along the east coast from Brevard County south; it is also found in the West Indies and tropical America (Coile 2000, Wunderlin and Hansen 2003, 2004). It is listed as endangered by the State of Florida (Coile 2000). This species was reported from CANA by Poppleton et al. (1977); however, Poppleton (1981) reported that the one individual known had been destroyed by a severe freeze in 1977. Krakow (1991) examined the historic location, and the plant was not present. We examined the historical location and the species is not present there; it was not found elsewhere on the Seashore.

Harrisia simpsonii (Caribbean applecactus) is an erect tree cactus (Cactaceae) with slender, cylindrical, spiny stems. It is listed as endangered by the State of Florida (Coile 2000). Taxonomic difficulties distinguishing *Harrisia fragrans* and its congeners *H. simpsonii* and *H. aboriginum* in Florida contribute to uncertainties regarding the historic and current ranges of these species. Austin (1984) concluded that the *H. fragrans* was restricted to St. Lucie County, the type locality, and that reports from Volusia and Brevard Counties (Norman 1976, Poppleton et al. 1977) were *Cereus gracilis* (= *Harrisia simpsonii*). The only exception was a “now extirpated stand near Malabar”. Norman (1976) reported

Harrisia fragrans from Turtle Mound in southern Volusia County as did Poppleton (1981). Poppleton indicated that the population was represented by a single plant. Krakow (1991) examined the site and reported the plant missing. Norman and Hawley (1995) reported that *Cereus gracilis* var. *simpsonii* (= *H. simpsonii*) was eliminated from Turtle Mound by freezes since the original study, indicating that the taxon originally reported should have been *H. simpsonii*. *H. simpsonii* occurred in Brevard County on the southern barrier island (Johnson et al. 1990). However, in a recent survey (Schmalzer and Foster 2003) these populations could not be relocated.

Listed Plants of Uncertain Status on CANA

Asclepias curtissii (Curtiss' milkweed) is an herb in the Apocynaceae listed as endangered by the State of Florida (Coile 2000). It occurs in scrub, flatwoods and dry hammocks in central and southern Florida (Coile 2000, Wunderlin and Hansen 2003). Poppleton (1981) located one small population within CANA. Krakow (1991) was unable to relocate it during his survey. We have not seen it within CANA during this survey. However, it does persist in the region. We have found *Asclepias curtissii* in scrubby flatwoods on Merritt Island (Tel-4 area) (Schmalzer and Foster 2004b) and on the mainland of Brevard County (Schmalzer and Foster 2004a) in recent surveys. It may persist within CANA. It is generally found in small numbers and is not readily detected when not in flower (personal observation).

Lechea cernua (nodding pinweed) is an herb in the Cistaceae listed as threatened by the State of Florida (Coile 2000) that occur in scrub in central and southern Florida (Coile 2000, Wunderlin and Hansen 2003). Poppleton (1981) found a population in scrub within CANA. Krakow (1991) was unable to relocate the population, and we have not seen it within CANA in this survey. It does persist in the region (Schmalzer and Foster 2004b) and may still occur within CANA.

Invasive Exotic Plants

Fifteen Category I and 10 Category II invasive exotic plants are now known to occur within the Seashore (Table 2). Most of these do not appear to be widespread occurring at only one (of 20) survey areas (Table 2). A few of these are widespread. *Schinus terebinthifolius* (Brazilian pepper) was the invasive exotic encountered most frequently in this survey. CANA has been conducting invasive exotic plant treatment for several years (John Stiner, CANA, personal communication), and this has reduced the abundance of Brazilian pepper in many areas, but it remains present throughout the Seashore. Australian pines (*Casuarina* spp.) have also been targeted for treatment by the Seashore and by Merritt Island National Wildlife Refuge (in the joint management area) (Ron Hight, MINWR, personal communication), and their abundance has been reduced (personal observation).

Table 2. Invasive exotic plants occurring within Canaveral National Seashore.

Taxa	Number of Survey Areas
Category I	
<i>Asparagus aethiopicus</i> (=A. densiflorus)	1
<i>Bauhinia variegata</i>	KSC herbarium
<i>Casuarina equisetifolia</i>	2
<i>Casuarina glauca</i>	KSC herbarium
<i>Dioscorea bulbifera</i>	1
<i>Eichhornia crassipes</i>	1
<i>Eugenia uniflora</i>	CANA herbarium
<i>Hydrilla verticillata</i>	1
<i>Imperata cylindrica</i>	1
<i>Lantana camara</i>	8
<i>Pennisetum purpureum</i>	2
<i>Psidium guajava</i>	1
<i>Pueraria montana</i> var. <i>lobata</i>	1
<i>Schinus terebinthifolius</i>	11
<i>Urochloa mutica</i>	1
Category II	
<i>Broussonetia papyrifera</i>	KSC herbarium
<i>Kalonchoe pinnata</i>	1
<i>Leucaena leucocephala</i>	2
<i>Panicum maximum</i>	5
<i>Rhynchelytrum repens</i>	8
<i>Ricinus communis</i>	1
<i>Sanseveria hyacinthoides</i>	1
<i>Sesbania punicea</i>	1
<i>Sphagneticola</i> (= <i>Widelia</i>) <i>trilobata</i>	1
<i>Urena lobata</i>	1

Several of the invasive exotic species have the potential to cause substantial harm to CANA ecosystems or populations of rare plants. *Lantana camara* threatens the native *Lantana depressa* var. *floridana* populations through hybridization as discussed previously. *Imperata cylindrica* (cogon grass) has been present in the region for some time (Poppleton et al. 1977), but it has been spreading in recent years (personal observation). Cogon grass has the capability to invade upland ecosystems (e.g., scrub), displace native plants, and change the fire regime (Lippincott 2000). *Pueraria montana* var. *lobata* (kudzu) was documented from the Seashore for the first time. At about the same time kudzu was found in several localities in Brevard County where it had not been reported previously (Suzanne Kennedy, Brevard County Natural Resources Management Office, personal communication). On CANA, kudzu was found in an abandoned citrus grove; these groves are often dominated by invasive exotic plants and weedy native species. Two Category II grasses, *Panicum maximum* (guinea grass) and *Rhynchelytrum repens* (Natal grass), are also common in abandoned groves and other disturbed sites. These and other exotic species in old groves may limit the establishment of native plant taxa (Schmalzer et al. 2002).

Discussion

Flora

The flora of Canaveral National Seashore is predominantly native and representative of the flora of similar communities in coastal central Florida. Good examples of coastal dunes, coastal strand, coastal hammocks, oak-saw palmetto scrub, pine flatwoods, mesic hammocks, hardwood swamps, freshwater marshes, and salt marshes are included with the Seashore, as are extensive seagrass beds.

Hammocks of subtropical character on shell mounds and shell beds are an additional source of plant diversity. The occurrence of more tropical species on shell mounds and beds north of their typical range was noted by early botanical explorers such as Andre Michaux, who visited Turtle Mound in 1788 (Taylor and Norman 2002). Later J.K. Small (1923) noted the tropical character of the vegetation of Turtle Mound and other shell mounds. Recently, Stalter and Kincaid (2004) examined five middens from north to central Florida on the east coast and found that the more southern of these (including Turtle Mound) supported tropical species. The P5 Peninsula site examined in this survey was on a flat shell bed rather than a mound; it had areas where *Bursera simaruba* (gumbo-limbo) and *Sideroxylon foetidissimum* (false mastic) were the dominant trees and other subtropical species were common (Appendix 2).

Abandoned citrus groves and other former agricultural sites or cleared areas support a mix of native and introduced plants including many invasive exotic plants. Our observations are that these sites do not return to “natural”

communities by successional processes. Restoration of these sites is not simple (Schmalzer et al. 2002) and requires additional work to develop effective techniques. The prevalence of invasive exotic plants in these sites provides a source for spread into intact native vegetation.

Threatened and Endangered Plants

Canaveral National Seashore provides habitat for populations of 13 plants listed as threatened or endangered by the state of Florida and five that are considered commercially exploited. CANA is clearly important for some of these. The large, contiguous area of coastal dunes, strand, and scrub are important for *Glandularia maritima*, *Lantana depressa* var. *floridana*, *Scaevola plumieri*, *Myrcianthes fragrans*, and *Opuntia stricta*; these coastal habitats also support the only sites for *Tephrosia angustissima* var. *curtissii* known on the Seashore. *Glandularia*, *Chamaesyce*, *Tephrosia* and to some extent *Lantana* require openings in the coastal strand-coastal scrub matrix. We have observed increases in *Glandularia* in coastal scrub that was cut and burned for restoration.

An introduced cactus moth, *Cactoblastis cactorum* (Berg) (Phycitidae) may be a threat to native *Opuntia* species including *Opuntia stricta* (Zimmermann et al. 2001). The range of this moth now includes CANA and extends to South Carolina (Hight et al. 2002), but occurrence is not uniform within this range. Extensive damage to *Opuntia stricta* within CANA has not been observed.

The survival of *Lantana depressa* var. *floridana* is threatened by the introduced *Lantana camara* through hybridization and genetic swamping (Sanders 1987). Removal of *Lantana camara* from coastal areas, particularly around entrances to the Seashore, facilities, and other disturbed sites would help protect the native *Lantana*.

Lechea divaricata and *Pteroglossaspis ecristata* both occur in oak-saw palmetto scrub on leached, acidic soils. As with many rare scrub plants (Menges and Kohfeldt 1995, Hawkes and Menges 1996), *Lechea* and *Pteroglossaspis* require openings in the dense shrub matrix. The site for *Pteroglossaspis* was in the joint management area and has been burned several times. The site for *Lechea* was along a sand road; it has been cut by roller-chopper in preparation for burning but not yet burned. Most of the scrub in the joint management area of CANA has been burned by the US Fish and Wildlife Service (MINWR), and some of the long-unburned scrub has been restored by cutting and burning (Schmalzer et al. 2003). Most of the scrub solely within Park Service management requires prescribed burning. Plans for these burns exist but are just beginning to be executed. Scrub near the south entrance to the seashore was cut and burned in February 2003. The first prescribed burn of the Bill's Hill area north of the Gomez Grant line was just conducted in January 2005.

Tillandsia fasciculata var. *densispica*, *Tillandsia utriculata*, and *Ophioglossum palmatum* are all epiphytes of coastal or mesic hammocks. *Ophioglossum* is the most host specific, occurring only on *Sabal palmetto*; it is also near the northern limits of its range and may be damaged by hard freezes. Both species of *Tillandsia* are threatened by an introduced insect, *Metamasius callizona* (Chervolat). No damage to *Tillandsia* by this weevil was seen in this study, but the insect may reach CANA. Periodic monitoring in areas where *Tillandsia* is frequent should be conducted to determine if weevil damage is occurring. Unlike the rare scrub plants, epiphytes are sensitive to fire. However, prescribed burns are usually conducted under moderate conditions such that fire does not spread into mesic hammocks. Reductions of fuel loads in scrub and flatwoods should reduce the risk or intensity of wild fires under more extreme conditions where they might represent a risk to coastal or mesic hammocks.

Invasive Exotic Plants

Treatment of invasive exotic plants within CANA in recent years has reduced but not eliminated populations of Brazilian pepper and Australian pine. The threat posed by *Lantana camara* to the native *Lantana depressa* var. *floridana* has been discussed. Guinea grass and cogon grass are also threats to native communities and species. Their current populations are primarily in disturbed sites including abandoned groves and roadsides, but they have the potential to spread into undisturbed vegetation.

Invasive Exotic Animals

We have noted the potential impact of two introduced insects to listed plants in CANA. Feral pigs (*Sus scrofa*) cause damage to wetlands and hammocks within CANA; localized damage can be extensive (personal observation). Feral pigs have the most destructive impact to native habitats of any exotic mammal in Florida (Layne 1997).

Climatic Fluctuations and Changes

CANA occupies a zone of climatic transition and supports many species that are near the northern or southern limits of their ranges. Climatic events such as hard freezes or extended droughts have the potential to affect the flora. Several species that occurred historically on CANA in small numbers (e.g., *Argusia gnaphalodes*, *Harrisia simpsonii*) apparently were eliminated by freezes in the 1970s and 1980s. Other species (e.g., *Ophioglossum palmatum*, *Amyris elemifera*, *Ocotea coriacea*) were damaged by these freezes, and populations could not be relocated soon after the last freeze (Krakow 1991). In this study we found one or more populations of these plants indicating recovery since then.

Future climatic change has the potential to affect plant species distributions, and transitional areas may be particularly sensitive (Crumpacker et al. 2001).

Monitoring could provide an early indication of climatic change (Crumpacker et al. 2002).

Recommendations for Management and Monitoring

1. The scrub, flatwoods, freshwater marshes, and some of the salt marshes within CANA are fire dependent systems. The rare plants in these communities require openings generated by fire in order to persist. Continuation of the prescribed burning program now instituted is extremely important. When restoring fire to long-unburned systems, it is often necessary to burn more frequently during the restoration period than may be required later for maintenance of these communities.
2. Progress has been made on reducing populations of Brazilian pepper and Australian pine within CANA, but these invasive exotics are still present and continued effort will be needed to eliminate them.
3. Cogon grass has the potential to cause significant damage to upland ecosystems. Currently, it appears to occur in only a few locations. Action to eliminate it before it spreads further is quite important.
4. The invasive exotic *Lantana camara* is a threat to the native *Lantana depressa* var. *floridana* through hybridization. CANA appears to have the largest extent of the native species in central Florida. Removal of the exotic species from the seashore boundaries and disturbed sites in proximity to populations of the native species would reduce potential impacts to it. This needs to be done carefully, because differences between the two taxa are subtle.
5. Feral pigs cause substantial damage to wetlands within CANA. Current control efforts do not appear adequate.
6. Introduced insects could affect populations of the rare plants *Tillandsia fasciculata* var. *densispica*, *Tillandsia utriculata*, and *Opuntia stricta*. Periodic monitoring would be useful in detecting impacts.
7. Effective techniques for restoration of abandoned agricultural lands and other disturbed areas need to be developed. Successional processes generally do not return these sites to natural communities.
8. The temperate and subtropical plants within CANA are sensitive to climatic fluctuations. Periodic monitoring could be useful in detecting biotic responses to short- and long-term climatic change.

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Appendix 1

Floristic List for Canaveral National Seashore

The list is arranged by Class where “p” indicates Pteridophyte (ferns and fern allies), “g” indicate Gymnosperm, and “a” indicates Angiosperm. The list is further arranged by Family, Genus, Species, and Variety or Subspecies. Taxonomy generally follows Wunderlin and Hansen (2003).

Under “Status” plants are native unless noted as “Introduced”.

The column “Collected” indicates whether a voucher specimen of this taxon was collected during this project. The column “Existing” indicates whether a voucher specimen for this taxon was present in either the KSC or CANA herbarium collections at the beginning of this project. A few species are listed based on field identification but currently lack a voucher specimen at KSC or CANA.

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
p	Aspleniaceae	Asplenium	platyneuron		(L.) BSP.		X	X
p	Azollaceae	Azolla	caroliniana		Willd.		X	
p	Blechnaceae	Blechnum	serrulatum		L. C. Rich.		X	
p	Blechnaceae	Woodwardia	areolata		(L.) Moore		X	
p	Blechnaceae	Woodwardia	virginica		(L.) Smith		X	
p	Dennstaedtiaceae	Pteridium	aquilinum (L.) Kuhn	var. pseudocaudatum	(Clute) Heller		X	
p	Dennstaedtiaceae	Pteridium	aquilinum (L.) Kuhn	var. caudatum	(L.) Sadeb.		X	X
p	Ophioglossaceae	Ophioglossum	palmatum		L.		X	
p	Osmundaceae	Osmunda	cinnamomea		L.		X	X
p	Osmundaceae	Osmunda	regalis L.	var. spectabilis	(Willd.) A. Gray		X	
p	Polypodiaceae	Phlebodium	aureum		(L.) Small		X	
p	Polypodiaceae	Pleopeltis	polypodioides (L.) Andrews & Wind	var. michauxianum	(Weatherby) Andrews & Windham		X	X
p	Psilotaceae	Psilotum	nudum		(L.) Beauv.		X	
p	Pteridaceae	Acrostichum	danaeifolium		Langsd. & Fisch.		X	
p	Thelypteridaceae	Macrothelypteris	torresiana		(Gaudich.) Ching	Introduced	X	
p	Thelypteridaceae	Thelypteris	dentata		(Forssk.) E.P. St. John	Introduced	X	
p	Thelypteridaceae	Thelypteris	kunthii		(Desv.) Morton		X	
p	Thelypteridaceae	Thelypteris	ovata		(RP St. John)		X	
p	Thelypteridaceae	Thelypteris	palustris Schott	var. pubescens	(G. Lawson) Fernald		X	
p	Vittariaceae	Vittaria	lineata		(L.) Sm.		X	
g	Cupressaceae	Juniperus	virginiana		L.		X	X
g	Pinaceae	Pinus	clausa		(Chapm. ex Englm.) Vasey ex Sarg.		X	
g	Pinaceae	Pinus	elliottii		Englm.		X	
g	Zamiaceae	Zamia	pumila		L.		X	X
a	Acanthaceae	Dicliptera	sexangularis		(L.) Juss.		X	X
a	Acanthaceae	Ruellia	caroliniensis		(J. F. Gmel.) Steud.		X	X
a	Adoxaceae	Sambucus	nigra L.	subsp. canadensis	(L.) R. Bolli.		X	X
a	Agavaceae	Agave	decipiens		Baker		X	
a	Agavaceae	Yucca	aloifolia		L.		X	X
a	Agavaceae	Yucca	filamentosa		L.		X	
a	Aizoaceae	Sesuvium	maritimum		(Walt.) BSP.		X	
a	Aizoaceae	Sesuvium	portulacastrum		(L.) L.		X	X
a	Alismataceae	Sagittaria	filiformis		J.G. Sm.		X	
a	Alismataceae	Sagittaria	lancifolia	subsp. lancifolia	L.		X	X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Alismataceae	Sagittaria	subulata		(L.) Buchenau			X
a	Altingiaceae	Liquidambar	styraciflua		L.		X	
a	Amaranthaceae	Amaranthus	australis		(A. Gray) Sauer			X
a	Amaranthaceae	Atriplex	cristata		Humb. & Bonpl. ex Willd.		X	
a	Amaranthaceae	Blutaparon	vermiculare		(L.) Mears		X	
a	Amaranthaceae	Chenopodium	ambrosioides		L.	Introduced	X	X
a	Amaranthaceae	Chenopodium	berlandieri		Moq.			X
a	Amaranthaceae	Froelichia	floridana		(Nutt.) Moq.		X	X
a	Amaranthaceae	Gomphrena	serrata		L.	Introduced	X	
a	Amaranthaceae	Iresine	diffusa		Humb. & Bonpl. ex Willd.		X	X
a	Amaranthaceae	Salicornia	bigelovii		Torr.		X	X
a	Amaranthaceae	Sarcocornia	perennis		(Mill.) A.J. Scott		X	X
a	Amaranthaceae	Suaeda	linearis		(Ell.) Moq.		X	X
a	Amaryllidaceae	Hymenocallis	latifolia		(Mill.) Roem.		X	
a	Anacardiaceae	Rhus	copallinum		L.		X	X
a	Anacardiaceae	Schinus	terebinthifolius		Raddi	Introduced	X	X
a	Anacardiaceae	Toxicodendron	radicans		(L.) Kuntze		X	X
a	Annonaceae	Asimina	obovata		(Willd.) Nash		X	X
a	Annonaceae	Asimina	parviflora		(Michx.) Dunal		X	
a	Annonaceae	Asimina	reticulata		Shuttlew. ex Chapm.		X	
a	Apiaceae	Cicuta	maculata		L.		X	
a	Apiaceae	Cyclospermum	leptophyllum		(Pers.) Sprague ex Britton & P. Wilson	Introduced	X	
a	Apiaceae	Eryngium	aromaticum		Baldwin		X	X
a	Apiaceae	Eryngium	baldwinii		Spreng.		X	
a	Apiaceae	Eryngium	yuccifolium		Michx.			X
a	Apiaceae	Oxypolis	filiformis	subsp. filiformis	(Walt.) Britt.		X	
a	Apiaceae	Ptilimnium	capillaceum		(Michx.) Raf.		X	
a	Apiaceae	Spermolepis	echinata		(Nutt. ex DC.) A. Heller		X	
a	Apocynaceae	Asclepias	pedicellata		Walt.		X	
a	Apocynaceae	Asclepias	tomentosa		Ell.			X
a	Apocynaceae	Asclepias	tuberosa		L.			X
a	Apocynaceae	Catharanthus	roseus		(L.) G. Don	Introduced	X	X
a	Apocynaceae	Cynanchum	angustifolium		Pers.		X	
a	Apocynaceae	Cynanchum	scoparium		Nutt.		X	X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Apocynaceae	Matelea	gonocarpus		(Walt.) Shinnars		X	
a	Apocynaceae	Morrenia	odorata		(Hook. & Arn.) Lindl.	Introduced		X
a	Aquifoliaceae	Ilex	ambigua	var. ambigua	(Michx.) Torr.		X	
a	Aquifoliaceae	Ilex	cassine	var. cassine	L.		X	X
a	Aquifoliaceae	Ilex	glabra		(L.) A. Gray		X	X
a	Aquifoliaceae	Ilex	vomitorea		Ait.		X	X
a	Araceae	Landoltia	punctata		(G. Mey.) Les & D.J. Crawford	Introduced	X	
a	Araliaceae	Centella	asiatica		(L.) Urban			X
a	Araliaceae	Hydrocotyle	bonariensis		Comm. ex Lam.		X	X
a	Araliaceae	Hydrocotyle	umbellata		L.		X	X
a	Arecaceae	Sabal	palmetto		(Walt.) Lodd. ex Schultes		X	
a	Arecaceae	Serenoa	repens		(Bartr.) Small		X	X
a	Asparagaceae	Asparagus	aethiopicus		L.	Introduced	X	
a	Asteraceae	Acmella	oppositifolia (Lam.) Jansen	var. repens	(Walt.) R.K. Jansen		X	
a	Asteraceae	Ambrosia	artemisiifolia		L.		X	X
a	Asteraceae	Arnoglossum	floridana		(A. Gray) H. Rob		X	
a	Asteraceae	Baccharis	glomeruliflora		Pers.		X	
a	Asteraceae	Baccharis	halimifolia		L.		X	X
a	Asteraceae	Berlandiera	subacaulis		(Nutt.) Nutt.		X	
a	Asteraceae	Bidens	alba (L.) DC.	var. radiata	(Sch. Bip.) R.E. Ballard ex Melchert		X	X
a	Asteraceae	Borrchia	frutescens		(L.) DC.		X	X
a	Asteraceae	Calyptocarpus	vialis		Less.	Introduced	X	
a	Asteraceae	Carphephorus	corymbosus		(Nutt.) Torr. & A. Gray		X	
a	Asteraceae	Carphephorus	odoratissimus (J.F. Gmel.)	var. subtropicanus	(J.F. Gmel.) Hebert		X	X
a	Asteraceae	Chrysopsis	linearifolia Semple	subsp. dressii	Semple		X	
a	Asteraceae	Chrysopsis	scabrella		Torr. & A. Gray		X	
a	Asteraceae	Chrysopsis	subulata		Small			X
a	Asteraceae	Cirsium	horridulum		Michx.		X	
a	Asteraceae	Conoclinium	coelestinum		(L.) DC.		X	
a	Asteraceae	Conyza	canadensis (L.) Cronq.	var. pusilla	(Nutt.) Cronq.		X	X
a	Asteraceae	Coreopsis	leavenworthii		Torr. & A. Gray		X	X
a	Asteraceae	Eclipta	prostrata		(L.) L.		X	
a	Asteraceae	Elephantopus	elatus		Bertol.		X	
a	Asteraceae	Emilia	fosbergii		Nicolson	Introduced		

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Asteraceae	Erechtites	hieraciifolius		(L.) Raf. ex DC.		X	X
a	Asteraceae	Erigeron	quercifolius		Poir.		X	
a	Asteraceae	Erigeron	vernus		(L.) Torr. & A. Gray		X	
a	Asteraceae	Eupatorium	album		L.			X
a	Asteraceae	Eupatorium	capillifolium		(Lam.) Small ex Porter & Britton		X	
a	Asteraceae	Eupatorium	compositifolium		Walt.		X	
a	Asteraceae	Eupatorium	leucolepis		(DC) Torr. & A. Grey		X	
a	Asteraceae	Eupatorium	mikanioides		Chapm.		X	X
a	Asteraceae	Eupatorium	mohrii		Greene		X	X
a	Asteraceae	Eupatorium	rotundifolium		L.		X	
a	Asteraceae	Eupatorium	serotinum		Michx.		X	X
a	Asteraceae	Euthamia	caroliniana		(L.) Green ex. Porter & Britton		X	
a	Asteraceae	Flaveria	linearis		Lag.		X	X
a	Asteraceae	Gaillardia	pulchella		Foug.		X	X
a	Asteraceae	Gamochaeta	falcata		(Lam.) Cabrera		X	X
a	Asteraceae	Gamochaeta	pensylvanicum		(Willd.) Cabrera			X
a	Asteraceae	Helianthus	angustifolius		L.			X
a	Asteraceae	Helianthus	debilis	subsp. debilis	Nutt.		X	X
a	Asteraceae	Helianthus	floridanus		A. Gray ex Chapm.		X	
a	Asteraceae	Heterotheca	subaxillaris		(Lam.) Brit. & Rusby		X	X
a	Asteraceae	Hieracium	megacephalum		Nash		X	
a	Asteraceae	Iva	frutescens		L.		X	X
a	Asteraceae	Iva	imbricata		Walt.		X	X
a	Asteraceae	Krigia	virginica		(L.) Willd.		X	
a	Asteraceae	Lactuca	canadensis		L.		X	
a	Asteraceae	Lactuca	floridana		(L.) Gaertn.			X
a	Asteraceae	Lactuca	graminifolia		Michx.		X	X
a	Asteraceae	Liatris	tenuifolia Nutt.	var. quadriflora	Chapm.		X	
a	Asteraceae	Melanthera	nivea		(L.) Small		X	X
a	Asteraceae	Mikania	cordifolia		(L.f.) Willd.		X	
a	Asteraceae	Mikania	scandens		(L.) Willd.		X	
a	Asteraceae	Packera	glabella		(Poir.) C. Jeffrey		X	
a	Asteraceae	Palafoxia	integrifolia		(Nutt.) Torr. & A. Gray		X	
a	Asteraceae	Pityopsis	graminifolia		(Michx.) Nutt.		X	

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Asteraceae	Pluchea	foetida		(L.) DC.		X	
a	Asteraceae	Pluchea	odorata		(L.) Cass.		X	X
a	Asteraceae	Pluchea	rosea		Godfrey		X	X
a	Asteraceae	Pterocaulon	pycnostachyum		(Michx.) Ell.		X	X
a	Asteraceae	Pyrrhopappus	carolinianus		(Walt.) DC.		X	X
a	Asteraceae	Rudbeckia	hirta		L.			X
a	Asteraceae	Seriocarpus	tortifolius		(Michx.) Nees		X	
a	Asteraceae	Solidago	fistulosa		Mill.		X	X
a	Asteraceae	Solidago	odora Ait.	var. chapmanii	(A. Gray) Cronq.		X	X
a	Asteraceae	Solidago	sempervirens		L.		X	
a	Asteraceae	Solidago	stricta		Ait.			X
a	Asteraceae	Sonchus	asper		(L.) Hill	Introduced	X	
a	Asteraceae	Sonchus	oleraceus		L.	Introduced	X	X
a	Asteraceae	Sphagneticola	trilobata		(L.) Pruski	Introduced	X	
a	Asteraceae	Symphyotrichum	dumosum		(L.) G.L. Nesom		X	
a	Asteraceae	Symphyotrichum	simmondsii		(Small) G.L. Nesom		X	
a	Asteraceae	Verbesina	virginica		L.		X	X
a	Asteraceae	Vernonia	gigantea		(Walt.) Trel. ex Branner & Coville		X	X
a	Asteraceae	Youngia	japonica		(L.) DC.	Introduced	X	
a	Avicenniaceae	Avicennia	germinans		(L.) L.		X	X
a	Bataceae	Batis	maritima		L.		X	X
a	Bignoniaceae	Tecoma	capensis		(Thunb.) Lindl.	Introduced		X
a	Boraginaceae	Heliotropium	angiospermum		Murr.		X	X
a	Boraginaceae	Heliotropium	curassavicum		L.		X	X
a	Brassicaceae	Cakile	lanceolata		(Willd.) Schulz		X	X
a	Brassicaceae	Capparis	flexuosa		(L.) L.		X	X
a	Brassicaceae	Lepidium	virginicum		L.		X	X
a	Brassicaceae	Rorippa	floridana		Al-Shehbaz & Rollins		X	
a	Bromeliaceae	Tillandsia	fasciculata Sw.	var. densispica	Mez		X	
a	Bromeliaceae	Tillandsia	recurvata		(L.) L.		X	X
a	Bromeliaceae	Tillandsia	simulata		Small		X	X
a	Bromeliaceae	Tillandsia	usneoides		(L.) L.		X	X
a	Bromeliaceae	Tillandsia	utriculata		L.		X	
a	Burseraceae	Bursera	simaruba		(L.) Sarg.		X	

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a	Cabombaceae	Brasenia	schreberi		J.F. Gmel		X	
a	Cactaceae	Opuntia	humifusa		(Raf.) Raf.		X	X
a	Cactaceae	Opuntia	stricta		(Haw.) Haw.		X	
a	Campanulaceae	Campanula	floridana		S. Watson ex A. Gray		X	
a	Campanulaceae	Lobelia	feayana		A. Gray		X	X
a	Campanulaceae	Lobelia	paludosa		Nutt.		X	X
a	Campanulaceae	Lobelia	puberula		Michx.			X
a	Cannaceae	Canna	flaccida		Salisb.		X	
a	Caricaceae	Carica	papaya		L.	Introduced	X	
a	Caryophyllaceae	Paronychia	americana		(Nutt.) Fenzl ex Walp.		X	X
a	Casuarinaceae	Casuarina	equisetifolia		L.	Introduced	X	
a	Casuarinaceae	Casuarina	glauca		Sieb. ex Spreng.	Introduced		X
a	Celtidaceae	Celtis	laevigata		Willd.		X	X
a	Chrysobalanaceae	Licania	michauxii		Prance		X	X
a	Cistaceae	Helianthemum	corymbosum		Michx.		X	X
a	Cistaceae	Lechea	divaricata		Shuttlew. ex Britt.		X	
a	Cistaceae	Lechea	minor		L.		X	X
a	Cistaceae	Lechea	mucronata		Raf.		X	
a	Cistaceae	Lechea	sessiliflora		Raf.		X	
a	Cistaceae	Lechea	torreyi		(Chapm.) Legg. ex Britton		X	X
a	Clusiaceae	Hypericum	brachyphyllum		(Spach) Steud.		X	
a	Clusiaceae	Hypericum	cistifolium		Lam.		X	X
a	Clusiaceae	Hypericum	galioides		Lam.		X	
a	Clusiaceae	Hypericum	gentianoides		(L.) Britton et al.		X	
a	Clusiaceae	Hypericum	hypericoides		(L.) Crantz		X	X
a	Clusiaceae	Hypericum	mutilum		L.		X	
a	Clusiaceae	Hypericum	reductum		(Svenson) W.P. Adams		X	X
a	Clusiaceae	Hypericum	tetrapetalum		Lam.		X	X
a	Combretaceae	Conocarpus	erectus		L.		X	X
a	Combretaceae	Laguncularia	racemosa		(L.) C.F. Gaertn.		X	X
a	Commelinaceae	Callisia	ornata		(Small) G.C. Tucker		X	
a	Commelinaceae	Commelina	communis		L.	Introduced	X	
a	Commelinaceae	Commelina	diffusa	var. diffusa	Burm.f.	Introduced	X	
a	Commelinaceae	Commelina	erecta		L.		X	X

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a	Commelinaceae	Tradescantia	ohiensis		Raf.		X	X
a	Convolvulaceae	Cuscuta	indecora		Choisy		X	
a	Convolvulaceae	Cuscuta	pentagona		Engelm.			X
a	Convolvulaceae	Ipomoea	alba		L.		X	X
a	Convolvulaceae	Ipomoea	imperati		(Vahl) Griseb.		X	
a	Convolvulaceae	Ipomoea	indica (Burnm.) Merr.	var. acuminata	(Vahl) Fosberg		X	X
a	Convolvulaceae	Ipomoea	pes-caprae (L.) R. Br.	subsp. brasiliensis	(L.) Van Ooststr.		X	X
a	Convolvulaceae	Ipomoea	purpurea		(L.) Roth.	Introduced		X
a	Convolvulaceae	Ipomoea	sagittata		Poir.		X	X
a	Convolvulaceae	Merremia	dissecta		(Jacq.) Hall. f.	Introduced		X
a	Cornaceae	Cornus	foemina		Mill.		X	
a	Cornaceae	Nyssa	sylvatica Marsh.	var. biflora	(Walt.) Sarg.		X	
a	Crassulaceae	Kalanchoe	pinnata		(Lam.) Pers.	Introduced	X	
a	Cucurbitaceae	Melothria	pendula		L.		X	
a	Cucurbitaceae	Momordica	charantia		L.	Introduced	X	
a	Cymodoceaceae	Halodule	wrightii		Aschers		X	X
a	Cymodoceaceae	Syringodium	filiforme		Kutz.		X	
a	Cyperaceae	Bulbostylis	ciliatifolia		(Ell.) Fern.		X	
a	Cyperaceae	Bulbostylis	stenophylla		(Elliott) C.B. Clarke		X	
a	Cyperaceae	Carex	alata		Torr.		X	X
a	Cyperaceae	Cladium	jamaicense		Crantz		X	
a	Cyperaceae	Cyperus	croceus		Vahl			X
a	Cyperaceae	Cyperus	difformis		L.	Introduced		X
a	Cyperaceae	Cyperus	distinctus		Steud.		X	
a	Cyperaceae	Cyperus	erythrorhizos		Muhl.		X	
a	Cyperaceae	Cyperus	esculentus		L.	Introduced	X	X
a	Cyperaceae	Cyperus	ligularis		L.		X	X
a	Cyperaceae	Cyperus	odoratus		L.		X	X
a	Cyperaceae	Cyperus	planifolius		L.C. Rich.		X	
a	Cyperaceae	Cyperus	polystachyos		Rottb.		X	X
a	Cyperaceae	Cyperus	retrorsus		Chapm.		X	X
a	Cyperaceae	Cyperus	tetragonus		Ell.		X	X
a	Cyperaceae	Eleocharis	albida		Torr.		X	
a	Cyperaceae	Eleocharis	baldwinii		(Torr.) Chapm.		X	

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a	Cyperaceae	Eleocharis	geniculata		(L.) Roem. & Schult.		X	X
a	Cyperaceae	Fimbristylis	dichotoma		(L.) Vahl		X	
a	Cyperaceae	Fimbristylis	puberula		(Michx.) Vahl		X	
a	Cyperaceae	Fimbristylis	spadicea		(L.) Vahl		X	X
a	Cyperaceae	Fuirena	breviseta		(Cov.) Cov.		X	
a	Cyperaceae	Fuirena	pumila		(Torr.) Spreng		X	
a	Cyperaceae	Fuirena	scirpoidea		Michx.		X	
a	Cyperaceae	Rhynchospora	colorata		(L.) H. Pfeiff		X	X
a	Cyperaceae	Rhynchospora	decurrens		Chapm.		X	
a	Cyperaceae	Rhynchospora	fascicularis		(Michx.) Vahl		X	X
a	Cyperaceae	Rhynchospora	fernaldii		Gale		X	
a	Cyperaceae	Rhynchospora	filifolia		A. Gray		X	
a	Cyperaceae	Rhynchospora	grayi		Kunth		X	
a	Cyperaceae	Rhynchospora	inundata		(Oakes) Fern.		X	
a	Cyperaceae	Rhynchospora	megalocarpa		A. Gray		X	
a	Cyperaceae	Rhynchospora	microcarpa		Baldw. ex A. Gray		X	
a	Cyperaceae	Rhynchospora	microcephala		(Britton) Britton ex Small		X	
a	Cyperaceae	Rhynchospora	odorata		Wright ex Griseb.		X	X
a	Cyperaceae	Rhynchospora	plumosa		Ell.		X	
a	Cyperaceae	Rhynchospora	tracyi		Britton		X	
a	Cyperaceae	Scirpus	robustus		Pursh		X	X
a	Cyperaceae	Scleria	ciliata	var. ciliata	Michx.		X	
a	Cyperaceae	Scleria	ciliata Michx.	var. pauciflora	(Muhl. ex Willd.) Kuk.		X	
a	Cyperaceae	Scleria	reticularis		Michx.		X	
a	Cyperaceae	Scleria	triglomerata		Michx.		X	
a	Cyperaceae	Scleria	verticillata		Muhl. ex Willd.		X	
a	Cyperaceae	Websteria	confervoides		(Poir.) S.S. Hooper		X	
a	Dioscoreaceae	Dioscorea	bulbifera		L.	Introduced	X	
a	Droseraceae	Drosera	brevifolia		Pursh		X	
a	Droseraceae	Drosera	capillaris		Poir.		X	
a	Ebenaceae	Diospyros	virginiana		L.		X	X
a	Ericaceae	Bejaria	racemosa		Vent.		X	X
a	Ericaceae	Gaylussacia	dumosa		(J. Kenn.) Torr. & A. Gray		X	
a	Ericaceae	Lyonia	ferruginea		(Walt.) Nutt.		X	

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a	Ericaceae	Lyonia	fruticosa		(Michx.) Torr.		X	
a	Ericaceae	Lyonia	lucida		(Lam.) K. Koch		X	
a	Ericaceae	Vaccinium	arboreum		Marshall		X	
a	Ericaceae	Vaccinium	corymbosum		L.		X	
a	Ericaceae	Vaccinium	darrowi		Camp.		X	
a	Ericaceae	Vaccinium	mysinites		Lam.		X	X
a	Ericaceae	Vaccinium	stamineum		L.		X	
a	Eriocaulaceae	Eriocaulon	compressum		Lam.		X	
a	Eriocaulaceae	Lachnocaulon	beyrichianum		Sporl. ex Korn.		X	
a	Eriocaulaceae	Syngonanthus	flavidulus		(Michx.) Ruhland		X	X
a	Euphorbiaceae	Acalypha	gracilens		A. Gray		X	X
a	Euphorbiaceae	Chamaesyce	bombensis		(Jacq.) Dugand		X	
a	Euphorbiaceae	Chamaesyce	cumulicola		Small		X	
a	Euphorbiaceae	Chamaesyce	hirta		(L.) Millsp.		X	X
a	Euphorbiaceae	Chamaesyce	hyssopifolia		(L.) Small		X	X
a	Euphorbiaceae	Chamaesyce	maculata		(L.) Small		X	
a	Euphorbiaceae	Chamaesyce	mesembryanthemifolia		(Jacq.) Dugand		X	
a	Euphorbiaceae	Cnidoscolus	stimulosus		(Michx.) Englm. & Gray		X	X
a	Euphorbiaceae	Croton	glandulosus	var. glandulosus	L.		X	X
a	Euphorbiaceae	Croton	punctatus		Jacq.		X	X
a	Euphorbiaceae	Phyllanthus	abnormis		Baill.		X	
a	Euphorbiaceae	Poinsettia	cyathophora		(Murray) Bartl.		X	X
a	Euphorbiaceae	Poinsettia	heterophylla		(L.) Klotzsch & Garcke ex Klotzsch		X	X
a	Euphorbiaceae	Ricinus	communis		L.	Introduced	X	X
a	Euphorbiaceae	Stillingia	sylvatica		L.		X	X
a	Euphorbiaceae	Tragia	urens		L.		X	
a	Fabaceae	Amorpha	fruticosa		L.		X	
a	Fabaceae	Apios	americana		Medik.		X	
a	Fabaceae	Bauhinia	variegata		L.	Introduced		X
a	Fabaceae	Caesalpinia	bonduc		(L.) Roxb.		X	
a	Fabaceae	Canavalia	rosea		(Sw.) DC.		X	X
a	Fabaceae	Centrosema	virginianum		(L.) Benth.		X	X
a	Fabaceae	Chamaecrista	fasciculata		(Michx.) Greene		X	X
a	Fabaceae	Chamaecrista	nictitans (L.) Moench	var. aspera	(Muhl. ex Ell.) Irwin & Barneby		X	X

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a	Fabaceae	Clitoria	mariana		L.		X	X
a	Fabaceae	Crotalaria	pallida Aiton	var. obovata	(G. Don) Polhill	Introduced	X	X
a	Fabaceae	Crotalaria	pumila		Ortega		X	X
a	Fabaceae	Crotalaria	purshii		DC.		X	
a	Fabaceae	Crotalaria	rotundifolia		J.F. Gmel.		X	X
a	Fabaceae	Dalea	feayi		(Chapm.) Barneby		X	X
a	Fabaceae	Dalea	pinnata (J.F. Gmel.) Barneby	var. adenopoda	(Rydb.) Barneby			X
a	Fabaceae	Desmodium	floridanum		Chapm.		X	
a	Fabaceae	Desmodium	incanum		DC.	Introduced	X	X
a	Fabaceae	Desmodium	laevigatum		(Nutt.) DC.		X	
a	Fabaceae	Desmodium	paniculatum		(L.) DC.		X	
a	Fabaceae	Desmodium	strictum		(Pursh) DC.		X	X
a	Fabaceae	Desmodium	tortuosum		(Sw.) DC.	Introduced	X	X
a	Fabaceae	Desmodium	triflorum		(L.) DC.	Introduced	X	
a	Fabaceae	Erythrina	herbacea		L.		X	X
a	Fabaceae	Galactia	elliottii		Nutt.		X	X
a	Fabaceae	Galactia	volubilis		(L.) Britt.		X	X
a	Fabaceae	Indigofera	caroliniana		Mill.		X	
a	Fabaceae	Indigofera	hirsuta		L.	Introduced	X	X
a	Fabaceae	Indigofera	miniata Oretaga	var. leptosepala	(Nutt. ex Torr. & A. Gray) B.L. Turner		X	X
a	Fabaceae	Indigofera	spicata		Forssk.	Introduced	X	X
a	Fabaceae	Indigofera	suffruticosa		Mill.	Introduced	X	
a	Fabaceae	Leucaena	leucocephala		(Lam.) de Wit	Introduced	X	X
a	Fabaceae	Lupinus	diffusus		Nutt.		X	
a	Fabaceae	Macroptilium	lathyroides		(L.) Urban	Introduced	X	X
a	Fabaceae	Medicago	lupulina		L.	Introduced	X	X
a	Fabaceae	Medicago	polymorpha		L	Introduced		X
a	Fabaceae	Melilotus	albus		Medik.	Introduced	X	X
a	Fabaceae	Melilotus	indicus		(L.) All.	Introduced	X	
a	Fabaceae	Mimosa	quadrivalis L.	var. floridana	(Chapm.) Barneby		X	
a	Fabaceae	Mimosa	strilligosa		Torr. & A. Gray			
a	Fabaceae	Phaseolus	polystachios	var. polystachios	(L.) Britton et al.		X	
a	Fabaceae	Pueraria	montana (Lour.) Merr.	var. lobata	(Willd.) Maesen & S.M. Almeida	Introduced	X	
a	Fabaceae	Rhynchosia	cinerea		Nash		X	

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a	Fabaceae	Rhynchosia	minima		(L.) DC.		X	X
a	Fabaceae	Senna	alata		(L.) Roxb.	Introduced	X	
a	Fabaceae	Senna	obtusifolia		(L.) Irwin & Barneby	Introduced	X	
a	Fabaceae	Sesbania	punicea		(Cav.) Benth.	Introduced	X	X
a	Fabaceae	Sesbania	vesicaria		(Jacq.) Ell.		X	X
a	Fabaceae	Sophora	tomentosa L.	var. truncata	Torr. & A. Gray		X	X
a	Fabaceae	Tephrosia	angustissima Shuttlew. ex Chapm.	var. curtissii	(Small ex Rydb.) Isely		X	
a	Fabaceae	Trifolium	repens		L.	Introduced		
a	Fabaceae	Vicia	acutifolia		Ell.		X	X
a	Fabaceae	Vigna	luteola		(Jacq.) Benth.		X	X
a	Fagaceae	Quercus	chapmanii		Sarg.		X	X
a	Fagaceae	Quercus	elliottii		Wilbur			X
a	Fagaceae	Quercus	geminata		Small		X	
a	Fagaceae	Quercus	laurifolia		Michx.		X	
a	Fagaceae	Quercus	minima		(Sarg.) Small		X	X
a	Fagaceae	Quercus	myrtifolia		Willd.		X	X
a	Fagaceae	Quercus	virginiana		Mill.		X	X
a	Gelsemiaceae	Gelsemium	sempervirens		(L.) W.T. Aiton		X	
a	Gentianaceae	Eustoma	exaltatum		(L.) Salisb. ex G. Don		X	X
a	Gentianaceae	Sabatia	brevifolia		Raf.		X	
a	Gentianaceae	Sabatia	campanulata		(L.) Torr.		X	X
a	Gentianaceae	Sabatia	grandiflora		(A. Gray) Small		X	X
a	Geraniaceae	Geranium	carolinianum		L.		X	
a	Goodeniaceae	Scaevola	plumieri		(L.) Vahl		X	
a	Haemodoraceae	Lachnanthes	caroliana		(Lam.) Dandy		X	X
a	Hydrocharitaceae	Halophila	engelmannii		Asch. ex Neumayer		X	
a	Hydrocharitaceae	Hydrilla	verticillata		(L.f.) Royle	Introduced	X	
a	Hypoxidaceae	Hypoxis	junceae		Sm.		X	
a	Iridaceae	Nemastylis	floridana		Small		X	
a	Iridaceae	Sisyrinchium	angustifolium		Mill.		X	
a	Juglandaceae	Carya	floridana		Sarg.		X	
a	Juglandaceae	Carya	glabra		(Mill.) Sweet		X	X
a	Juncaceae	Juncus	effusus		L.		X	
a	Juncaceae	Juncus	elliottii		Chapm.		X	

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Juncaceae	Juncus	marginatus		Rostk.		X	
a	Juncaceae	Juncus	megacephalus		M.A. Curtis		X	
a	Juncaceae	Juncus	repens		Michx.		X	
a	Juncaceae	Juncus	roemerianus		Scheele		X	X
a	Juncaceae	Juncus	scirpoides		Lam.		X	X
a	Lamiaceae	Callicarpa	americana		L.		X	X
a	Lamiaceae	Clerodendrum	indicum		(L.) Kuntze	Introduced	X	
a	Lamiaceae	Hyptis	mutabilis		(A. Rich.) Briq.	Introduced	X	X
a	Lamiaceae	Monarda	punctata		L.		X	X
a	Lamiaceae	Physostegia	purpurea		(Walter) S.F. Blake		X	
a	Lamiaceae	Piloblephis	rigida		(Batr. ex Benth.) Raf.		X	
a	Lamiaceae	Salvia	coccinea		Buc'hoz ex Etl.		X	X
a	Lamiaceae	Salvia	lyrata		L.		X	X
a	Lamiaceae	Salvia	serotina		L.		X	
a	Lamiaceae	Scutellaria	integrifolia		L.		X	
a	Lamiaceae	Teucrium	canadense		L.		X	X
a	Lamiaceae	Trichostema	dichotomum		L.		X	X
a	Lauraceae	Cassytha	filiformis		L.			X
a	Lauraceae	Ocotea	coriacea		(Sw.) Britton		X	X
a	Lauraceae	Persea	borbonia	var. borbonia	(L.) Spreng.		X	X
a	Lauraceae	Persea	borbonia (L.) Spreng.	var. humilis	(Nash) L.E. Kopp		X	
a	Lauraceae	Persea	palustris		(Raf.) Sarg.		X	
a	Lentibulariaceae	Pinguicula	pumila		Michx.		X	
a	Lentibulariaceae	Utricularia	purpurea		Walt.		X	
a	Lentibulariaceae	Utricularia	subulata		L.		X	
a	Loasaceae	Mentzelia	floridana		Nutt. ex Torr. & A. Gray		X	X
a	Loganiaceae	Mitreola	petiolata		(J.F. Gmel.) Torr. & A. Gray		X	
a	Lythraceae	Ammannia	latifolia		L.		X	X
a	Lythraceae	Lythrum	alatum Pursh	var. lanceolatum	(Ell.) T. & G. ex Rothr.		X	
a	Lythraceae	Lythrum	lineare		L.			X
a	Magnoliaceae	Magnolia	grandiflora		L.		X	X
a	Malvaceae	Kosteletzkya	virginica		(L.) Presl ex A. Gray		X	X
a	Malvaceae	Malvastrum	corchorifolium		(Desr.) Britton ex Small		X	X
a	Malvaceae	Pavonia	spinifex		(L.) Cav.		X	

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Malvaceae	Sida	acuta		Burm. f.		X	X
a	Malvaceae	Sida	rhubifolia		L.		X	X
a	Malvaceae	Urena	lobata		L.	Introduced	X	
a	Melastomataceae	Rhexia	mariana		L.		X	
a	Melastomataceae	Rhexia	nuttallii		C.W. James		X	
a	Melastomataceae	Rhexia	petiolata		Walter		X	
a	Molluginaceae	Mollugo	verticillata		L.	Introduced	X	
a	Moraceae	Broussonetia	papyrifera		(L.) Vent.	Introduced		X
a	Moraceae	Ficus	aurea		Nutt.		X	
a	Moraceae	Morus	rubra		L.		X	X
a	Myricaceae	Myrica	cerifera		L.		X	X
a	Myrsinaceae	Ardisia	escallonioides		Schiede & Deppe ex Schldl. & Cham.		X	X
a	Myrsinaceae	Rapanea	punctata		(Lam.) Lundell		X	X
a	Myrtaceae	Eugenia	axillaris		(Sw.) Willd.		X	X
a	Myrtaceae	Eugenia	uniflora		L.	Introduced		X
a	Myrtaceae	Myrcianthes	fragrans		(Sw.) McVaugh		X	X
a	Myrtaceae	Psidium	guajava		L.	Introduced	X	
a	Nyctaginaceae	Boerhavia	diffusa		L.		X	X
a	Nymphaeaceae	Nymphaea	capensis		Thunb.	Introduced	X	
a	Olacaceae	Ximenia	americana		L.		X	X
a	Oleaceae	Forestiera	segregata		(Jacq.) Krug & Urban		X	X
a	Oleaceae	Osmanthus	americana		(L.) Benth. & Hook. f. ex A. Gray		X	X
a	Onagraceae	Gaura	angustifolia		Michx.		X	X
a	Onagraceae	Ludwigia	alata		Elliott		X	
a	Onagraceae	Ludwigia	decurrens		Walter		X	
a	Onagraceae	Ludwigia	erecta		(L.) H. Hara		X	
a	Onagraceae	Ludwigia	lanceolata		Elliott		X	
a	Onagraceae	Ludwigia	maritima		Harper		X	X
a	Onagraceae	Ludwigia	peruviana		(L.) H. Hara	Introduced	X	X
a	Onagraceae	Ludwigia	repens		J.R. Forst.		X	X
a	Onagraceae	Ludwigia	suffruticosa		Walt.		X	
a	Onagraceae	Oenothera	humifusa		Nutt.		X	X
a	Onagraceae	Oenothera	laciniata		Hill		X	X
a	Orchidaceae	Encyclia	tampensis		(Lindl.) Small			X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Orchidaceae	Epidendrum	conopseum		R. Br.		X	
a	Orchidaceae	Habenaria	floribunda		Lindl.		X	
a	Orchidaceae	Pteroglossaspis	ecristata		(Fernald) Rolfe		X	
a	Orobanchaceae	Agalinis	fasciculata		(Ell.) Raf.		X	
a	Orobanchaceae	Agalinis	filifolia		(Nutt.) Raf.		X	
a	Orobanchaceae	Aureolaria	pedicularia (L.) Raf.	var. pectinata	(Nutt.) Gleason			X
a	Orobanchaceae	Buchnera	americana		L.		X	X
a	Orobanchaceae	Seymeria	pectinata		Pursh		X	
a	Oxalidaceae	Oxalis	corniculata		L.		X	X
a	Passifloraceae	Passiflora	incarnata		L.		X	X
a	Passifloraceae	Passiflora	suberosa		L.		X	X
a	Petiveriaceae	Rivina	humilis		L.		X	X
a	Phytolaccaceae	Phytolacca	americana		L.		X	X
a	Plantaginaceae	Plantago	lanceolata		L.	Introduced	X	
a	Plantaginaceae	Plantago	major		L.	Introduced		
a	Plantaginaceae	Plantago	virginica		L.		X	X
a	Plumbaginaceae	Limonium	carolinianum		(Walt.) Britt.		X	
a	Plumbaginaceae	Plumbago	scandens		L.		X	X
a	Poaceae	Amphicarpum	muhlenbergianum		(Schult.) Hitchc.		X	
a	Poaceae	Andropogon	brachystachyus		Chapm.		X	X
a	Poaceae	Andropogon	floridanus		Scribn.		X	
a	Poaceae	Andropogon	glomeratus (Walt.) BSP.	var. hirsutior	(Hack.) C. Mohr		X	
a	Poaceae	Andropogon	glomeratus (Walt.) BSP.	var. glaucopsis	(Ell.) C. Mohr		X	
a	Poaceae	Andropogon	glomeratus (Walt.) BSP.	var. pumilus	(Vasey) Vasey ex L.H. Dewey		X	X
a	Poaceae	Andropogon	gyrans	var. gyrans	Ashe		X	X
a	Poaceae	Andropogon	longiberbis		Hack.		X	
a	Poaceae	Andropogon	ternarius		Michx.		X	X
a	Poaceae	Andropogon	virginicus L.	var. decipiens	C. S. Campb.		X	
a	Poaceae	Andropogon	virginicus L.	var. glaucus	Hack.		X	
a	Poaceae	Aristida	purpurascens Poir.	var. tenuispica	(Hitchc.) Allred		X	
a	Poaceae	Aristida	spiciformis		Ell.		X	
a	Poaceae	Aristida	stricta Michx.	var. beyrichiana	(Trin. & Rupr.) D.B. Ward		X	
a	Poaceae	Arundo	donax		L.	Introduced	X	
a	Poaceae	Axonopus	fissifolius		(Raddi) Kuhl.		X	

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Poaceae	Cenchrus	echinatus		L.		X	X
a	Poaceae	Cenchrus	spinifex		Cav.		X	X
a	Poaceae	Chasmanthium	laxum (L.) Yates	var. sessiliflorum	(Poir.) Wipf & S.D. Jones		X	
a	Poaceae	Coelorachis	rugosa		(Nutt.) Nash			X
a	Poaceae	Cynodon	dactylon		(L.) Pers.	Introduced	X	X
a	Poaceae	Dactyloctenium	aegyptium		(L.) Willd. ex Asch. & Schweinf.	Introduced	X	
a	Poaceae	Dichanthelium	aciculare		(Desv. ex Poir.) Gould & C.A. Clark		X	
a	Poaceae	Dichanthelium	acuminatum	var. acuminatum	(Sw.) Gould & C.A. Clark		X	
a	Poaceae	Dichanthelium	commutatum		(Schult.) Gould		X	
a	Poaceae	Dichanthelium	dichotomum		(L.) Gould		X	
a	Poaceae	Dichanthelium	ensifolium (Baldwin ex Elliott) Gould	var. breve	(Hitche. & Chase) B.F. Hansen & Wunderlin		X	
a	Poaceae	Dichanthelium	laxiflorum		(Lam.) Gould		X	
a	Poaceae	Dichanthelium	oligosanthes		(Schult.) Gould		X	
a	Poaceae	Dichanthelium	portoricense		(Desv. ex Ham.) B.F. Hansen & Wunderlin		X	
a	Poaceae	Dichanthelium	scabriusculum		(Elliott) Gould & C.A. Clark		X	
a	Poaceae	Dichanthelium	scoparium		(Lam.) Gould		X	
a	Poaceae	Dichanthelium	sphaerocarpon		(Elliott) Gould		X	
a	Poaceae	Dichanthelium	strigosum (Muhl. ex Ell.) Freckma	var. leucoblepharis	(Trin.) Freckmann			X
a	Poaceae	Digitaria	ciliaris		(Retz.) Koel.		X	X
a	Poaceae	Digitaria	filiformis	var. filiformis	(L.) Koeler		X	
a	Poaceae	Distichlis	spicata		(L.) Greene		X	X
a	Poaceae	Echinochloa	muricata		(P. Beauv.) Fernald		X	
a	Poaceae	Echinochloa	walteri		(Pursh) Heller		X	
a	Poaceae	Eleusine	indica		(L.) Gaertn.	Introduced	X	
a	Poaceae	Eragrostis	ciliaris		(L.) R. Br.	Introduced	X	
a	Poaceae	Eragrostis	elliottii		S. Wats.		X	
a	Poaceae	Eragrostis	hirsuta		(Michx.) Nees		X	X
a	Poaceae	Eragrostis	pectinacea	var. pectinacea	(Michx.) Nees ex. Jedwabn.		X	
a	Poaceae	Eragrostis	secundiflora J. Presl	subsp. oxylepis	(Torr.) S.D. Koch		X	
a	Poaceae	Eragrostis	spectabilis		(Pursh) Steud.		X	X
a	Poaceae	Eremochloa	ophiuroides		(Munro) Hack.	Introduced	X	
a	Poaceae	Eriochloa	michauxii	var. michauxii	(Pior.) Hitchc.		X	
a	Poaceae	Eustachys	petraea		(Sw.) Desv.		X	X
a	Poaceae	Imperata	cylindrica		(L.) Beauv.	Introduced		

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Poaceae	Oplismenus	hirtellus		(L.) P. Beauv.		X	
a	Poaceae	Panicum	amarum		Ell.		X	X
a	Poaceae	Panicum	anceps		Michx.		X	
a	Poaceae	Panicum	dichotomiflorum Michx.	var. bartowense	(Scribn. & Merr.) Fernald		X	
a	Poaceae	Panicum	hemitomon		Schult.		X	
a	Poaceae	Panicum	longifolium		Torr.		X	
a	Poaceae	Panicum	maximum		Jacq.	Introduced	X	
a	Poaceae	Panicum	rigidulum		Bosc ex Nees		X	
a	Poaceae	Panicum	verrucosum		Muhl.		X	
a	Poaceae	Panicum	virgatum		L.		X	
a	Poaceae	Paspalum	caespitosum		Flugge		X	
a	Poaceae	Paspalum	conjugatum		Bergius		X	
a	Poaceae	Paspalum	floridanum		Michx.		X	
a	Poaceae	Paspalum	notatum Fluegge	var. saurac	Parodi	Introduced	X	X
a	Poaceae	Paspalum	setaceum		Michx.		X	X
a	Poaceae	Paspalum	urvillei		Steud.	Introduced	X	X
a	Poaceae	Paspalum	vaginatum		Sw.		X	X
a	Poaceae	Pennisetum	purpureum		Schum.	Introduced	X	
a	Poaceae	Phragmites	australis		(Cav.) Trin. ex Steud.			X
a	Poaceae	Polypogon	monspeliensis		(L.) Desf.	Introduced	X	
a	Poaceae	Rhynchelytrum	repens		(Willd.) C.E. Hubb.	Introduced	X	X
a	Poaceae	Saccharum	giganteum		(Walt.) Pers.		X	
a	Poaceae	Sacciolepis	striata		(L.) Nash		X	X
a	Poaceae	Schizachyrium	scoparium	var. scoparium	(Michx.) Nash		X	X
a	Poaceae	Setaria	corrugata		(Elliott) Schult.			X
a	Poaceae	Setaria	macrosperma		(Scribn. & Merr.) K. Schum.		X	X
a	Poaceae	Setaria	magna		Griseb.		X	
a	Poaceae	Setaria	parviflora		(Poir.) Kerguelen		X	
a	Poaceae	Sorghastrum	secundum		(Ell.) Nash		X	
a	Poaceae	Sorghum	halepense		(L.) Pers.	Introduced		X
a	Poaceae	Spartina	alterniflora		Loisel.		X	
a	Poaceae	Spartina	bakeri		Merr.		X	X
a	Poaceae	Spartina	cynosuroides		(L.) Roth		X	
a	Poaceae	Spartina	patens		(Ait.) Muhl.		X	X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Poaceae	Sphenopholis	obtusata		(Michx.) Scribn.		X	
a	Poaceae	Sporobolus	indicus	var. indicus	(L.) R. Br.	Introduced	X	X
a	Poaceae	Sporobolus	virginicus		(L.) Kunth		X	
a	Poaceae	Stenotaphrum	secundatum		(Walt.) Kuntze		X	
a	Poaceae	Tridens	flavus	var. flavus	(L.) Hitchc.		X	
a	Poaceae	Triplasis	purpurea		(Walt.) Chapm.		X	X
a	Poaceae	Tripsacum	dactyloides		(L.) L.		X	X
a	Poaceae	Uniola	paniculata		L.		X	X
a	Poaceae	Urochloa	distachya		(L.) T.Q. Nguyen	Introduced	X	
a	Poaceae	Urochloa	fusca (Sw.) B.F. Hansen & Wunderlin	var. reticulata	(Torr.) B.F. Hansen & Wunderlin	Introduced	X	
a	Poaceae	Urochloa	mutica		(Forssk.) Nguyen	Introduced	X	
a	Polemoniaceae	Ipomopsis	rubra		(L.) Wherry		X	X
a	Polemoniaceae	Phlox	drummondii		Hook.	Introduced	X	
a	Polygalaceae	Polygala	grandiflora		Walt.		X	X
a	Polygalaceae	Polygala	incarnata		L.		X	
a	Polygalaceae	Polygala	nana		(Michx.) DC.		X	X
a	Polygalaceae	Polygala	rugelii		Shuttlew. ex Chapm.		X	X
a	Polygalaceae	Polygala	setacea		Michx.		X	
a	Polygonaceae	Coccoloba	uvifera		(L.) L.		X	X
a	Polygonaceae	Polygonella	gracilis		Meisn.			X
a	Polygonaceae	Polygonum	hydropiperpoides		Michx.		X	
a	Polygonaceae	Polygonum	punctatum		Ell.		X	
a	Polygonaceae	Rumex	hastatulus		Baldwin		X	
a	Polygonaceae	Rumex	verticillatus		L.		X	
a	Pontederiaceae	Eichhornia	crassipes		(Mart.) Solms	Introduced	X	
a	Pontederiaceae	Pontederia	cordata		L.		X	
a	Portulacaceae	Portulaca	pilosa		L.		X	X
a	Primulaceae	Samolus	ebracteatus		Kunth		X	X
a	Primulaceae	Samolus	valerandi L.	subsp. parviflorus	(Raf.) Hulten		X	X
a	Proteaceae	Grevillea	robusta		A. Cunn.	Introduced		X
a	Rhamnaceae	Berchemia	scandens		(Hill) K. Koch		X	
a	Rhamnaceae	Sageretia	minutiflora		(Michx.) C. Mohr		X	X
a	Rhizophoraceae	Rhizophora	mangle		L.		X	X
a	Rosaceae	Prunus	angustifolia		Marsh.			X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Rosaceae	Prunus	caroliniana		(Mill.) Aiton		X	X
a	Rosaceae	Prunus	persica		(L.) Batsch	Introduced		X
a	Rosaceae	Rubus	argutus		Link		X	
a	Rosaceae	Rubus	trivialis		Michx.		X	
a	Rubiaceae	Cephalanthus	occidentalis		L.		X	
a	Rubiaceae	Chiococca	alba		(L.) Hitchc.		X	X
a	Rubiaceae	Diodia	teres		Walt.		X	X
a	Rubiaceae	Diodia	virginiana		L.		X	
a	Rubiaceae	Galium	hispidulum		Michx.		X	
a	Rubiaceae	Galium	tinctorium		L.		X	
a	Rubiaceae	Houstonia	procumbens		(J.F. Gmel.) Standl		X	X
a	Rubiaceae	Mitracarpus	hirtus		(L.) DC.	Introduced	X	
a	Rubiaceae	Oldenlandia	corymbosa		L.	Introduced	X	
a	Rubiaceae	Oldenlandia	uniflora		L.		X	
a	Rubiaceae	Pentodon	pentandrus		(Schumach. & Thonn.) Vatke		X	
a	Rubiaceae	Psychotria	nervosa		Sw.		X	X
a	Rubiaceae	Psychotria	sulzneri		Small		X	X
a	Rubiaceae	Richardia	brasiliensis		Gomes	Introduced	X	X
a	Rubiaceae	Spermacoce	assurgens		Ruiz & Pavon		X	
a	Ruppiaceae	Ruppia	maritima		L.		X	
a	Ruscaceae	Sansevieria	hyacinthoides		(L.) Druce	Introduced	X	
a	Rutaceae	Amyris	elemifera		L.		X	X
a	Rutaceae	Citrus	aurantium		L.	Introduced	X	X
a	Rutaceae	Zanthoxylum	clava-herculis		L.		X	X
a	Rutaceae	Zanthoxylum	fagara		(L.) Sarg.		X	X
a	Salicaceae	Salix	caroliniana		Michx.		X	X
a	Sapindaceae	Acer	rubrum		L.		X	
a	Sapindaceae	Exothea	paniculata		(Juss.) Radlk. ex T. Durand		X	X
a	Sapotaceae	Sideroxylon	foetidissimum		Jacq.		X	
a	Sapotaceae	Sideroxylon	reclinatum		Michx.			X
a	Sapotaceae	Sideroxylon	tenax		L.		X	X
a	Smilacaceae	Smilax	auriculata		Walt.		X	
a	Smilacaceae	Smilax	bona-nox		L.		X	
a	Solanaceae	Capsicum	frutescens		L.	Introduced	X	X

Class	Family	Genus	Species	Variety	Authority	Status	Collected	Existing
a	Solanaceae	Lycium	carolinianum		Walt.		X	X
a	Solanaceae	Physalis	pubescens		L.			X
a	Solanaceae	Physalis	walteri		Nutt.		X	X
a	Solanaceae	Solanum	americanum		Mill.		X	
a	Solanaceae	Solanum	chenopodioides		Lam.			X
a	Tetrachondraceae	Polypremum	procumbens		L.		X	X
a	Turneraceae	Piriqueta	cistoides (L.) Griseb.	subsp. caroliniana	(Walter) Albo		X	X
a	Typhaceae	Typha	domingensis		Pers.		X	
a	Typhaceae	Typha	latifolia		L.		X	
a	Ulmaceae	Ulmus	americana		L.		X	
a	Urticaceae	Boehmeria	cylindrica		(L.) Sw.		X	X
a	Urticaceae	Parietaria	praetermissa		Hinton.		X	
a	Verbenaceae	Glandularia	maritima		(Small) Small		X	X
a	Verbenaceae	Lantana	camara		L.	Introduced	X	X
a	Verbenaceae	Lantana	depressa Small	var. floridana	(Moldenke) R.W. Sanders		X	
a	Verbenaceae	Phyla	nodiflora		(L.) Greene		X	X
a	Verbenaceae	Verbena	scabra		Vahl		X	
a	Veronicaceae	Bacopa	monnieri		(L.) Pennell		X	X
a	Veronicaceae	Gratiola	hispida		(Benth. ex Lindl.) Pollard		X	X
a	Veronicaceae	Linaria	canadensis		(L.) Chaz.		X	X
a	Veronicaceae	Mecardonia	acuminata (Walter) Small	subsp. peninsularis	(Pennell) Rossow		X	X
a	Veronicaceae	Penstemon	multiflorus		(Benth.) Chapm. ex Small		X	X
a	Veronicaceae	Scoparia	dulcis		L.		X	X
a	Violaceae	Viola	sororia		Willd.		X	
a	Viscaceae	Phoradendron	leucarpum		(Raf.) Reveal & M.C. Johnst.			X
a	Vitaceae	Ampelopsis	arborea		(L.) Koehne		X	X
a	Vitaceae	Cissus	trifoliata		(L.) L.		X	X
a	Vitaceae	Parthenocissus	quinquefolia		(L.) Planch.		X	X
a	Vitaceae	Vitis	aestivalis		Michx.		X	X
a	Vitaceae	Vitis	rotundifolia		Michx.		X	X
a	Vitaceae	Vitis	shuttleworthii		House		X	X
a	Xyridaceae	Xyris	brevifolia		Michx.		X	
a	Xyridaceae	Xyris	caroliniana		Walt.		X	X
a	Xyridaceae	Xyris	elliottii		Chapm.		X	

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a	Xyridaceae	Xyris	fimbriata		Elliott			X
a	Xyridaceae	Xyris	flabeliformis		Kral.			X
a	Xyridaceae	Xyris	jupicai		Rich.	Introduced		X
a	Xyridaceae	Xyris	platylepis		Chapm.			X
a	Xyridaceae	Xyris	smalliana		Nash			X