A FLORISTIC INVENTORY OF CORKSCREW SWAMP SANCTUARY (COLLIER COUNTY AND LEE COUNTY), FLORIDA, U.S.A.

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ABSTRACT

Documented presently as growing wild within Corkscrew Swamp Sanctuary (Collier Co. and Lee Co., Florida, U.S.A) are individuals of 126 families, 401 genera, 756 species, and 773 infrageneric taxa of vascular plants. Those data, combined with records from previous workers, yield a total of 770 species and 787 infrageneric taxa documented for the Sanctuary. Of the 773 infrageneric taxa documented presently, 611 (79.0%) are native to Florida. Herein, seven main kinds of habitats are recognized for the study area, and individual taxa inhabit one or more of those habitats. Twenty-nine presently reported infrageneric taxa are listed as Endangered (16 taxa) or Threatened in Florida (13 taxa). For South Florida, 36 infrageneric taxa listed as Extirpated (3 taxa), as Historical (5 taxa), or as Critically Imperiled (28 taxa) were documented during this study.

RESUMEN

Existen documentados individuos de 126 familias, 401 géneros, 756 especies, y 773 taxa infragenéricos de plantas vasculares que actualmente crecen silvestres en Corkscrew Swamp Sanctuary (Collier Co. y Lee Co., Florida, U.S.A). Estos datos, combinados con los registros de investigadores anteriores, dan un total de 770 especies y 787 taxa infragenéricos documentados para el Sanctuary. De los 773 taxa infragenéricos documentados actualmente, 611 (79.0%) son nativos de Florida. En estos, se reconocen siete tipos principales de hábitats en el área de estudio, y los taxa individuales habitan en uno o más de estos hábitats. Veintinueve de los taxa infragenéricos citados ahora están listados como En Peligro (16 taxa) o Amenazados en Florida (13 taxa). Para el Sur de Florida, 36 taxa infragenéricos están listados como Extirpados (3 taxa), como Históricos (5 taxa), o como Críticamente Amenazados (28 taxa) se documentaron durante este estudio.

INTRODUCTION

This is the sixth of a series of papers focused on the flora of south Florida (Wilder & McCombs 2006; Wilder & Roche 2009; Wilder & Barry 2012; Wilder et al. 2014; Wilder & Thomas 2016). Presented herein are the results of a floristic inventory of the native and exotic taxa of vascular plants growing wild in Corkscrew Swamp Sanctuary (hereafter, also called CSS or the Sanctuary).

Historical sketch

The Sanctuary was established to save a tract of old-growth bald-cypress forest from logging and to protect the associated plants and wildlife.

In the 1920s, logging of bald-cypress (*Taxodium distichum*) was initiated in the Big Cypress Swamp of south Florida. It peaked there "... in the mid-1940s and tapered off in the 1950s, when most of the large [bald-cypress] trees had been removed" (Gunderson 1977 [quoting Betts 1960]; language in brackets is ours).

Initially, in Collier County the virgin bald-cypress forests "... stretched for fifty miles" (McIver 1989); however, after logging only three remnants of the old-growth forests remained in the County: a northern remnant (of ca. 700 acres) and two southern remnants (of 215 and 40 acres). The larger of the two southern remnants is now part of Fakahatchee Strand Preserve State Park, whereas, the smaller remnant is privately owned (Michael Owen [Park Biologist at Fakahatchee Strand Preserve State Park], pers. comm. to George Wilder, 21 July 2017).

The northern remnant represented the last remaining unlogged portion of Corkscrew Strand—a more-or-less linear bald-cypress forest more than 20 miles long. In the early 1950s, the northern remnant was owned by Collier Enterprises and the Lee Tidewater Cypress Company, and it was threatened with imminent logging.

Many of the bald-cypress trees there ranged from 200 to nearly 700 years old (Sprunt 1961). Too, the northern remnant contained the largest rookery of wood storks and egrets remaining within the United States (Buchheister [undated]).

In 1954, the Corkscrew Cypress Rookery Association was established (that Association consisting of fourteen different conservation organizations [including the National Audubon Society] plus various individuals). Also in 1954, the Association purchased three contiguous tracts for preservation, totaling 2,240 acres. The largest tract contained the northern remnant (Fig. 1). As well, the Lee Tidewater Cypress Company contributed 640 additional acres for preservation, and Collier Enterprises facilitated the purchase, later on, of 3,200 more acres (Sprunt 1961). The National Audubon Society assumed ownership and management of all of the purchased/donated properties and named them, collectively, Corkscrew Swamp Sanctuary (McIver 1989).

Additional properties were added to CSS, in 1966, 1967, 1968, 1998, 1999, 2001, 2007, and 2010; however, the property acquired in 1967 was traded-away in 2007. Also, one property acquired in 1954 was traded-away during that year, but was reacquired in 2010 (Fig. 1).

Six properties currently located within the northern and western limits of CSS were established as a mitigation bank which was named Panther Island Mitigation Bank (Fig. 1; the properties delineated, collectively, by a thick solid line). From 1999 to the present, landscape-remodeling and habitat-restoration have been underway there.

The Sanctuary currently includes ca. 13,400 acres (20.9 square miles) and is centered at ca. 26°23'60"N and 81°36'37"W. The National Audubon Society owns the entire Sanctuary, except for 320 acres which are managed by CSS staff, but owned by the State of Florida (Fig. 1 [the southeasternmost tract of land added in 1954]). Most of CSS is located in Collier County, but part of its northeastern sector lies in Lee County (Fig. 1). The Sanctuary is situated within Corkscrew Swamp—a region that contains the headwaters of the Imperial River. "Corkscrew" refers to the twisted course of the River, which was formerly known as the Corkscrew River or Corkscrew Creek (Buchheister [undated]).

The land presently included in CSS has a history of human disturbances. They include cattle-grazing (e g , on the North Marsh and on Panther Island); logging (pine trees were logged on Little Corkscrew Island, Eagle Island, Panther Island, and Ruess Island); farming (near Little Corkscrew Island, in the 1960s, and on Panther Island); intentional burning as well as fire suppression; construction of a fish farm for CSS (that facility, now defunct, includes large, water-filled basins excavated for rearing fish); operation of a plant nursery on land (the Rigsby Tract) subsequently purchased for CSS, in 1999; construction of a visitors' center, housing, and two maintenance facilities for CSS; installation of an (unsuccessful) exploratory oil well at Ruess Island; construction of roads and associated drainage ditches; hydrological alterations; and the introduction of white-tail deer and of hogs (Carlson [1982a] and personal observations; Fig. 1).

When CSS was established, it was ranked among the Audubon Society's "... finest and most spectacular sanctuaries" (Buchheister [undated]). Today CSS is a world-famous natural area. In 1964, it was designated as a National Natural Landmark (by the U.S. Department of Interior) and, in 2009, it was deemed a Wetland of International Importance (by Ramsar). Too, the National Audubon Society and Birdlife International have designated the Corkscrew Swamp Watershed (a region which includes CSS) as an Important Bird Area.

Previous research at CSS

From the outset, previous investigators undertook biological (including botanical) studies and pursued other areas of research at CSS (CSS 2017). For example, previous workers investigated plant-ecological aspects of CSS (Carlson 1982b; Duever 1978, 1990; Duever & McCollom 1987; Duever et al. 1975, 1976, 1978, 1984; Gunderson 1977, 1984; Knoble et al. 1978; Ludwig, 2001; McCollom 1990; Riopelle 1978, 1980).

Previous investigators compiled unpublished checklists of the flora and fauna of CSS. We have located 13 different checklists of the flora (listed at the end of References), but there might have been more. Today copies of the checklists are rare.

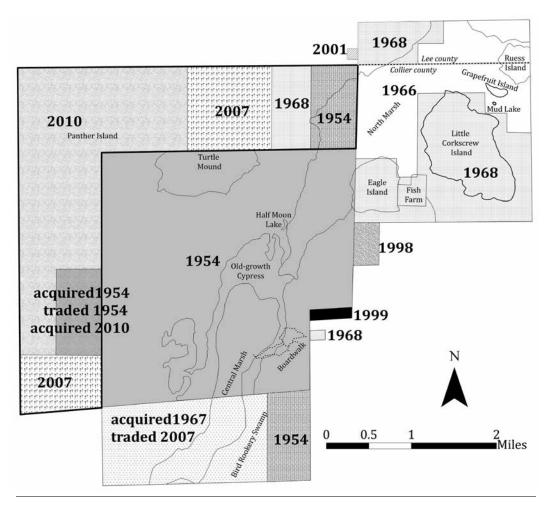


Fig. 1. Map depicting Corkscrew Swamp Sanctuary (CSS). Outlined separately, and indicated both by their dates of acquisition and by separate backgrounds, are the tracts of land composing the Sanctuary. Six contiguous tracts delineated, collectively, by a thick black line constitute the Panther Island portion of CSS (i.e., the Panther Island Mitigation Bank). The map indicates that one of the southernmost tracts no longer belongs to CSS; that tract, acquired in 1967, was traded-away in 2007. Indicated, too, is a tract that was acquired in 1954, was traded-away in 1954, and was reacquired in 2010. Indicated, are five "Islands" (defined and listed elsewhere in this paper); the Central Marsh and North Marsh; the remnant of old-growth bald-cypress forest ("Old-growth Cypress") which surrounds the Central Marsh and appears, partly, as an upside-down U; the Fish Farm (an area for raising fish, no longer in use); a boardwalk; and Half Moon Lake and Mud Lake (small, shallow bodies of water). Most of the territory is in Collier County. The relatively small portion in Lee County is located within the northeastern sector of the Sanctuary and its southern boundary is delineated by a dashed line. This map is based partly on information provided verbally by Jason Lauritsen (pers. comm. to Jean McCollom, 5 July 2017)

Davis et al. (1955) compiled the first floristic checklist that we know of. It was attached to a checklist of the fauna of CSS, and both checklists were entitled, jointly, "A general description of Corkscrew Swamp Sanctuary and a preliminary list of its flora and fauna". The latest floristic checklist, of 1999, was assembled by A.J. Mackie as an emendation of previous checklists (Mackie et al. 1999).

The other floristic checklists included Anonymous (undated, 1956, 1957, 1984 [with appended, handwritten additions for 1985], 1986, 1988), Avery (1983), Bantz (1979), Butler (undated), Hammer et al. (1989), and Judd et al. (1994).

In addition to the checklists, aforementioned, two other plant lists were produced that pertained to the

vascular flora of CSS. Michael Barry compiled an unpublished, undated list for part/all of the Panther Island sector of CSS that was acquired in 2010. Too, the Institute of Regional Conservation (IRC 2017) assembled a list of the species attributed to CSS.

Numerous individuals—independently or in small groups—have collected, and deposited in herbaria, plant specimens from CSS. They have included J.R. Abbott, G.N. Avery, R. Bantz, M.J. Barry, J.E. Carlson, F.C. Craighead, G. Fleming, P. Genelle, W.T. Gillis, G.F. Guala, J.L. Hansen, M.J. Huebschen, C. Hutchinson, W.S. Judd, O. Lakela, D. Lauer, P. McDermott, M. Meisenburg, P. Owens, L. Riopelle, and D. Workman (based on specimen labels from the CSS herbarium and seen in University of Florida Herbarium Collections Catalog 2017, Virtual Herbarium 2017, and Wunderlin et al. 2017).

Climate

Collier County manifests a subtropical climate, albeit "... temperatures are greatly modified by winds ... from the Gulf of Mexico and the Atlantic Ocean" (Leighty et al. 1954). Annually, there occur a rainy season (from ca. May through Oct) and a dry season (from ca. Nov through Apr).

The following data are for Immokalee (Collier Co.), an unincorporated area situated ca. 7.5 miles east of CSS. During Jun through Sep (the four peak months of the rainy season), average monthly precipitation varies from 6.18 to 7.83 in., whereas, during Nov through Apr (the six months of the dry season) the corresponding data vary from 1.77 to 2.91 in. The highest average monthly high temperatures (91–93°F) and the highest average monthly low temperatures (70–73°F) coincide with the four peak months of the rainy season. For Nov through Apr, the lowest average monthly high temperatures are 76–85°F and the lowest average monthly low temperatures are 49–59°F (Your Weather Service 2017).

There occur occasional freezes (FAWN 2017) and tropical storms. Hurricane Donna (a Category 4 hurricane in 1960) and Hurricane Irma (a Category 3 hurricane when in Collier County, in 2017) were the most powerful storms to impact CSS after it was established. They inflicted considerable damage on trees there (Buchheister [undated]; Naples Daily News 2017; National Hurricane Center 2017).

Topography, geology, and soils

The Sanctuary is located within the Coastal Lowlands region of Florida (Schmidt 1977). The land is nearly flat, varying in elevation from ca. 15 to 28 feet.

The Sanctuary manifests uplands (some known locally as "islands" [Google Technology Company 2016; Rand McNally Education Company 1999]) and lowlands. Certain "islands" that exist partly, or entirely, within CSS are listed (Fig. 1): Big Corkscrew Island; Eagle Island; Grapefruit Island; Little Corkscrew Island; Ruess Island; Spirit Dance Island (a small "island" not depicted in Fig. 1, located just west of Mud Lake); and Turtle Mound. Prominent lowlands include all areas of bald-cypress, the Central Marsh (also called Horseshoe Marsh), and the North Marsh (Fig. 1).

"Panther Island" actually has two meanings. As indicated, it means six properties, collectively, located within the northern and western limits of CSS. It also signifies a small "island" within CSS, situated partially within Panther Island in the first sense. Elsewhere, herein we discuss "Panther Island" solely in the first sense.

The uplands at CSS are most appropriately characterized as islands during the rainy season, when the surrounding lowlands are flooded; however, excluding differences in habitats and substrates, the "islands" are little differentiated from the lowlands, for the following reasons. (I) Miniscule differences in elevation (a few feet) distinguish the "islands" from the lowlands. (2) During the rainy season large areas of the "islands" may themselves be shallowly flooded. (3) During the dry season water may evaporate from both the "islands" and the lowlands, creating a continuum of dry land.

The uplands support primarily pine flatwoods, mesic hardwood hammock, and ruderal land. Lowland habitats include bald-cypress swamp, hardwood swamp, freshwater marsh, wet prairie, ruderal land, and aquatic ruderal land (see below).

Limestone, the uppermost bedrock underlying CSS, usually ranges from 1–3 m below the ground surface (Duever et al. 1984) but is occasionally above the ground surface at a few localized sites. Also, four "general soil

map units" are represented within CSS: Boca-Riviera-Copeland, Holopaw-Malabar-Basinger-Immokalee, Immokalee-Oldsmar-Basinger, and Winder-Riviera-Chobee (Liudahl et al. 1998).

Remodeling of the landscape and restoration

On Panther Island, extensive acreage of ruderal land has been/is being remodeled with heavy equipment and restored as freshwater marsh, wet prairie, and pine flatwoods. In the process, numerous individuals of species native to Florida have been planted. Those species were/are intended to represent specific environments. Examples—provided here as named by the restorers—are listed together with selected species: canopy (*Persea borbonia*, *Pinus elliottii*, *Quercus laurifolia*), sub-canopy (*Cephalanthus occidentalis*, *Ilex glabra*, *Serenoa repens*), groundcover (*Lachnanthes caroliana*, *Tripsacum dactyloides*, *Paspalum monostachyum*), shallow marsh (*Canna flaccida*, *Juncus effusus*, *Panicum hemitomon*), deep marsh (*Cladium jamaicense*, *Eleocharis interstincta*, *Pontederia cordata*), and flowway (*Muhlenbergia capillaris*, *Spartina bakeri*) (Robert Colvin [Restoration Manager], pers. comm. to George Wilder, 1 Sep 2017).

Habitats

We recognize seven main types of habitats within CSS: hardwood forest, pine flatwoods, bald-cypress swamp, wet prairie, freshwater marsh, aquatic-ruderal land, and ruderal land. Areas within each habitat-type may become flooded during the rainy season and dry-up during the dry season.

Hardwood forest.—This includes all forest other than forest containing conifers. Two subcategories of hardwood forest are represented at CSS: mesic hardwood hammock and hardwood swamp. Forest of the first subcategory is more common than, and is flooded less often than, that of the second subcategory.

Mesic hardwood hammock is abundant on Little Corkscrew Island and also occurs on Grapefruit Island, Panther Island, Spirit Dance Island, and in isolated areas west of Half-Moon Lake and north of Fish Farm Rd. (at a point by the northwestern corner of the Fish Farm). Common dominant trees include *Acer rubrum*, *Quercus laurifolia*, *Quercus virginiana*, and *Sabal palmetto*. Present frequently, are *Telmatoblechnum serrulatum*, *Myrsine cubana*, *Smilax* spp., and—in places—*Ximenia americana*.

Compared to other mesic hardwood hammock at CSS, the hammock on Grapefruit Island contains many tropical and/or subtropical species of woody plants: *Ardisia escallonioides*, *Bursera simaruba*, *Carica papaya*, *Chrysophyllum oliviforme*, *Eugenia axillaris*, *Myrcianthes fragrans*, *Psychotria nervosa*, *Psychotria sulzneri*, *Schoepfia schreberi*, *Sideroxylon foetidissimum*, *and Zanthoxylum fagara*. It also manifests a subterranean shell mound (likely created by Indians), elevated limestone, and proximity to a major flow-way that normally holds water well into the winter; those factors have likely favored the growth of the tropical/subtropical species (Michael Duever, verbal communications of 4 Jan 2016 and 2 Sep 2017).

Pine flatwoods.—These comprise more-or-less open forest in which *Pinus elliottii* (Slash Pine) is dominant and bald-cypress is absent. At CSS, different areas of pine flatwoods exhibit features of either of two natural communities recognized by FNAI (2010): "wet flatwoods" and "mesic flatwoods."

Pine flatwoods at CSS may exhibit a ground cover composed primarily of grasses or of *Serenoa repens* (Saw Palmetto). Those two kinds of ground cover are sometimes intermixed. For example, the ground cover may be primarily of grasses but include scattered individuals or clumps of *S. repens*. Conversely, plants of *S. repens* may enclose a limited grassy area. Pine flatwoods are extensive at CSS, and good examples may be found on Eagle Island, on Ruess Island, on Turtle Mound, on property situated west of Rookery Lane (i.e., southeast of the boardwalk), on land north of the Riggs Tract (the property purchased in 1999 [Fig 1]), and elsewhere.

During the rainy season, different areas of pine flatwoods may become flooded or not so. Much of the flatwoods on Eagle Island and west of Rookery Lane becomes flooded. By contrast, an area of relatively dry flatwoods exists on Panther Island, ca. 1/8 mile south of the northeastern corner of the large tract purchased in 2010 (Fig. 1). Certain species exist there that are, apparently, absent elsewhere in the Sanctuary: *Carphephorus corymbosus, Carphephorus paniculatus, Commelina communis, Eryngium aromaticum, Gymnopogon chapmanianus, Habenaria quinqueseta, Pteroglossaspis ecristata, Rhynchospora plumosa,* and *Sporobolus junceus*.

Because of flooding during the rainy season, a portion of pine flatwoods may manifest species generally attributed to aquatic habitats, e.g., *Nymphaea elegans*, *Nymphaea jamesoniana*, *Utricularia foliosa*, and *Utricularia purpurea*. Also, by the southwestern corner of the Sanctuary there exists considerable acreage of pine flatwoods where periphyton covers the forest floor (that circumstance reflecting the shallow depth to limestone and flooding during the rainy season). Another area of pine flatwoods, located near Turtle Mound (Fig. 1), exhibits soil that contains marl (a calcite clay that overlies limestone).

Wet prairie and freshwater marsh.—We describe these habitat-types together because they appear outwardly similar. They generally exhibit relatively short (especially herbaceous) vegetation, they are normally inundated during the rainy season, and subtle intergradations (ecotones) exist between them.

In south Florida, freshwater marsh and wet prairie differ hydrologically from one another, as follows (Duever & Roberts 2013). Their substrates are inundated from 6 to 10 and from 2 to 6 months per year, respectively. During a normal rainy season their water depths range from 0.3 m to 0.6 m and from 0.15 m to 0.4 m, respectively. And, their water tables fluctuate annually from 0.6 m to 0.9 m and from 0.9 m to 1.2 m, respectively. Those differences are reflected by differences in organic substrates, which are present or absent, respectively. Commonly, too, at CSS the uppermost substrate of wet prairie includes sand, whereas, that of freshwater marsh lacks sand. As well, freshwater marsh tends to be dominated by fewer species than does prairie.

At CSS, the Central Marsh and North Marsh both contain freshwater marsh, but the North Marsh—its name notwithstanding—also manifests wet prairie. A prominent strip of wet prairie also exists eastward of the eastern arm of old-growth cypress that borders the Central Marsh (Fig. 1). Too, certain portions of the Central Marsh and North Marsh exhibit dense concentrations of *Salix caroliniana* or *Typha* sp.

We also consider as freshwater marsh Half Moon Lake and Mud Lake (two small bodies of water; Fig. 1); both "Lakes" are shallow and—at least sometimes—each Lake dries-up during the dry season. We likewise classify as marsh the openings within cypress donuts and the "lettuce lakes" (isolated ponds with dense, floating concentrations of *Pistia stratiotes*) that occur sporadically within the bald-cypress swamp.

Bald-cypress swamp.—Varying concentrations of *Taxodium distichum* sensu lato together with woody dicotyledons are dominant, whereas, pines are absent. The Sanctuary manifests three main categories of bald-cypress swamp: (1) swamp containing the stand of large, more-or-less scattered, old-growth bald-cypress trees, (2) swamp having medium-size, densely arranged bald-cypress trees, and (3) a small forest of dwarf bald-cypress trees situated by the western boundary of CSS. (Craighead [1971], discussing dwarf-cypress associations in general, stated that "... the dwarfing [of the trees] reflects the shallow marl soil, which is often only 4 to 10 inches deep with little humus ...").

The areas of medium-size bald-cypress trees manifest shorter hydroperiods (and, hence, less organic substrate and more frequent fires) than does the stand of large, old-growth bald-cypress trees (Duever et al. 1984).

The dicotyledonous trees and shrubs within bald-cypress swamp include *Acer rubrum*, *Annona glabra*, *Cephalanthus occidentalis*, Ficus aurea, Fraxinus caroliniana, Ilex cassine, Itea virginica, Magnolia virginiana, *Morella cerifera*, Myrsine cubana, Persea palustris, and Sambucus nigra.

Some portions of bald-cypress swamp exhibit extensive, dense concentrations of terrestrial ferns, e.g., *Nephrolepis* spp., *Telmatoblechnum serrulatum*, *Thelypteris interrupta*, *and Woodwardia virginica*. Epiphytes may also abound, e.g., *Campyloneurum phyllitidis* and various species of Bromeliaceae and Orchidaceae. During the dry season the substrate within bald-cypress swamp may become exposed. Then opportunistic, herbaceous angiosperms may overgrow extensive areas of the substrate, e.g., *Commelina diffusa*, *Erigeron quercifolius*, *Hydrocotyle umbellata*, *Limnophila sessiliflora*, *Persicaria punctata*, and *Rorippa teres*.

Aquatic ruderal land.—This includes excavated areas which hold water during the rainy season. Three main categories of aquatic ruderal land occur: drainage ditches bordering roads, borrow pits, and the basins within the fish farm. Many ditches were designed to not drain the surrounding terrain and they, therefore, contain stagnant water. Examples of borrow pits include one pit located just west of the southern terminus of

Rookery Lane (i.e., by the southeastern corner of the large tract purchased in 1954), two others being situated by the main maintenance area of CSS (i.e., within the smaller of the two tracts purchased in 1968), and another pit located on the tract acquired in 1998 (Fig. 1).

Aquatic ruderal land manifests aquatic/subaquatic species, e.g., Ceratopteris pteridoides, Cyperus blepharoleptos, Eichhornia crassipes, Eleocharis interstincta, Hymenachne amplexicaulis, Landoltia punctata, Pistia stratiotes, Pontederia cordata, Salix caroliniana, Salvinia minima, Scleria lacustris, Thalia geniculata, and Typha domingensis.

As is true of bald-cypress swamp, during the dry season standing water may evaporate from aquatic ruderal land, which may then be overrun by opportunistic herbaceous species of angiosperms. Examples include Bacopa monnieri, Boehmeria cylindrica, Gamochaeta antillana, Gamochaeta pensylvanica, Parietaria floridana, Persicaria punctata, Pluchea baccharis, Proserpinaca palustris, Ptilimnium capillaceum, Rorippa teres, and Solanum americanum.

Ruderal land.—This includes paved and non-paved roads, disturbed roadsides, and other cleared lands (including all restored/remodeled areas).

Ecotones.—The Sanctuary exhibits ecotones that are abrupt (e.g., ecotones where main natural habitats abut trails) as well as more extensive ecotones. Examples of ecotones that manifest considerable acreage include: (1) pine flatwoods—bald-cypress swamp ecotone (situated, for example, on Panther Island; some portions of that ecotone exhibit comparable numbers of pine- and bald-cypress trees), (2) hardwood swamp—bald-cypress swamp ecotone (located at a remote area somewhat west of Half Moon Lake), and (3) mesic hardwood hammock—pine flatwoods ecotone (situated, for example, on Little Corkscrew Island, where it coexists with abundant mesic hardwood hammock).

Prescribed burns

Periodically, CSS staff members and volunteers burn areas of three fire-dependent habitats within the Sanctuary: pine flatwoods, wet prairie, and freshwater marsh (Wade et al. 1980, National Audubon Society 2017). Before those areas were incorporated into CSS, their previous owners/inhabitants burned them more frequently than they have been burned since. The current, lower frequency of burning has allowed certain woody species, including *Morella cerifera* and *Salix caroliniana*, to become more abundant in those areas (Duever & Roberts 2013). Current efforts are being made to restore natural plant community fire frequencies of 2–4 years for pine flatwoods and wet prairie and 3–5 years for freshwater marsh.

Reasons for undertaking the present investigation

We undertook this study for three main reasons. (1) We wished to update the previous floristic checklists for CSS. (2) We desired to document (with specimens or with photographs, where appropriate) all the taxa encountered by us. In contrast, the previous floristic checklists for CSS (and the lists by Barry and by IRC [2017]) indicated no, or inconsistent, documentation. Roger Hammer highlighted the need for increased documentation in the Introduction to his emended checklist of 1989, stating that "It is my hope that future field biologists working within Corkscrew Swamp Sanctuary will ... [document] plant species (with the exception of very rare taxa) with herbarium material". Andrew Mackie, in 1999, reprinted Hammer's remark in Appendix II of his own emended floristic checklist for CSS. (3) We wished to ascertain the habitat(s) within CSS which were occupied by individual species, varieties, and subspecies.

METHODS AND TERMINOLOGY

We undertook field work for this study from/including 15 Oct 2015 through 17 Oct 2017. During that time period we made 160 field trips to CSS, including multiple visits for each month of the year. Also, George Wilder visited CSS earlier, on 12 Aug 2009, and documented *Urochloa ramosa* there (a species not observed during current field work).

We considered species, subspecies, varieties, and hybrids that grew wild at CSS, omitting taxa that were only introduced during restoration or otherwise cultivated. A minority of species at CSS was represented by

wild—as well as by introduced/cultivated individuals; for those species we documented solely wild individuals.

We vouchered all infrageneric taxa with specimens or photographs and we deposited all voucher materials at the Herbarium of Southwestern Florida (SWF; Appendix 1). Mostly, we prepared dried herbarium specimens; however, we fixed materials of the following species in an aqueous solution of ethanol (50%), formaldehyde (5%), and either acetic acid (5%) or propionic acid (5%): *Azolla filiculoides*, *Callitriche peploides*, *Ceratophyllum demersum*, all observed species of Lemnaceae, and *Salvinia minima*. Those fixed materials were rinsed in water and were then stored permanently in an aqueous solution of glycerin (5%) and ethanol (50%). For *Cuscuta compacta*, we prepared both dried herbarium specimens and materials fixed and stored in liquid, as described above; the superior preservation of the liquid-preserved materials aided in distinguishing *C. compacta* from other species of *Cuscuta*.

We documented certain presently observed species, solely, with numbered photographs rather than with actual specimens. Those species and the individuals who photographed them are listed: Calopogon pallida (pink-flowered and white-flowered formas), Epidendrum floridense, Epidendrum nocturnum, Eulophia alta, Pteroglossaspis ecristata, Roystonea regia, Tillandsia pruinosa, Tillandsia utriculata (Jean McCollom); Cyrtopodium punctatum (Sally Stein); Dendrophylax lindenii, Platanthera nivea (Ralph Arwood); Epidendrum anceps, Epidendrum rigidum, Polystachya concreta, Tillandsia fasciculata (Myron Barefoot); Ionopsis utricularioides (Dick Brewer); Prosthechea cochleata (Michael Duever); and Sacoila lanceolata var. paludicola (Nelson Pole).

Prior to the present investigation, Michael Duever (in 1991) and Sally Stein (at an unspecified date) had photographed, at CSS, two other species which we did not subsequently observe there: *Malaxis spicata* and *Nymphoides* sp. (possibly, *Nymphoides peltata*), respectively. We also cite their photographs as voucher materials (Appendix 1).

Too, we examined specimens of species not collected by us, at the University of Florida Herbarium (UF), the University of South Florida Herbarium (USF), and the herbarium of Corkscrew Swamp Sanctuary (that herbarium lacks a formal name and acronym).

During our work we located rare copies of checklists compiled by previous workers, of the flora and fauna of CSS. In order to safeguard those checklists we made certain that originals/photocopies were deposited in the CSS library and that all checklists were scanned electronically for permanent storage in the library-archive of Florida Gulf Coast University (Fort Myers, FL).

Mostly, present nomenclature follows Wunderlin et al. (2017); however, Appendix 1 (footnote 1) specifies nomenclatural differences between that source and the present paper. We define **infrageneric taxa** as species, subspecies, varieties, and hybrids. In Appendix 1, certain species are listed more than once, as different varieties or subspecies. For each such species, following its initial listing in Appendix 1, each additional listing is said to represent an **additional infrageneric taxon**.

We also follow Wunderlin et al.'s (2017) assessments as to whether individual species are native, endemic, or exotic. For various species, those assessments differ from those of Wunderlin and Hansen (2011). Accordingly, for those species the assessments presented herein differ from those presented in earlier papers of the present series (e.g., Wilder & Thomas 2016).

RESULTS AND DISCUSSION

Taxonomic analysis of present data

The Sanctuary exhibited 126 families, 401 genera, 756 species, and 773 infrageneric taxa of vascular plants (herein we count the infrageneric taxa of *Citrus* as species rather than as hybrids).

Between parentheses, the numbers of families, genera, and infrageneric taxa are indicated, respectively, for each of the following major groups: pteridophytes (13, 20, 32), gymnosperms (2, 2, 2), angiosperms (111, 379, 739), monocotyledons (27, 120, 311), and dicotyledons sensu lato (84, 259, 428).

The eight largest families of monocotyledons, as gauged by the numbers of infrageneric taxa present, are Poaceae (123), Cyperaceae (80), Orchidaceae (28), Bromeliaceae (11), Juncaceae (7), Lemnaceae (6), Commelinaceae (6), and Xyridaceae (6) (for each family the number of infrageneric taxa is listed between parentheses). The families Poaceae and Cyperaceae, collectively, exhibited 26.3% of all 773 infrageneric taxa listed (i.e., 203 taxa).

The 11 largest families of dicotyledons sensu lato are Asteraceae (73), Fabaceae (37), Euphorbiaceae (21), Rubiaceae (17), Lentibulariaceae (12), Onagraceae (12), Plantaginaceae (12), Lamiaceae (10), Malvaceae (10), Clusiaceae (9), and Polygalaceae (9). The families Asteraceae and Fabaceae, collectively, exhibited 14.2% of all 773 infrageneric taxa listed (i.e., 110 taxa).

Infrageneric taxa and habitats

Habitats are listed for all 773 infrageneric taxa reported here (Appendix 1). Within CSS, ruderal land and pine flatwoods exhibited the highest percentages of infrageneric taxa. Intermediate percentages of taxa grew in bald-cypress swamp. Lowest percentages occurred within wet prairie, freshwater marsh, aquatic ruderal land, and hardwood forest.

Supporting data are presented. Each number, below, refers solely to the infrageneric taxa that we noted inside of a habitat, not to taxa whose sole association with the habitat was occurrence within ecotone(s) involving that habitat. For each habitat indicated, listed between parentheses are the number of infrageneric taxa observed therein and the percentage which that number represents of all 773 infrageneric taxa reported here: ruderal land (427, 55.2%); pine flatwoods (344, 44.5%); bald-cypress swamp (201, 26.0%); wet prairie (142, 18.4%); freshwater marsh (128, 16.6%); aquatic ruderal land (128, 16.6%); and hardwood forest (125, 16.2%).

We studied both subcategories of hardwood forest, i.e., mesic hardwood hammock and hardwood swamp. We noted 99 and 61 infrageneric taxa within the two subcategories, respectively (Appendix 1).

For the Poaceae and Cyperaceae, the two largest families of vascular plants at CSS, the data for ruderal land and pine flatwoods, essentially, paralleled the corresponding data for vascular plants overall, i.e., for each family those two habitats manifested the highest and second-highest numbers of infrageneric taxa present, respectively. Between parentheses, for each habitat listed are indicated the numbers of infrageneric taxa represented of Poaceae and Cyperaceae, respectively: ruderal land (74, 49), pine flatwoods (49, 31), bald-cypress swamp (20, 13), wet prairie (23, 14), freshwater marsh (17, 14), aquatic ruderal land (14, 10), and hardwood forest (2, 3).

Infrageneric taxa that were not observed in particular habitats sometimes grew in one or more ecotones which involved those habitats (Appendix 1). For example, 35 taxa were not noted in hardwood forest but grew in ecotone(s) involving hardwood forest (e.g., hardwood forest—pine flatwoods ecotone). Similarly, 81 taxa were not noted from pine flatwoods, but grew in ecotone(s) involving pine flatwoods and habitats other than hardwood forest (e.g., pine flatwoods—bald-cypress-swamp ecotone).

Native and endemic taxa inventoried during the present study

Six hundred and eleven (79.0%) of the 773 infrageneric taxa recorded were native to Florida (Appendix 1). Between parentheses, the number and percentage of native infrageneric taxa within each major group of vascular plants are listed, respectively: pteridophytes (25, 78.1%), gymnosperms (2, 100%), angiosperms (584, 79.0%), monocotyledons (241, 77.5%), and dicotyledons sensu lato (343, 80.1%). We have excluded two taxa, *Myriophyllum* sp. and *Pistia stratiotes*, from these determinations, because: (1) *Myriophyllum* is known from both native—and exotic species in Florida, making the status of *Myriophyllum* sp. indeterminable, and (2) the status (native vs. exotic) of *P. stratiotes* in Florida is unclear (Wunderlin et al. 2017).

Eighteen taxa were endemic to Florida: Aristida patula, Bigelowia nudata subsp. australis, Campanula floridana, Carex vexans, Carphephorus odoratissimus var. subtropicanus, Clematis baldwinii, Echinochloa paludigena, Elytraria caroliniensis var. angustifolia, Eupatorium mikanioides, Euphorbia inundata var. garrettii, Euphorbia polyphylla, Juncus paludosus, Lobelia homophylla, Mecardonia acuminata subsp. peninsularis, Micranthemum glomeratum, Polygala rugelii, Ruellia succulenta, and Schizachyrium rhizomatum.

Exotic species inventoried during the present study

One hundred and sixty infrageneric taxa observed within CSS are exotic within Florida (not including *Myriophyllum* sp. and *Pistia stratiotes*; Appendix 1).

The Florida Exotic Pest Plant Council (FLEPPC 2017) has recognized two categories of plant species exotic within Florida, that pose especial threats to the ecology of the State, overall, i.e., Category I and Category II (those categories indicate decreasing degree of threat; FLEPPC 2017). Noted presently were 33 Category I species (Abrus precatorius, Acacia auriculiformis, Albizia lebbeck, Bischofia javanica, Colocasia esculenta, Cupaniopsis anacardioides, Dioscorea bulbifera, Eichhornia crassipes, Ficus microcarpa, Hydrilla verticillata, Hymenachne amplexicaulis, Imperata cylindrica, Lantana camara, Ludwigia peruviana, Lygodium microphyllum, Melaleuca quinquenervia, Melinis repens, Nephrolepis brownii, Nephrolepis cordifolia, Panicum repens, Pistia stratiotes, Psidium cattleianum, Psidium guajava, Rhodomyrtus tomentosa, Salvinia minima, Schinus terebinthifolia, Scleria lacustris, Senna pendula, Sporobolus jacquemontii, Syngonium podophyllum, Syzygium cumini, Urena lobata, and Urochloa mutica) and 20 Category II species (Alternanthera philoxeroides, Crassocephalum crepidioides, Dactyloctenium aegyptium, Eulophia graminea, Hemarthria altissima, Landoltia punctata, Leucaena leucocephala, Limnophila sessiliflora, Macroptilium lathyroides, Momordica charantia, Pennisetum polystachion, Phoenix reclinata, Pteris vittata, Richardia grandiflora, Ruellia blechum, Spermacoce verticillata, Sphagneticola trilobata, Terminalia catappa, Terminalia muelleri, and Urochloa maxima). The 33 Category I species and the 20 Category II species comprised 41.3% and 23.5% of all 80 Category I species and 85 Category II species recognized for Florida, respectively.

We rank 14 species (12 were listed by FLEPPC 2017) as being among the most troublesome exotic species at CSS: Colocasia esculenta, Cyperus blepharoleptos, Hymenachne amplexicaulis, Imperata cylindrica, Ludwigia peruviana, Lygodium microphyllum, Panicum repens, Schinus terebinthifolia, Scleria lacustris, Sporobolus jacquemontii, Syzygium cumini, Urena lobata, Urochloa arrecta, and Urochloa mutica.

Staff members and volunteers at CSS regularly eradicate individuals of exotic species. They do so mostly with herbicides but also, to a lesser extent, with mechanical equipment and by hand.

Native taxa deemed rare by Weaver and Anderson (2010) and/or by Gann et al. (2002)

Weaver and Anderson (2010) and Gann et al. (2002) listed infrageneric taxa which they considered rare in Florida and in south Florida, respectively. During the present study we documented 62 of those taxa (Table 1). For Florida, Weaver and Anderson (2010) ranked 29 of the 62 taxa as Endangered (16 taxa) or as Threatened (13 taxa). For south Florida, Gann et al. (2002) ranked 36 of the taxa as Extirpated (3 taxa), as Historical (5 taxa), or as Critically Imperiled (28 taxa).

Of the species that solely previous workers had documented at CSS, Gann et al. (2002) ranked two as Critically Imperiled (Table 1).

We comment on the three species at CSS that Gann et al. (2002) listed as Extirpated in south Florida. **A.** *Botrychium biternatum.*—Gann et al. (2002) stated that *B. biternatum* was "Collected once in 1934 near La Belle" (Hendry Co.). At CSS (within that portion in Collier Co.) we found two individuals of *B. biternatum* growing in mesic hardwood hammock. **B.** *Eleocharis microcarpa*.—Gann et al. (2002) stated that this species was "Last collected in 1917 in the vicinity of Fort Myers." At CSS (within both Collier Co. and Lee Co.) we found populations of *E. microcarpa* in bald-cypress swamp and on ruderal land. **C.** *Lipocarpha maculata*.—Gann et al. (2002) stated that *L. maculata* was "Collected once in 1965 near Immokalee." At CSS (within that portion in Collier Co.) we found *L. maculata* growing on sandy ruderal land.

George Wilder and coworkers have also documented the three species, aforementioned (with voucher specimens at SWF), at locations outside of CSS, in Collier County and Lee County (*L. maculata* [in 2002 through 2007]; Wilder & McCombs 2006) or solely in Lee County (*B. biternatum* [in 2007], *E. microcarpa* [in 2005, 2006]).

Below, we discuss three additional rare taxa.

A. Ophioglossum palmatum (Hand Fern).—This species is State-listed as Endangered. Wunderlin and

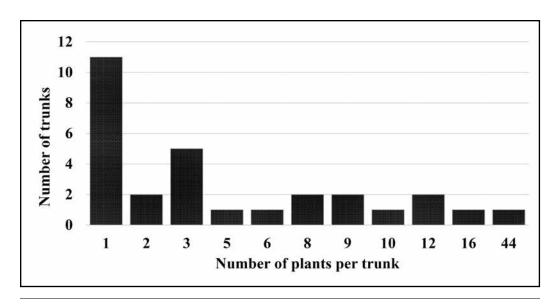


Fig. 2. Histogram depicting the relationship between the number of plants of *Ophioglossum palmatum* per trunk of *Sabal palmetto* (X axis) and the number of trunks of *Sabal palmetto* bearing that number of plants (Y axis). Distances are nonlinear along the X axis.

Hansen (2000) indicated that *O. palmatum* has declined in Florida because of over-collection, habitat destruction, and fire.

Most of the plants at CSS manifested the norm for *O. palmatum*, growing axillary to leaf sheaths on the trunks of *Sabal palmetto* (Cabbage Palm); however, only a miniscule proportion of the cabbage palms at CSS exhibited *O. palmatum*. We observed *Ophioglossum* plants inserted at levels of palm trunks, from ground level to 20 to 25 feet aboveground. Cabbage palms bearing *O. palmatum* grew in hardwood hammock (17), in bald-cypress swamp (3), on ruderal land (5), and in three kinds of ecotones (4) (the numbers between parentheses indicate the numbers of *Ophioglossum*-bearing palms observed per habitat; Appendix 1).

For 29 palm trunks bearing *O. palmatum*, we counted the number of *Ophioglossum* plants per trunk. The data are presented as a histogram (Fig. 2). Based on those data, the total number of *Ophioglossum* plants counted, the median number of plants per trunk, and the mean number of plants per trunk were 169, 3, and 5.8, respectively.

In light of the miniscule proportion of cabbage palms that bore *O. palmatum* at CSS, one might expect there to have occurred, typically, no more than one *Ophioglossum* plant per palm. In that case the data, aforementioned, would be counterintuitive. We envision two possible explanations for those data. (1) Perhaps, the spores released from an *Ophioglossum* plant on one palm trunk drift preferentially to, and germinate axillary to, the leaf sheaths of the same palm trunk or of nearby palm trunks, rather than travelling to, and germinating axillary to, the sheaths of distant palm trunks. (2) Certain palm trunks might constitute more suitable microhabitat than do others.

Although, most plants of *O. palmatum* were epiphytic on trunks of *Sabal palmetto*, we observed over 30 juvenile plants and fertile individuals growing together on a root ball (Fig. 3). The root ball was elevated

It was sometimes uncertain whether a palm leaf sheath subtended one, or more than one, Ophioglossum plant. To provide certainty would have required bending that sheath outward to better expose the Ophioglossum plant(s)—a procedure that might have damaged or destroyed it/them. Thus, where uncertainty occurred, we recognized solely one Ophioglossum plant per leaf sheath. Accordingly, we may have undercounted, to a small extent, the number of Ophioglossum plants that were present.



Fig. 3. A portion of a clump of over 30 plants of *Ophioglossum palmatum*. The clump is highly unusual, being located on a root ball at the base of a trunk of *Sabal palmetto*. Photographic image by Jean McCollom (2017).

minimally above ground level, it contained little soil, and it encircled, and was apparently derived from, the base of a trunk of *S. palmetto*.

- **B.** *Thelypteris serrata* (Thelypteridaceae).—This terrestrial species is State-listed as Endangered. We observed *T. serrata* at ca. 10 places near the northern boundary of Panther Island, where the plants were either solitary or composed a clump. The species grew in bald-cypress swamp and in the ecotone between hardwood hammock and pine flatwoods.
- **C.** *Dendrophylax lindenii* (Orchidaceae).—This epiphytic species, the so-called "Ghost Orchid," is Statelisted as Endangered. Ghost orchids are unusual (but not unique) among Florida orchids, because they lack foliage leaves; however, they produce photosynthetic roots.

Ghost orchids were once more frequent at CSS. Apparently, freeze(s) during past year(s) decimated the population there (Michael Duever, pers. comm. to George Wilder, 4 June 2016). Today we know of two remaining ghost orchids. Each is rooted to a separate bald-cypress tree situated within the remnant of old-growth bald-cypress swamp.

During the weekend of July 7–8, 2007, Maryanne Biggar (in the company of Jean McCollom, Michael Duever, and John Ogden) discovered the larger of the two remaining ghost orchids (Figs. 4, 5). That individual (clone?) is unusual. (1) It ranks among the largest of ghost orchids known. (2) It flowers more prolifically than do other ghost orchids in south Florida. It bore nine flowers when it was discovered and, in 2014, it produced more than 40 flowers. In contrast, ghost orchids in south Florida commonly produce from one to three flowers



Fig. 4. An exceptionally large, profusely flowering plant of *Dendrophylax lindenii*, located high on a trunk of *Taxodium distichum*. Photographic image by Ralph Arwood (2014).

per year (Michael Owen, pers. comm. to George Wilder, 23 Aug 2017). (3) On 25 Jan 2015, it manifested its first flowers at anthesis for that calendar year; thereby, it set an early-flowering record for *D. lindenii* in south Florida. Ghost orchids in south Florida typically flower in June, July, and August. (4) The plant is situated ca. 50 to 60 feet above ground, being located higher-up than any other ghost orchid known.

A record of the large ghost orchid's flowering behavior over several years is available at http://corkscrew.audubon.org/visit/corkscrews-ghost-orchids.

Native and exotic infrageneric taxa that are rare within the Sanctuary

Considered under this heading are only infrageneric taxa that were documented currently, not ones documented solely by previous workers.

We deem 291 infrageneric taxa (37.6% of all 773 infrageneric taxa presently reported) to be rare within CSS (Appendix 1). Included among those 291 taxa are 41 of the taxa discussed above, that are State listed as Endangered or Threatened in Florida or that are designated as Critically Imperiled or Historical in south Florida (Gann et al. 2002; Weaver & Anderson 2010; Table 1).

Certain of the rarest species in the Sanctuary are considered. For each of the following species, indicated between parentheses after the species name is the number of individuals that we encountered thereof: Bischofia javanica (1), Botrychium biternatum (2), Carica papaya (1), Clematis baldwinii (2), Cupaniopsis anacardioides (ca. 2), Cyperus hyalinus (1), Eragrostis cumingii (1 or 2), Ipomoea hederifolia (1), Pinguicula caerulea (ca. 3), Psidium cattleianum (1), Psidium guajava (1), Pteroglossaspis ecristata (1), Roystonea regia (1), and Tillandsia flexuosa (1). Also, we observed solely one small clump of Ophioglossum petiolatum. Too, on 15 Sep 2017, five days after Hurricane Irma, we collected near ground level the single specimen of T. flexuosa; that plant was

TABLE 1. List of species and varieties of rare plants of Corkscrew Swamp Sanctuary. Certain rankings of rarity are for Florida (Weaver & Anderson 2010) and for south Florida (Gann et al. 2002). One ranking of rarity (**r** after the name of a taxon) is solely for the study area; **r** is used here only for taxa that were listed by Weaver & Anderson (2010) and by Gann (2002). See Appendix 1 for an accounting of additional taxa that are rare in the study area. Taxa documented during the present study and solely by previous workers are represented with non-bold font and bold font, respectively. **Crit. Imp.** = critically imperiled; **End.** = endangered; **Ext.** = extirpated; **Hist.** = historical; **Threat.** = threatened; **r** = a taxon documented during the present study and deemed to be rare within the study area.

Taxon	Weaver & Anderson (2010)	Gann et al. (2002)
Anagallis minima		Crit. Imp.
Anagallis pumila ^r		Crit. Imp.
Aristida purpurascens var. virgata ^r		Crit. Imp.
Bartonia virginica ^r		Crit. Imp.
Botrychium biternatum ^r		Ext.
Burmannia biflora ^r		Crit. Imp.
Callitriche peploides		Hist.
Campsis radicans		Crit. Imp.
Carex gigantea ^r		Crit. Imp.
Carex verrucosa		Crit. Imp.
Ceratopteris pteridoides		Crit. Imp.
Chamaecrista nictitans var. nictitans		Hist.
Chrysophyllum oliviforme ^r	Threat.	
Cyperus squarrosus r		Crit. Imp.
Cyrtopodium punctatum ^r	End.	•
Dendrophylax lindenii *	End.	
Dendrophylax porrectus r	Threat.	
Echinodorus berteroi r		Hist.
Eleocharis microcarpa ^r		Ext.
Epidendrum anceps ^r	End.	LAG
Epidendrum floridense ^r	End.	
Epidendrum nocturnum ^r	End.	
Epidendrum rigidum	End.	
Eragrostis hypnoides ^r	Liid.	Crit. Imp.
Euphorbia inundata var. garrettii ^r		Crit. Imp.
		·
Gymnopogon chapmanianus r		Crit. Imp.
Hibiscus coccineus	E. J	Crit. Imp.
lonopsis utricularioides r	End.	Crit. Imp.
Juncus dichotomus r		Crit. Imp.
Juncus repens r		Crit. Imp.
Lilium catesbaei	Threat.	
Lipocarpha maculata		Ext.
Lobelia homophylla		Hist.
Myrcianthes fragrans	Threat.	
Nephrolepis biserrata	Threat.	
Nymphaea jamesoniana	End.	
Nymphaea mexicana ^r		Crit. Imp.
Ophioglossum palmatum	End.	
Persicaria setacea		Crit. Imp.
Pinguicula caerulea ^r	Threat	
Platanthera nivea ^r	Threat.	
Polystachya concreta ^r	End.	
Prosthechea cochleata ^r	End.	
Pteroglossaspis ecristata ^r	Threat.	
Rhynchospora fernaldii r		Crit. Imp.
Rhynchospora pusilla ^r		Crit. Imp.
Rhynchospora rariflora r		Crit. Imp.
Roystonea regia ^r	End.	•
Sacoila lanceolata var. paludicola ^r	Threat.	
Sageretia minutiflora	====	Crit. Imp.
Scutellaria integrifolia ^r		Hist.
Spiranthes praecox		Crit. Imp.
Thelypteris hispidula ^r		Crit. Imp.
	End.	·
Thelypteris serrata ^r	LAIG.	Crit. Imp.

TABLE 1. cont.

Taxon	Weaver & Anderson (2010)	Gann et al. (2002)
Tillandsia balbisiana	Threat.	
Tillandsia fasciculata	End.	
Tillandsia flexuosa ^r	Threat.	
Tillandsia pruinosa ^r	End.	Crit. Imp.
Tillandsia utriculata ^r	End.	·
Tillandsia variabilis	Threat.	
Utricularia juncea		Crit. Imp.
Viola palmata ^r		Crit. Imp.
Wolffiella gladiata		Crit. Imp.
Zephyranthes simpsonii	Threat.	•



Fig. 5. The same plant of *Dendrophylax lindenii* as in Figure 4, lacking flowers. The plant consists primarily of roots. Photographic image by Ralph Arwood (2015).

anchored to a branch of *Pinus elliottii* which had, apparently, broken away from a tree during the Hurricane. During collection, we apparently extirpated from CSS two of the species, aforementioned (both exotic): *B. javanica* and *C. hyalinus*.

We offer a caveat. Because population sizes may vary over time, our assessments of the rarity of taxa at CSS are not necessarily permanent. Consider two herbaceous annuals: *Amaranthus australis* and *Pentodon pentandrus* (Godfrey & Wooten 1981). During our initial year of study, we observed ca. two individuals of *A. australis* and we saw no plants of *P. pentandrus*. Thus, we initially ranked *A. australis* as rare at CSS. Later on,

though, there appeared at CSS, to our astonishment, thousands of densely arranged individuals of each species. Thus, we reassessed each species as non-rare (Appendix 1).

The pronounced increase in population sizes of those two species transpired during a severe drought, when standing water had evaporated from much of CSS. We suspect that, for both species, the newly dried-up soils greatly enhanced seed germination and/or seedling survival.

A species new for North America north of Mexico

Herein, *Phyllanthus debilis* J.G. Klein ex Willd. is reported for the first time for North America north of Mexico (John Kartesz, pers. comm. to George Wilder, 4 Oct 2017; Kartesz 2017; USDA 2017). Included, within the current issue (p. 245) of this journal is a more detailed report of this range extension, authored by G. Levin et al. (2018).

Comparisons with previous studies

As was stated above, we presently report 773 infrageneric taxa and 756 species of vascular plants for the Sanctuary. Also, previous workers documented at least 14 additional species there (Appendix 1). Thus, we and those workers have documented, collectively, a total of 787 infrageneric taxa and 770 species for the Sanctuary. Of the 14 previously collected species, 10 are native to Florida.

Below, we compare our list of presently documented taxa with two of the previous plant lists for CSS. Exact comparisons are precluded for two reasons. First, we cannot equate certain of our collections of sterile material (which we identified solely to genus) with particular species indicated within the previous lists. Secondly, in cases where two species have been recognized in place of one, we could not determine the identity in a strict sense, of an undocumented species that previous workers had listed in a broad sense. Because of such shortcomings, we apply the phrase "at least" to qualify some of the numbers/percentages presented below.

Mackie et al. (1999) reported 550 infrageneric taxa of vascular plants for CSS (including *Taxodium ascendens* and *Taxodium distichum* sensu stricto—taxa which we subsume within *Taxodium distichum* sensu lato). During present field work we documented at least 430 (78.2%) of those 550 taxa. Too, Mackie et al. (1999) listed five of the 14 species, aforementioned, that solely previous workers had documented at CSS.

The Institute for Regional Conservation (IRC 2017) maintains a database based on previous floristic work undertaken within the Sanctuary. That database lists 511 infrageneric taxa of vascular plants for CSS (including *Taxodium ascendens* and *Taxodium distichum* sensu stricto). During present field work we documented at least 430 (84.1%) of those 511 taxa. Too, IRC (2017) listed seven of the 14 species, aforementioned, that solely previous workers had documented at CSS.

For 32 species documented during the present study we provide the first published records of voucher specimens from Collier County: Botrychium biternatum, Bromelia pinguin, Citrus reticulata, Commelina communis, Commelina gambiae, Crotalaria lanceolata, Descurainia pinnata, Eleocharis microcarpa, Equisetum hyemale, Fimbristylis littoralis, Geranium carolinianum, Juncus dichotomus, Mimosa quadrivalvis, Mimosa strigillosa, Nuphar advena, Nymphaea jamesoniana, Panicum laxum, Parietaria praetermissa, Paspalum acuminatum, Paspalum plicatulum, Paspalum praecox, Phyllanthus debilis, Rhynchospora eximia, Rhynchospora distans, Rottboellia cochinchinensis, Rumex paraguayensis, Schizachyrium rhizomatum, Scutellaria integrifolia, Spiranthes lacera, Terminalia catappa, Tithonia diversifolia, and Viola palmata (The Florida State University Biology Department 2017; University of Florida Herbarium Collections Catalog 2017; Virtual Herbarium 2017; Wilder & Barry 2012; Wilder & McCombs 2006; Wilder & Roche 2009; Wilder & Thomas 2016; Wunderlin et al. 2017). Austin et al. (1990) listed Citrus reticulata, Iris savannarum ("Iris hexagona"), and Nuphar advena ("Nuphar luteum") for Fakahatchee Strand State Preserve (Collier Co.), but they specified no voucher specimens for those species. Based on certain of the sources, aforementioned, for Thelypteris hispidula we provide the first published record of a voucher specimen from Lee County.

APPENDIX 1

Table of infrageneric taxa (species, subspecies, varieties, formas, and a hybrid [Citrus sp.]) and of higher-level taxa documented at Corkscrew Swamp Sanctuary (CSS) during, and previous to, the present study. The names of infrageneric taxa documented during the

present investigation are listed in non-bold font. For certain of those infrageneric taxa, listed after the name of a taxon is/are relevant synonym(s) [between brackets], an indication of whether the taxon is rare within CSS, and/or the designation of the taxon by the Florida Exotic Plant Pest Council (FLEPPC 2017). Also, presented after the name of an infrageneric taxon is the five-digit Wilder and McCombs collection number² of a voucher specimen or of a voucher photograph of that taxon. The names of infrageneric taxa that we (in one case) and previous workers had previously documented within CSS, but that were not observed during the present study, are presented in bold font. For those taxa, data are provided as follows after the Latin name of a taxon: relevant synonym, if any [between brackets]; collector(s); collection number; year of collection; and acronym of the herbarium where the specimen is on deposit (in parentheses).3 After the name of each family and suprafamilial taxon, between parentheses are included two or four numbers; the two numbers not in italics—if present—signify, respectively, the numbers reported presently of genera and infrageneric taxa (excluding formas) within that family or suprafamilial taxon; the two numbers in italics—if present—signify, respectively, the sums of numbers reported presently and by previous workers, of such genera and infrageneric taxa (excluding formas). Habitat data are provided within the seven vertical columns at the right of this table. * = alien to Florida; ? = a taxon (Myriophyllum sp., Pistia stratiotes) that is not clearly native to, or exotic within, Florida; x = endemic to Florida; Aq-rud = aquatic ruderal land; Cypr = bald-cypress swamp; Hardw = hardwood forest; Pinefl = pine flatwoods; Marsh = freshwater marsh; Prairie = wet prairie; Rud = ruderal land; FLEPPC I and FLEPPC II = taxa recognized as Category I or Category II species, respectively, by the Florida Exotic Plant Pest Council (2017). Each of X, X, and X = occurrence of an infrageneric taxon within a habitat, away from the habitat boundary; also, each of X and X (with or without superscript) signifies material that was observed and/or collected within part(s) of the Sanctuary situated in Collier County; X represents a specimen that was collected in Lee County. Each of the following symbols indicates the occurrence of a taxon either (a) at a sharp boundary between the habitat represented by the associated vertical column and another habitat or ecotone, and/or (b) within an extended ecotone comprised by the habitat represented by the associated vertical column and another habitat: $X^{aq} = growing$ at the boundary with aquatic ruderal land; $X^{c} = growing$ at the boundary with, and/or within the extended ecotone comprised together with, bald-cypress swamp; $X^m =$ occurring at the boundary with, and/or within the extended ecotone comprised together with, freshwater marsh; $X^p =$ occurring at the boundary with, and/or within the extended ecotone comprised together with, wet prairie; X^{pf} = occurring at the boundary with, and/or within the extended ecotone = occurring by the ecotone comprised by pine flatwoods and mesic hardwood hammock; X^{pf-p} = occurring by the ecotone comprised by pine flatwoods and wet prairie; X' = occurring at the boundary with ruderal land. For hardwood forest, X (with or without a superscript) refers to forest other than hardwood swamp, whereas X specifies hardwood swamp.

1 We follow the nomenclature of Wunderlin et al. (2017), with the following exceptions. (1) We recognize the family Lemnaceae, which Wunderlin and Hansen (2011) and Wunderlin et al. (2017) submerged into Araceae. (2) We recognize solely Taxodium distichum (L.) Rich. sensu lato (as did Adams et al. 2012, Denny and Arnold 2007, and Watson 1985), whereas, Wunderlin et al. (2017) recognized Taxodium distichum (L.) Rich. sensu stricto and Taxodium ascendens Brongn.; we do, however, cite voucher specimens for both segregate taxa. (3) We recognize solely Symphyotrichum subulatum (Michx.) G.L. Nesom rather than either of two segregate taxa, Symphyotrichum bahamense (Britton) G.L. Nesom and Symphyotrichum expansum (Poeppig ex Spreng.) G.L. Nesom. (4) We recognize subspecies of Dichanthelium aciculare (Desv. ex Poir.) Gould & C.A. Clark and of Dichanthelium dichotomum (L.) Gould (as did Freckmann and Lelong 2003 [for both species]); we also recognize varieties of Digitaria ciliaris (Retz.) Koeler, Eragrostis ciliaris (L.) R. Br., Lindernia dubia (L.) Pennell, and Paspalum setaceum Michx. (as did Wipff 2003, Peterson 2003, Cooperrider 1995, and Allen and Hall 2003, respectively). Wunderlin et al. (2017) recognized neither the subspecies nor varieties, aforementioned. (5) We recognize Rhynchospora distans (Michx.) Vahl (as did McMillan 2007), a taxon which Wunderlin et al. (2017) submerged into Rhynchospora fascicularis (Michx.) Vahl. (6) We recognize Cyperus ovatus Baldwin sensu stricto and Cyperus retrorsus Chapm. (as did Tucker et al. 2002), taxa which Wunderlin et al. (2017) grouped within Cyperus ovatus Baldwin sensu lato. (7) We recognize Panicum anceps Michx., Panicum hians Elliott, Panicum Iaxum Sw., Panicum rigidulum Bosc ex Nees, and Panicum tenerum Beyr. ex Trin., taxa which Wunderlin et al. (2017) have called Coleataenia anceps (Michx.) Soreng, Steinchisma hians (Elliott) Nash, Steinchisma laxum (Sw.) Zuloaga, Coleataenia rigidula (Bosc ex Nees) LeBlond, and Coleataenia tenera (Beyrich ex Trin.) Soreng, respectively. (8) We refer to one of our collections as Cynanchum sp. sensu lato, whereas, Wunderlin et al. (2017) recognized four genera in place of Cynanchum sensu lato: Cynanchum sensu stricto, Metastelma, Orthosia, and Pattalias. We refer to Cynanchum sp. sensu lato, because our material is sterile, precluding identification as any of the four narrowly defined genera. (9) We retain 25 species names from Wunderlin and Hansen (2011), which Wunderlin et al. (2017) replaced with different names (listed between brackets after each retained name is Wunderlin et al.'s [2017] replacement): Ampelopsis arborea (L.) Koehne [Nekemias arborea (L.) J. Wen & Boggan], Anagallis minima (L.) E.H.L. Krause [Lysimachia minima (L.) U. Manns & Anderb.], Anagallis pumila Sw. [Lysimachia ovalis (Ruiz & Pav.) U. Manns & Anderb.], Chamaesyce blodgettii (Engelm. ex Hitchc.) Small [Euphorbia blodgettii Engelm. ex Hitchc.], Chamaesyce hirta (L.) Millsp. [Euphorbia hirta L.], Chamaesyce hypericifolia (L.) Millsp. [Euphorbia hypericifolia L.], Chamaesyce hyssopifolia (L.) Small [Euphorbia hyssopifolia L.], Chamaesyce lasiocarpa (Klotzsch) Arthur [Euphorbia lasiocarpa Klotzsch], Chamaesyce maculata (L.) Small [Euphorbia maculata L.], Chamaesyce mendezii (Boiss.) Millsp. [Euphorbia mendezii Boiss.], Chamaesyce ophthalmica (Pers.) D.G. Burch [Euphorbia ophthalmica Pers.], Chamaesyce thymifolia (L.) Millsp. [Euphorbia thymifolia L.], Kyllinga brevifolia Rottb. [Cyperus brevifolius (Rottb.) Endl. ex Hassk.], Kyllinga odorata Vahl [Cyperus sesquiflorus (Torr.) Mattf. & Kük.], Kyllinga squamulata Thonn. ex Vahl [Cyperus metzii (Hochst. ex Steud.) Mattf. & Kük.], Leptochloa fusca (L.) Kunth subsp. fascicularis (Lam.) N. Snow [Diplachne fusca (L.) P. Beauv. ex Roem. & Schult. subsp. fascicularis (Lam.) P.M. Peterson & N. Snow], Lipocarpha aristulata (Coville) G.C. Tucker [Cyperus aristulatus (Coville) Bauters], Lipocarpha maculata (Michx.) Torr. [Cyperus neotropicalis Alain], Lipocarpha micrantha (Vahl) G.C. Tucker [Cyperus subsquarrosus (Muhl.) Bauters], Oldenlandia uniflora L. [Edrastima uniflora (L.) Raf.], Pennisetum polystachion (L.) Schult. [Cenchrus polystachios (L.) Morrone], Poinsettia cyathophora (Murray) Bartl. [Euphorbia cyathophora Murray], Poinsettia heterophylla (L.) Klotzsch & Garcke ex Klotzsch [Euphorbia heterophylla L.], and Pteroglossaspis ecristata (Fernald) Rolfe [Orthochilus ecristatus (Fernald) Bytebier].

² Ms. Martha McCombs contributed importantly to SWF; hence, on the label of each herbarium sheet from SWF George Wilder's name and Martha McCombs' name precede the collection number of each specimen, a circumstance not duplicated in this appendix.

³ Data for previous collections were compiled from Wunderlin et al. (2017) and during visits to UF, USF, and the herbarium at Corkscrew Swamp Sanctuary; the latter herbarium lacks an acronym from Index Herbariorum; we call it CSS, herein.

	APPENDIX cont.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
	PTERIDOPHYTES (20, 32)	ES (20, 32)					
AZOLLACEAE (1, 1)							
Azolla filiculoides Lam. [Azolla caroliniana Willd.]; 37992					×	×	
BLECHNACEAE (2, 2)							
Telmatoblechnum serrulatum (Rich.) Perrie et al. [Blechnum serrulatum Rich.].;38398	X 'Xc'Xpt' X	X,X ^c ,X ^r	X'Xc	X,Xm,Xr	×	X,Xr	×
Woodwardia virginica (L.) Sm.; 38113	X,Xpf	X,Xr	×	×	×		
DENNSTAEDTIACEAE (1, 2)							
Pteridium aquilinum (L.) Kuhn var. caudatum (L.) Sadèb.; Rare; 39613		×					×
Pteridium aquilinum (L.) Kuhn var. pseudocaudatum (Clute) Clute ex A. Heller; 39728		x,x'					
EQUISETACEAE (1, 1)							
Equisetum hyemale L.; Rare; 38725		×					
NEPHROLEPIDACEAE (1, 4)							
Nephrolepis biserrata (Sw.) Schott; 38359	×	×		×			
*Nephrolepis brownii (Desv.) Hovenkamp & Miyam. [Nephrolepis multiflora (Roxb.) F.M. Jarrett ex C.V. Morton]; FLEPPC I; 38553	×	x,xr		×		×	×
*Nephrolepis cordifolia (L.) C. Presl; Rare; FLEPPC I; 39893				×			×
Nephrolepis exaltata (L.) Schott; 38262	x 'x			X,X ^m ,X ^r			×
OPHIOGLOSSACEAE (2, 3)							
Botrychium biternatum (Savigny) Underw.; Rare; 39611	×						
Ophioglossum palmatum L.; 38312	x,x	X ^c ,X ^r		×			×
Ophioglossum petiolatum Hook.; Rare; 39612	×						
OSMUNDACEAE (1, 2)							
Osmunda cinnamomea L.; Rare; 38458	$\overline{\mathbf{X}}$					×	
Osmunda regalis L.; 38000	X 'Xc' X	X,X ^c ,X ^r	×	wX'X	×		
POLYPODIACEAE (3, 3)							
Campyloneurum phyllitidis (L.) C. Presl; 38358	X 'Xc' X			mX,X	(yní)X		
Phlebodium aureum (L.) Sm.; 38290	X ′ _{Jd} X′X	×		X,Xm,Xr	×		×
Pleopeltis michauxiana (Weath.) Hickey & Sprunt [Pleopeltis polypodioides (L.) E. G. Andrews & Windham]; 38554	X 'X¢ X	×		X,X ^m ,X ^r	×		
PSILOTACEAE (1, 1)							
Psilotum nudum (L.) P. Beauv.; 38261	x,x'	×		x,X ^m			×
PTERIDACEAE (4, 5)							
Acrostichum danaeifolium Langsd. & Fisch.; 37996	×			X,X ^m			

×

×

×

×

Crinum americanum L.; 38010 Zephyranthes simpsonii Chapm.; 38270

Sagittaria lancifolia L.; 38009 AMARYLLIDACEAE (2, 2)

X,X

βď

	APPENDIX cont.	X cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Ceratopteris pteridoides (Hook.) Hieron.; 37998				X,X	×	×	
*Pteris tripartita Sw.; Rare; 38459		×		×			
*Pteris vittata L.; FLEPPC II; 38112		×					×
Vittaria lineata (L.) Sm.; 38556	X ,Y,X	×		mX,X			×
SALVINIACEAE(1,1)							
*Salvinia minima Baker; FLEPPC I; 37988	X ′ ₂ X			mX,X	×	×	X(flooded)
SCHIZAEACEAE (1, 1)							
*Lygodium microphyllum (Cav.) R. Br.; FLEPPC I; 38399	X _{bt} X	X,X ^c ,X ^r		×			
THELYPTERIDACEAE (1, 6)							
*Thelypteris dentata (Forssk.) E.P. St. John; 38555	х,Хрб	×		×		×	
Thelypteris hispidula (Decne.) C.F. Reed; Rare; 38460	×						×
Thelypteris interrupta (Willd.) K. Iwats.; 38500	X',X',X			mX,X	×		×
Thelypteris kunthii (Desv.) C.V. Morton; 38538	×	x,x		×			×
Thelypteris palustris Schott; 37999	X 'Xc' X	ďΧ	×	×			×
Thelypteris serrata (Cav.) Alston; Rare; 39615	X,XPf			×			
	GYMNOSPERMS (2, 2)	MS (2, 2)					
CUPRESSACEAE (1, 1)							
Taxodium distichum sensu lato (L.) Rich. sensu lato (including Taxodium ascendens Brongn. {38001} and Taxodium distichum (L.) Rich. sensu stricto {38002})		3X'X	×'X¢	,x,×	×	,x,x,	×
PINACEAE (1, 1)							
Pinus elliottii Engelm.; 38434	X,XPf	X,X ^c ,X ^r					×
SO W	MONOCOTYLEDONS (120, 311; 124, 318)	120, 311; 124, 3	18)				
ALISMATACEAE (2, 4)							
Echinodorus berteroi (Spreng.) Fassett; Rare; 39496						×	
Sagittaria filiformis J.G. Sm.; Rare; 38317	×						X(flooded)
Sagittaria graminea Michx. var. chapmanii J.G. Sm.; 38320	×		×	X,X		×	

	AFFEINDIACOM	COM.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
ARACEAE (4, 4)							
*Colocasia esculenta (L.) Schott; FLEPPC I; 38737				x,x			
Peltandra virginica (L.) Schott; 38011	x			×	×		
?Pistia stratiotes L.; FLEPPC I; 38295	X '>X			×	×	×	
*Syngonium podophyllum Schott; Rare; FLEPPC I; 38228							×
ARECACEAE (4, 4)							
Roystonea regia (Kunth) O.F. Cook; Rare; 38285 (photograph)				×			
*Phoenix reclinata Jacq.; Rare; FLEPPC II; 38817				x,x			
Sabal palmetto (Walter) Lodd. ex Schult. & Schult. f.; 39038	X'X'Xbt'X'X	X,X ^c ,X ^r	×	×	×	×	×
Serenoa repens (W. Bartram) Small; 38297	X,Xpf	X,X ^c ,X ^r		×			×
BROMELIACEAE (2, 11)							
*Bromelia pinguin L.; Rare; 39022							×
Tillandsia balbisiana Schult. & Schult. f.; 38321	X ,X'X	X,X ^c	×	X,Xm,Xr	×		×
Tillandsia fasciculata Sw.; 38288 (photograph)	X 'yd X 'X	X,X ^c	×c	X,Xm,Xr	×		×
Tillandsia flexuosa Sw.; Rare ; 40097		×					
Tillandsia paucifolia Baker; 38713		Xc	×c	X,Xr,X ^m			
Tillandsia pruinosa Sw.; Rare; 38572 (photograph)				x,X ^m			
Tillandsia recurvata (L.) L.; 38143	X ,X,X	X,X ^c		x,x			×
Tillandsia setacea Sw.; 38322	X 'Xc'Xpt' X	X,X ^c	×c	X,Xm,Xr			×
Tillandsia usneoides (L.) L.; 38328	X'Xc'Xbt'Xr' X	X,X ^c	χc	X,Xm,Xr	×		×
Tillandsia utriculata L.; Rare; 39238 (photograph)	×			mX′beX			X,Xpf-h
Tillandsia variabilis Schltdl.; 38323	×			x,X ^m			
BURMANNIACEAE (1, 2)							
Burmannia biflora L.; Rare; 38441		×					
Burmannia capitata (J.F. Gmel.) Mart.; 38549		чХ,Х					
CANNACEAE (1, 1)							
Canna flaccida Salisb.; 38945	⋩				×		X(flooded)
COMMELINACEAE (2, 6)							
*Commelina communis L.; Rare; 38763		×					
*Commelina diffusa Burm. f.; 38229	x ′×		×	×	×	×	×
Commelina erecta L; Rare; 38795		Σľ					
*Commelina gambiae C.B. Clarke; 38144							×
*Murdannia nudiflora (L.) Brenan; 39166							×

	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
*Murdannia spirata (L.) G. Brückn.; 38129		×		×			×
CYPERACEAE (12, 80; 13, 82)							
*Bulbostylis barbata (Rottb.) C.B. Clarke; 38224							×
Carex comosa Boott; Rare; 38708				×			
Carex gigantea Rudge; Rare ; 39617	Χc						
Carex longii Mack; 38567							×
Carex lupuliformis Sartwell ex Dewey; 38856	×	×		×			×
Carex verrucosa Muhl.; 38851	_{Jd} X′ _d X		×	×	×		
¤Carex vexans F.J. Herm.; 38292						×	d-JdX
Cladium jamaicense Crantz; 38789	×	X,X ^c	wX,X	x,X ^m	×		×
Cyperus articulatus L.; Rare; 39219							×
*Cyperus blepharoleptos Steud. [Oxycaryum cubense (Poepp. & Kunth) Palla; Scirpus cubensis Poepp. & Kunth]; 38570					×	×	
Cyperus compressus L.; 39033							×
Cyperus croceus Vahl; 38510							×
Cyperus distinctus Steud.; 38293	dΧ				×	×	
*Cyperus esculentus L.; 38141							×
Cyperus flavescens L.; 38511							×
Cyperus haspan L.; 38649	×	dX,2X,X	×	x,x	×	x,xr	×
*Cyperus hyalinus Vahl [Kyllinga hyalina (Vahl) T. Koyama]; Rare; 39313							×
*Cyperus iria L; 38732						Xr	
Cyperus ligularis L.; 38466							×
Cyperus odoratus L.; 38568			Xc	×	×	Xr	×
Cyperus ovatus Baldwin; Rare; 39164							×
Cyperus polystachyos Rottb.; 38294		X,Xr		×			×
*Cyperus pumilus L; 38512							×
Cyperus retrorsus Chapm.; 38733							×
*Cyperus richardii Steud. [Kyllinga bulbosa P. Beauv.; Kyllinga macrocephala A. Rich.]; 38142							×
*Cyperus sphacelatus Rottb.; 39525		x,x'					×
Cyperus squarrosus L. [Cyperus aristatus Rottb.]; Rare; 39220							×
Cyperus surinamensis Rottb.; 38266							×
Eleocharis baldwinii (Torr.) Chapm.; 38513		×c					×
Eleocharis cellulosa Torr.; 38758		Xc	×				X(flooded)

	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Eleocharis flavescens (Poir.) Urb.; 39056		×					×
Eleocharis geniculata (L.) Roem. & Schult.; 38791							×
Eleocharis interstincta (Vahl) Roem. & Schult.; 38008					×	×	×
Eleocharis microcarpa Torr; Rare ; 38650				×			×
*Eleocharis nigrescens (Nees) Steud.; 39057		×					×
Fimbristylis autumnalis (L.) Roem. & Schult.; 38515							×
Fimbristylis caroliniana (Lam.) Fernald; 38944	X ^{pf} (in opening)		×				
Fimbristylis cymosa R. Br.; 38516							×
Fimbristylis dichotoma (L.) Vahl; 38569						×	×
*Fimbristylis littoralis Gaudich. [Fimbristylis miliacea (L.) Vahl]; Rare; 39310						×	
Fimbristylis puberula (Michx.) Vahl; 39495		×					
*Fimbristylis schoenoides (Retz.) Vahl; 39087							×
Fimbristylis spadicea (L.) Vahl; 38438		x,xr					
Fuirena breviseta (Coville) Coville; 37921		x,xr		×			
Fuirena pumila (Torr.) Spreng.; 38405		×					×
Fuirena scirpoidea Michx.; 38406		x,xr	X,Xr		×	×	×
*Kyllinga brevifolia Rottb.; 38268		×					×
Kyllinga odorata Vahl; Rare; 38365							×
*Kyllinga squamulata Thonn. ex Vahl; Rare; 38517							×
*Lipocarpha aristulata (Coville) G.C. Tucker; 38269		×r					
Lipocarpha maculata (Michx.) Torr; 38518							×
Lipocarpha micrantha (Vahl) G.C. Tucker; 38519							×
Rhynchospora colorata (L.) H. Pfeiff. [Dichromena colorata (L.) Hitchc.]; 38790		X ^c ,X ^r	×		×		×
Rhynchospora corniculata (Lam.) A. Gray; Rare; 38734					×		
Rhynchospora distans (Michx.) Vahl [Rhynchospora fascicularis (Michx.) Vahl var. distans (Michx.) Chapm.]; Rare; 39088		×					
Rhynchospora divergens Chapm. ex M.A. Curtis; 38088		X,Xr	×	×		×	
Rhynchospora eximia (Nees) Boeck.[Psilocarya schiedeana (Kunth) Liebm.]; Rare; 39094		×					Χ'Χ
Rhynchospora fascicularis (Michx.) Vahl; 38571		×					×
Rhynchospora fernaldii Gale; Rare; 38520		X,Xr					
Rhynchospora filifolia A. Gray; 38544		×	×	×			
Rhynchospora floridensis (Britton ex Small) H. Pfeiff. [Dichromena floridensis Britton ex Small]; W.S. Judd 8027; 1999 (UF)							

	APPENDIX CONT	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Rhynchospora globularis (Chapm.) Small; 38439	Xpf	×					
Rhynchospora intermedia (Chapm.) Britton; Rare; 38760		×					
Rhynchospora inundata (Oakes) Fernald; 38545		×	×		×		
Rhynchospora latifolia (Baldwin) W.W. Thomas [Dichromena latifolia Baldwin]; Rare; 38735		×					
Rhynchospora microcarpa Baldwin ex A. Gray (including Rhynchospora sulcata Gale); 38089		×	×	×	×		
Rhynchospora miliacea (Lam.) A. Gray; 37926	X ′ ₂ X	×		×			
Rhynchospora nitens (Vahl) A. Gray [Psilocarya nitens (Vahl) A.W. Wood]; 38087		×					×
Rhynchospora odorata C. Wright ex Griseb.; 38440		×					×
Rhynchospora plumosa Elliott; Rare ; 39318		×					
Rhynchospora pusilla Chapm. ex M.A. Curtis; Rare; 39097		×					
Rhynchospora rariflora (Michx.) Elliott; Rare; 38965	уbу						X
Rhynchospora tracyi Britton; 38652		X,X ^c	×	×	×		
Schoenoplectus pungens (Vahl) Palla; J.L. Hansen & M.J. Huebschen s.n.; 1977 (CSS)							
Schoenus nigricans L; 38547		X,X ^c					
Scleria baldwinii (Torr,) Steud.; 38736			×		X'X		
Scleria ciliata Michx.; Rare; 38657		×					
Scleria distans Poir, [Scleria hirtella Sw.]; Rare; 38792		X'X					X
Scleria georgiana Core; 38548		×					
*Scleria lacustris C. Wright; FLEPPC I; 39102		x,x	×			×	×
Scleria reticularis Michx.; 38090		×					×
Scleria verticillata Muhl. ex Willd.; 38521							×
DIOSCOREACEAE (1, 1)							
*Dioscorea bulbifera L.; Rare; FLEPPC I; 38230							×
ERIOCAULACEAE (3, 5)							
Eriocaulon compressum Lam.; 38231		X,X ^c ,X ^m	×	X,Xr			
Eriocaulon decangulare L.; 38324		X,XP	×				×
Eriocaulon ravenelii Chapm.; 39167		×					
Lachnocaulon anceps (Walter) Morong; 38658		X'X					
Syngonanthus flavidulus (Michx.) Ruhland; 38325		×					
HAEMODORACEAE (1, 1)							
Lachnanthes caroliana (Lam.) Dandy; Rare ; 38573							×

	- 1	LINDIA COIN.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
HYACINTHACEAE (1, 1)							
Schoenolirion albiflorum (Raf.) R.R. Gates; 38946		×					
HYDROCHARITACEAE (3, 3)							
*Hydrilla verticillata (L. f.) Royle; Rare; FLEPPC I; 38948							X(flooded)
Limnobium spongia (Bosc) Rich. ex Steud.; 38012				×	×		
Najas guadalupensis (Spreng.) Magnus; Rare; 39037							×
HYPOXIDACEAE (1, 1)							
Hypoxis juncea Sm.; 38357		X,X'					
IRIDACEAE(2, 3)							
Iris savannarum Small; 38659	x 'x	X,X ^c ,XP,X ^r	×c	×		×	
Sisyrinchium angustifolium Mill.; Rare; 38550		X,X'	×				Xpf-c
Sisyrinchium nashii E.P. Bicknell; Rare ; 39647		×c					ХрĮ-с
JUNCACEAE (1, 7)							
Juncus dichotomus Elliott; Rare; 39587							×
Juncus effusus L.; Rare; 39446							X(flooded)
Juncus marginatus Rostk.; 38296	×	×					×
Juncus megacephalus M.A. Curtis; 38862		X,Xr	×			×	X,Xpf⁻c
¤Juncus paludosus E.L. Bridges & Orzell; 38863	X ′ ₂ X		×	×			×
Juncus repens Michx.; Rare; 38764			Хэд				
Juncus scirpoides Lam.; Rare; 38574		×					×
LEMNACEAE (5, 6; 5, 7)							
*Landoltia punctata (G. Mey.) Les & DJ. Crawford; FLEPPC II; 37989	X			×		×	
Lemna obscura (Austin) Daubs; Rare; 39158						×	
Lemna valdiviana Phil.; 38278						×	
Spirodela polyrhiza (L.) Schleid.; 38279						×	X(flooded)
Wolffia columbiana H. Karst.; 38499						×	
Wolffiella gladiata (Hegelm.) Hegelm.; P. Genelle & G. Fleming 589; 1971 (USF)							
Wolffiella oblonga (Phil.) Hegelm.; 37991						×	
LILIACEAE (1, 1)							
Lilium catesbaei Walter; 39291		X,Xr					×
MARANTACEAE (1, 1)							
Thalia geniculata L. (two formas in which the foliage leaves exhibit green leaf sheaths and red leaf sheaths [Rare], respectively); 38013	×	×		×	×	×	×

	APPENDIX cont.	X cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
NARTHECIACEAE (1, 1)							
Aletris lutea Small; 38741		X,X ^c ,X ^r					×
ORCHIDACEAE (17, 28; 18, 29)							
*Bletia sp. or Bletia-like species; Rare; 40095		×					
Calopogon pallidus Chapm. (pink-flowered forma plus a white-flowered forma); Rare; 38898, 38900 (photographs)		×					
Calopogon tuberosus (L.) Britton et al.; Rare; 38765		×					
Cyrtopodium punctatum (L.) Lindl.; Rare; 39999; (photograph)				×			
Dendrophylax lindenii (Lindl.) Benth. ex Rolfe [Polyrrhiza lindenii (Lindl.); Cogn.]; Rare; 38280, 38281 (photographs)				×			
Dendrophylax porrectus (Rchb.f.) Carlsward & Whitten [Harrisella porrecta (Rchb.f.) Fawc. & Rendle]; Rare; 38638				×			
Encyclia tampensis (Lindl.) Small; Rare; 38850	×		×c	x'ωX'X	×		
Epidendrum anceps Jacq.; Rare; 38289 (photographs)	Χc			mX,X			
Epidendrum floridense Hágsater; Rare; 39692, 39693 (photographs)				ωX′X			
Epidendrum nocturnum Jacq.; Rare; 38897 (photograph)				×			
Epidendrum rigidum Jacq.; 38286 (photograph)				mX,X	×		
Eulophia alta (L.) Fawc. & Rendle; 37886 (photographs)		X,X'					
*Eulophia graminea Lindl.; Rare; FLEPPC II; 38743							×
Habenaria floribunda Lindl. [Habenaria odontopetala Rchb.f.]; 38575	×	X,X'		×			
Habenaria quinqueseta (Michx.) Eaton; Rare; 39320		×					
Ionopsis utricularioides (Sw.) Lindl.; Rare; 39714 (photograph)							
Malaxis spicata Sw.; (photograph); M. Duever 39695; 1991 (SWF)							
*Oeceoclades maculata (Lindl.) Lindl.; 38259	×			×			×
Platanthera nivea (Nutt.) Luer [Habenaria nivea (Nutt.) Spreng.]; Rare; 38895 (photograph)		×					
Polystachya concreta (Jacq.) Garay & H.R. Sweet; Rare; 38287 (photographs)	Xc			×			
Prosthechea cochleata (L.) W.E. Higgins; Rare; 38896 (photograph)				×			
Pteroglossaspis ecristata (Fernald) Rolfe; Rare; 39237 (photographs)		×					
Sacoila lanceolata (Aubl.) Garay var. lanceolata; Rare; 38766		×					×
Sacoila lanceolata (Aubl.) Garay var. paludicola (Luer) Sauleda et al.; Rare ; 39694 (photograph)				×			
Spiranthes lacera (Raf.) Raf. [Spiranthes eatonii Ames ex P.M. Br].; 38661		×					
Spiranthes odorata (Nutt.) Lindl.; 38232	×			×			

Spiranthes praecox (Waleo) 5. Watson; 38662 Nation Nation Nation Nation Nation Nation Nation Nation Nation; 38662 Nation; 38662 Nation; 38651 Nation; 38651 Nation; 38651 Nation; 3877 Nation Nati	raine ypr	Marsn Aq-rud	Kud
X			
XXr			
X			
X	×	Xr	×
X			
X			
sis (Elliott) x x x x x x x x x x x x x			
Agre; 39277 Agre; 4927 A		×	
X			
## Agre; 39277			
### X			
X			
X			×
89255 X X 89255 X X X X/X 18 X X/X 19 X X/X 19 X X/X 10 X X/X 10 X X/X 10 X X/X 10 X X/X 11 X X/X 11 X X/X 12 X X/X 13 X X/X 14 X X/X 15 X X/X 16 X X/X 17 X X/X 18 X X/X 18 X X/X 18 X X/X 18 X X/X 19 X		×	
39255 X X X X X X X X X X X X X X X X X X			×
39255 X X X X X X X X X X X X X X X X X X			×
Ilred; Rare; 39255			
X			
32 Curtis]; 38218 curtis]; 38416 R. Schweinf; FLEPPC II; 38780 R. C.A. Clark subso, fusiforme X. X			
32 Curtis]; 382 18 asey; 39416 & Schweinf; FLEPPC II; 38780 & C.A. Clark subso, fusiforme X X X X X X X X X X X X X			
32 Curtis]; 38218 asey; 39416 A: X, X' X, X' X, X' X X A: X X			×
32 Curtis]; 38218 sasey; 39416 X. XX X. XX X. XX S. Schweinf; FLEPPC II; 38780 & C.A. Clark subso, fusiforme X. XX X XX X XX X XX X XX X X XX X X XX X X XX X X X XX X X X XX X			×
32 Curtis]; 38218 asey; 39416 X; XX' X X S. Schweinf; FLEPPC II; 38780 & C.A. Clark subso, fusiforme X X X X X X X X X X X X X X X X X X X X X X X X X X X			×
Curtis]; 38218 asey; 39416 X,X' X, X X X X X S. Schweinf; FLEPPC II; 38780 & C.A. Clark subso, fusiforme X X X X X X X X X X X X X X X X X X X X X X X X X X X X X			×
Curtis]; 38218 'asey; 39416 'x			×
Asey; 39416			×
.8. Schweinf.; FLEPPC II; 38780 8. C.A. Clark subsp. fusiforme X. X. X.			
.8. Schweinf.; FLEPPC II; 38780 & C.A. Clark subsp. fusiforme			
. & Schweinf.; FLEPPC II; 38780 & C.A. Clark subso. fusiforme			×
& C.A. Clark subsp. fusiforme			×
<u>-</u>			
Dichanthelium aciculare (Desv. ex Poir.) Gould & C.A. Clark subsp. neuranthum (Griseb.) Freckmann & Lelong; Rare; 38727			×

	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Dichanthelium commutatum (Schult.) Gould; 38004	X,Xpf			×			×
Dichanthelium dichotomum (L.) Gould subsp. roanokense (Ashe) Freckmann & Lelong; 38133		X,Xr		×	×		
Dichanthelium dichotomum (L.) Gould subsp. nitidum (Lam.) Freckmann & Lelong; Rare; 38746		×					
Dichanthelium ensifolium (Baldwin ex Elliott) Gould var. ensifolium; Rare; 38313		×					
Dichanthelium ensifolium (Baldwin ex Elliott) Gould var. unciphyllum (Trin.) B.F. Hansen & Wunderlin; Rare; 38502		×					
Dichanthelium erectifolium (Nash) Gould & C.A. Clark; 38314		X,X ^c ,Xp	×	×			
Dichanthelium laxiflorum (Lam.) Gould; Rare; 38005		×					
Dichanthelium ovale (Elliott) Gould & C.A. Clark; Rare; 38541		×					×
Dichanthelium portoricense (Desv. ex Ham.) B.F. Hansen & Wunderlin; 38315		×					
Dichanthelium strigosum (Muhl. ex Elliott) Freckmann var. glabrescens (Griseb.) Freckmann; Rare; 38558		×					
*Digitaria bicornis (Lam.) Roem. & Schult. ex Loudon; Rare; 38559							×
Digitaria ciliaris (Retz.) Koeler var. ciliaris; 38923				×		×	×
Digitaria filiformis (L.) Koeler; Rare; 39279							×
*Digitaria longiflora (Retz.) Pers.; 39040		×				X,Xr	×
Digitaria serotina (Walter) Michx.; Rare; 38134							×
*Echinochloa colona (L.) Link; Rare ; 38782		mXI		×			×
*Echinochloa crus-galli (L.) P. Beauv.; Rare; 39517							×
¤Echinochloa paludigena Wiegand; 38006			×	×	×	×	
Echinochloa walteri (Pursh) A. Heller; Rare; 38641			×	×	×	×	×
*Eleusine indica (L.) Gaertn.; 38783						×	×
Elionurus tripsacoides Humb. & Bonpl. ex Willd.; Rare; 39280		X,Xr					
*Eragrostis amabilis (L.) Wight & Arn. ex Hook. & Arn.; Rare; 39024							×
*Eragrostis atrovirens (Desf.) Trin. ex Steud.; 38400		×		x,x			×
*Eragrostis ciliaris (L.) R. Br. var. ciliaris; 38135							×
*Eragrostis cumingii Steud.; Rare; 40098							×
Eragrostis elliottii S. Watson; 38263		X,Xr					
*Eragrostis gangetica (Roxb.) Steud.; 38362							×
Eragrostis hypnoides (Lam.) Britton et al.; Rare; 39808			×				
*Eragrostis scaligera Salzm. ex Steud.; 39168							×
Eragrostis virginica (Zuccagni) Steud. [Eragrostis refracta Scribn.]; Rare; 39128							×

	APPENDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
*Eremochloa ophiuroides (Munro) Hack.; Rare; 38505							×
Eriochloa michauxii (Poir.) Hitchc. var. michauxii; Rare; 38937	X ^{pf} (in opening)	×					
Eustachys glauca Chapm.; 38711		X,X ^c					×
Eustachys petraea (Sw.) Desv.; 38076		Xr				×r	×
Gymnopogon chapmanianus Hitchc.; Rare; 39467		X,Xr					×
*Hemarthria altissima (Poir.) Stapf & C.E. Hubb.; Rare; FLEPPC II; 39041							×
*Hymenachne amplexicaulis (Rudge) Nees; FLEPPC I; 38560		×		x,x	×	x,x	×
*Imperata cylindrica (L.) P. Beauv.; Rare; FLEPPC I; 38543		×					
Leersia hexandra Sw; 38561		X,X	×		×	×	×
Leptochloa fusca (L.) Kunth subsp. fascicularis (Lam.) N. Snow; Rare; 38748			Xr				
Luziola fluitans (Michx.) Terrell & H. Rob.; 39025					×		×
*Melinis repens (Willd.) Zizka [Rhynchelytrum repens (Willd.) C.E. Hubb.]; FLEPPC I; 38221							×
Muhlenbergia capillaris (Lam.) Trin.; 37957		X,X ^c ,XP,X ^r	×				
Oplismenus hirtellus (L.) P. Beauv. sensu lato; Rare; 38462	\overline{X} bf						
Panicum anceps Michx. [Coleataenia anceps (Michx.) Soreng]; 38784							×
Panicum dichotomiflorum Michx. var. bartowense (Scribn. & Merr.) Fernald; 39368		×	×	×			×
Panicum dichotomiflorum Michx. var. dichotomiflorum; 38007			×				×
Panicum hemitomon Schult.; 38642	×		×	×	×	×	
Panicum hians Elliott [Steinchisma hians (Elliott) Nash]; 38316		X,XP					×
*Panicum laxum Sw. [Steinchisma laxum (Sw.) Zuloaga]; Rare; 39428		×					×
*Panicum repens L.; FLEPPC I; 38785					×	×	×
Panicum rigidulum Bosc ex Nees [Coleataenia rigidula (Bosc ex Nees) LeBlond]; 38044	×	X,Xr	×	×	×	×	×
Panicum tenerum Beyr. ex Trin. [Coleataenia tenera (Beyrich ex Trin.) Soreng]; 39256		×,×	×	×			X(flooded)
Panicum virgatum L.; Rare; 39282		×	×				
Paspalidium geminatum (Forssk.) Stapf; 38222			×	×	×		д-удХ
*Paspalum acuminatum Raddi; 39081						×	×
Paspalum caespitosum Flüggé; 38264							×
Paspalum conjugatum Bergius; 38401		Xr		×			×
Paspalum distichum L.; 39027							×
Paspalum floridanum Michx.; Rare; 38122		×					×

	APPENDIX CONT	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Paspalum laeve Michx.; Rare; 38730		X,Xr					×
Paspalum monostachyum Vasey ex Chapm.; 39048		X,X ^c	×				
*Paspalum nicorae Parodi; Rare; 39051							×
*Paspalum notatum Flüggé; 38938							×
Paspalum plicatulum Michx.; Rare; 39471			×				×
Paspalum praecox Walter; Rare; 38731		×					
Paspalum repens Bergius; 38852				×		×	X(flooded)
Paspalum setaceum Michx. var. ciliatifolium (Michx.) Vasey (atypical material); Rare; 38648							×
Paspalum setaceum Michx. var. longipedunculatum (Leconte) Alph. Wood; Rare; 39032		X'X					
Paspalum setaceum Michx. var. stramineum (Nash) D.J. Banks; 38753		×					×
Paspalum setaceum Michx. var. supinum (Bosc ex Poir.) Trin.; Rare; 39085		×					
*Paspalum urvillei Steud.; 38138			×				×
Paspalum vaginatum Sw.; Rare; 38139							×
*Pennisetum polystachion (L.) Schult.; FLEPPC II; 39356							×
Phragmites australis (Cav.) Trin. ex Steud. sensu lato; 39371		Xc	X,X ^c			×	×
*Rottboellia cochinchinensis (Lour.) Clayton; Rare; 39516							×
Saccharum giganteum (Walter) Pers.; 38364		X,X ^c	×	×	×		
*Sacciolepis indica (L.) Chase; 38329		×		×			×
Sacciolepis striata (L.) Nash; 38564			×		×		×
¤Schizachyrium rhizomatum (Swallen) Gould; Rare; 39258		×					
Schizachyrium scoparium (Michx.) Nash var. scoparium; Rare; 39283		X,Xr					
Setaria magna Griseb.; Rare; 39995					×		
Setaria parviflora (Poir.) Kerguélen; 38565		×	×	×		×	×
Sorghastrum secundum (Elliott) Nash; 39427		×					
*Sorghum bicolor (L.) Moench; Rare; 38566							×
Spartina bakeri Merr; 38509			×		×		
*Sporobolus indicus (L.) R. Br. [Sporobolus indicus (L.) R. Br. var. indicus]; Rare; 40099							×
*Sporobolus jacquemontii Kunth [Sporobolus indicus (L.) R. Br. var. pyramidalis (P. Beauv.) Veldkamp]; FLEPPC I; 38788							X'X
Sporobolus junceus (P. Beauv.) Kunth; Rare; 38754		×					
Stenotaphrum secundatum (Walter) Kuntze; W.S. Judd 6708; 1992 (UF)							
Tripsacum dactyloides (L.) L.; Rare; 38926		×					

	APPENDIA CONT	x cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
*Urochloa arrecta (Hack. ex T. Durand & Schinz) Morrone & Zuloaga; 38265						×	×
*Urochloa distachya (L.) T.Q. Nguyen [Urochloa subquadripara (Trin.) R.D. Webster]; Rare; 38508							×
*Urochloa maxima (Jacq.) R.D. Webster [Panicum maximum Jacq.]; Rare; FLEPPC II; 39080							×
*Urochloa mutica (Forssk.) T.Q. Nguyen; Rare; FLEPPC I; 39361		X ^c ,X ^r					
*Urochloa piligera (F. Muell. ex Benth.) R.D. Webster; 39217							×
*Urochloa ramosa (L.) T.Q. Nguyen; G. Wilder, A. Webb, L. Berthelsen & J. Roche 30110; 2009 (SWF)							
Zizaniopsis miliacea (Michx.) Döll & Asch.; 38712				mX,X ^m	×		
PONTEDERIACEAE (3, 3)							
*Eichhornia crassipes (Mart.) Solms; FLEPPC I; 38147						×	
*Heteranthera limosa (Sw.) Willd; 38275							×
Pontederia cordata L. (blue-flowered forma plus a primarily white-flowered forma); 38276	X 'X' X	X′5X′X	X,Xr	mX,X	×	×	×
POTAMOGETONACEAE (1, 1)							
Potamogeton illinoensis Morong; Anonymous s.n.; 1977 (CSS)							
SMILACACEAE (1, 4)							
Smilax auriculata Walter; Rare; 38720							×
Smilax bona-nox L.; 39825	X,Xr						
Smilax laurifolia L.; 38299	X	эΧ'Х	×	X,X ^m		×	
Smilax tamnoides L.; Rare; 38721		X,Xr		Xr			
TYPHACEAE (1, 2)							
Typha domingensis Pers.; 21246				Χm	×	×	×
Typha latifolia L.; 38742					×	×	
XYRIDACEAE (1, 6)							
Xyris ambigua Beyr. ex Kunth; 37928		×					
Xyris brevifolia Michx.; Rare; 38663		X'X					×
Xyris caroliniana Walter; 39526		×					
Xyris elliottii Chapm.; 38552		×	×				
Xyris flabelliformis Kral; Rare; 38277		×					
Xyris jupicai Rich.; 38865		×				×	

	APPENDIX cont.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
DICOTYLE	DICOTYLEDONS SENSU LATO (256, 427; 259, 434)	TO (256, 427; 25	9, 434)				
ACANTHACEAE (5, 7)							
Dicliptera sexangularis (L.) Juss.; Rare; 38666							XI
Dyschoriste angusta (A. Gray) Small; 38407		×					×
Dyschoriste oblongifolia (Michx.) Kuntze (purple-flowered forma plus a white-flowered forma); Rare; 38442		×					
¤Elytraria caroliniensis (J.F. Gmel.) Pers. var. angustifolia (Fernald) S.F. Blake; Rare; 38605		X,X'					
Justicia angusta (Chapm.) Small; 38818			×		×		Xpf-c,Xpf-h
*Ruellia blechum L. [Blechum pyramidatum (Lam.) Urb.]; FLEPPC II; 38366							×
¤Ruellia succulenta Small; Rare; 38797		X,Xr					
ADOXACEAE (1, 1)							
Sambucus nigra L. [Sambucus canadensis L.]; 38014	X 'ydX'X		×	×	\overline{X}		×
AMARANTHACEAE (5, 8; 5, 9)							
*Alternanthera philoxeroides (Mart.) Griseb.; Rare; FLEPPC II; 38802					×	X	
*Alternanthera sessilis (L.) R. Br. ex DC.; 38684			×	Xr		×	
Amaranthus australis (A. Gray) J.D. Sauer; 38804				×		×	
*Amaranthus blitum L; 38367							×
*Amaranthus spinosus L.; M.J. Barry s.n.; no date (CSS)							
*Amaranthus viridis L.; Rare; 38990							×
Chenopodium berlandieri Moq.; Rare; 39749							×
*Gomphrena serrata L.; Rare; 38015							×
Iresine diffusa Humb. & Bonpl. ex Willd.; 38576				×		Xr	×
ANACARDIACEAE (3, 3)							
Rhus copallinum L.; 38408	ydΧ	X,Xr					
*Schinus terebinthifolia Raddi; FLEPPC I; 38095	X ′Xbt′ X	X,X ^c ,X ^r	Xc	X,Xr	×	×	×
Toxicodendron radicans (L.) Kuntze, 38301	X,X ^c ,Xpf	X,X ^c ,X ^r		X,X ^m			
ANNONACEAE (2, 2)							
Annona glabra L.; 38016	X ′ _{>} X	X,X ^c ,X ^r	X'Xc	wX,X	×	×	×
Asimina reticulata Shuttlew. ex Chapm.; 38608		X,Xr					X'X
APIACEAE (4, 6)							
Cicuta maculata L; 38848				×	×		
Eryngium aromaticum Baldwin; 39239		X,X'					
Eryngium baldwinii Spreng.; 38819		×					

	APPENDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Eryngium yuccifolium Michx; 38150		×					
Ptilimnium capillaceum (Michx.) Raf., 38151	X		×	x,X ^m		×	×
Tiedemannia filiformis (Walter) Feist & S.R. Downie subsp. filiformis [Oxypolis filiformis (Walter) Britton subsp. filiformis]; 38096		λ,Χ.č	×	×	×		
APOCYNACEAE (3, 6)							
*Asclepias curassavica L.; Rare ; 38338							×
Asclepias incarnata L.; 39005	×r		×				
Asclepias lanceolata Walter; 38823		X,X ^c	×				
Asclepias longifolia Michx.; 38847		dX,X					
Cynanchum sp. sensu lato (sterile); Rare; 39621	x,x	×		×			
Funastrum clausum (Jacq.) Schltr. [Sarcostemma clausum (Jacq.) Roem. & Schult.]; 38368		X,X ^c ,XP,X ^r	Xc	X,X ^m	×	×	×
AQUIFOLIACEAE (1, 2)							
llex cassine L.; 38017	X 'Xc'XL' X	X,X ^c	×	mX,X		X,Xr	
llex glabra (L.) A. Gray; 38331		×					
ARALIACEAE (2, 4)							
Centella asiatica (L.) Urb.; 38668	X,Xpf	X,X ^c	X,X ^c	X,Xr	×	×	×
Hydrocotyle umbellata L.; 38522		×	×	X,Xr	×	×	×
Hydrocotyle verticillata Thunb. var. triradiata (A. Rich.) Fernald; Rare; 38820				×			
Hydrocotyle verticillata Thunb. var. verticillata; 38821	×		Xr	×		×	X
ASTERACEAE (49, 73; 49, 74)							
Acmella oppositifolia (Lam.) R. K. Jansen; Rare; 38182		×	×	×			
*Ageratum conyzoides L.; 38019						×	×
Ambrosia artemisiifolia L.; 38302	Хрб	Xr				×	×
Baccharis glomeruliflora Pers.; 38410		X,X ^c ,X ^r		×	×	Xr	
Baccharis halimifolia L.; 38303		X,Xr			×		×
Bidens alba (L.) DC; 38183		X,Xr		×		X,Xr	×
Bidens laevis (L.) Britton et al.; Rare; 39476				ΜX			X(flooded)
¤Bigelowia nudata (Michx.) DC. subsp. australis L.C. Anderson; 39529		X,Xr					
Boltonia diffusa Elliott; 38152		X,X ^c ,X ^p	X,X'	X,Xr	×		×
Carphephorus corymbosus (Nutt.) Torr. & A. Gray; Rare; 39531		×					
¤Carphephorus odoratissimus (J.F. Gmel.) H. Hebert var. subtropicanus (DeLaney et al.) Wunderlin & B.F. Hansen; 38184		×					
Carphephorus paniculatus (J.F. Gmel.) H. Hebert; Rare; 39240		×					

	APPENDIX cont.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Chaptalia tomentosa Vent.; Rare; 38609		×					
Chromolaena odorata (L.) R.M. King & H. Rob.; Rare; 39925							×
Cirsium horridulum Michx. (pink-flowered forma plus a white-flowered forma); 38611		X,X ^c ,X′					
Cirsium nuttallii DC; 38021	×	×	X,Xaq	mX		×	×
Conoclinium coelestinum (L.) DC. (blue-flowered forma plus a white-flowered forma); Rare; 38992	Xpf	Xr				×	
Conyza canadensis (L.) Cronquist; 38332							×
Coreopsis leavenworthii Torr. & A. Gray; 37984		X,X°,Xr					×
*Crassocephalum crepidioides (Benth.) S. Moore; FLEPPC II; 39438				ωX		×	×
*Cyanthillium cinereum (L.) H. Rob. [Vernonia cinerea (L.) Less.]; 38185		×					×
Eclipta prostrata (L.) L.; 38577	×			×		x,x	×
Elephantopus elatus Bertol.; 38473		X,Xr					
*Emilia fosbergii Nicolson; 37934		X,Xr		×		X,Xr	×
*Emilia sonchifolia (L.) DC; Rare; 38186				ωX′X			×
Erechtites hieraciifolius (L.) Raf. ex DC.; 38578		×		×	×	x,x	×
Erigeron quercifolius Poir.; 38187		Xr	X,X ^c	X,Xr		×	×
Erigeron vernus (L.) Torr. & A. Gray; 38444		X,Xr					
Eupatorium capillifolium (Lam.) Small ex Porter & Britton; 38412	X,XPf	X,Xr	×	x,X ^m	×	X,Xr	×
Eupatorium leptophyllum DC.;38413		×	×	×			×
¤Eupatorium mikanioides Chapm.; 38973		×	×				X,Xpf-c
Eupatorium mohrii Greene; 38671		×					×
Euthamia caroliniana (L.) Greene ex Porter & Britton [Euthamia minor (Michx.) Greene]; 38101		X,XP	×				×
Flaveria linearis Lag.; Rare; 38612		X,X ^c					
Gamochaeta antillana (Urb.) Anderb. [Gamochaeta falcata (Lam.) Cabrera]; 38686			X'Xc	×		X,Xr	×
*Gamochaeta pensylvanica (Willd.) Cabrera; 38334						×	×
Helenium pinnatifidum (Schwein. ex Nutt.) Rydb.; 38613		X,Xr					×
Helianthus agrestis Pollard; 38768		×r	×				×
Heterotheca subaxillaris (Lam.) Britton & Rusby; Rare; 39224							×
Hieracium megacephalon Nash; Rare; 38769		×					
Iva microcephala Nutt; 39451		×					X(flooded)
Lactuca graminifolia Michx; Rare; 38806						×	
Liatris garberi A. Gray; Rare; 39006		X,Xr					

	APPENDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Liatris gracilis Pursh; Rare; 39107		X,X'					Ī
Liatris tenuifolia Nutt.; 39475		×					
Lygodesmia aphylla (Nutt.) DC.; Rare; 38770		X,Xr					
Melanthera nivea (L.) Small; 38414		X,Xr					×
Mikania scandens (L.) Willd.; 37936	×	X,X ^c ,X ^r	×	X,X ^m	×	X,Xr	
Packera glabella (Poir.) C. Jeffrey; Rare; 38672							×
Pectis glaucescens (Cass.) D.J. Keil; 38523							×
Pectis prostrata Cav.; 38524							×
Pityopsis graminifolia (Michx.) Nutt.; 38614		X,X					
Pluchea baccharis (Mill.) Pruski [Pluchea rosea R.K. Godfrey]; 38615		X,X ^c ,X ^r	X,X ^c	X,Xr	×	×	
*Pluchea carolinensis (Jacq.) G. Don; Rare; 39532				×			
Pluchea odorata (L.) Cass.; 38022		x,x'	×	x,x	×	×	×
*Pseudelephantopus spicatus (B. Juss. ex Aubl.) C.F. Baker; 38688							×
Pterocaulon pycnostachyum (Michx.) Elliott; 38190		×					×
Rudbeckia hirta L.; 38616		×					
Solidago fistulosa Mill.; 38165		X,Xr					×
Solidago leavenworthii Torr. & A. Gray; Rare; 39447							×
Solidago odora Aiton; Rare; 38474							X
Solidago sempervirens L.; 38617		×					
Solidago stricta Aiton; W.S. Judd 5898; 1989 (CSS)							
*Sonchus asper (L.) Hill; Rare; 38673						Xr	
*Sonchus oleraceus L.; Rare; 38335				×		×	×
*Sphagneticola trilobata (L.) Pruski [Wedelia trilobata (L.) Hitchc.]; FLEPPC II; 38415							×
Symphyotrichum carolinianum (Walter) Wunderlin & B.F. Hansen; 38579	X '> X '	X,X ^c	mX,X	×	×	×	×
Symphyotrichum dumosum (L.) G.L. Nesom; 38370		×					
Symphyotrichum elliottii (Torr. & A. Gray) G.L. Nesom; 38304		×	×		×	x,xr	×
Symphyotrichum simmondsii (Small) G.L. Nesom; 38526		X,Xr			×		
Symphyotrichum subulatum (Michx.) G.L. Nesom sensu lato; Rare; 38580						×	
*Tithonia diversifolia (Hemsl.) A. Gray; Rare; 38336							×
Vernonia blodgettii Small; Rare; 38824		×					
*Youngia japonica (L.) DC.; 38337				×			Ī
BIGNONIACEAE (1, 1)							
Campsis radicans (L.) Seemann; 38416							×

	APPENDIX cont.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
BORAGINACEAE (2, 2)							
Euploca polyphylla (Lehm.) J.I.M. Melo & Semir [Heliotropium polyphyllum Lehm.]; 38618		X,X ^c ,XP,X ^r	×				×
Heliotropium angiospermum Murray; 38371		×					×
BRASSICACEAE (4, 4)							
Cardamine pensylvanica Muhl. ex Willd. (possibly Cardamine flexuosa); 38339				χw			×
Descurainia pinnata (Walter) Britton; 38527							×
Lepidium virginicum L.; 38372							×
Rorippa teres (Michx.) Stuckey; 38619				×	×	×	×
BURSERACEAE (1, 1)							
Bursera simaruba (L.) Sarg.; Rare; 38234	×						
CAMPANULACEAE (2, 5)							
¤Campanula floridana S. Watson ex A. Gray; Rare; 38674		Xr					
Lobelia feayana A. Gray; 38199		X,X'					×
Lobelia glandulosa Walter; 38105		X,X°,X'					×
¤Lobelia homophylla E. Wimm.; 38200							×
Lobelia paludosa Nutt.; 38831		×					
CANNABACEAE (1, 1)							
Celtis laevigata Willd.; 38260	X,Xr						
CARICACEAE (1, 1)							
Carica papaya L.; Rare; 38235	×						
CARYOPHYLLACEAE (2, 2)							
*Drymaria cordata (L.) Willd. ex Schult.; 38236							×
Stipulicida setacea Michx. var. lacerata C.W. James; 39533		×					×
CERATOPHYLLACEAE (1,1)							
Ceratophyllum demersum L.; Rare; 39192					×		
CHRYSOBALANACEAE (2, 2)							
Chrysobalanus icaco L.; 38373	×	X,X ^c ,X ^r		X,Xr			×
Geobalanus oblongifolius (Michx.) Small [Licania michauxii Prance]; Rare; 38771		×					×
CISTACEAE (2, 2)							
Crocanthemum corymbosum (Michx.) Britton [Helianthemum corymbosum Michx.]; Rare; 38772							×
Lechea torreyi (Chapm.) Legg. ex Britton; 39108		×					

	APPENDIA CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
CLUSIACEAE (1, 9)							
Hypericum brachyphyllum (Spach) Steud.; Rare; 39717		×	×				
Hypericum cistifolium Lam.; 38103	yαX	×					×
Hypericum fasciculatum Lam.; 38155		X,X ^c ,X ^r	×	X,Xr			
Hypericum gentianoides (L.) Britton et al.; Rare; 39536		×	×				
Hypericum hypericoides (L.) Crantz; 37940	X,Xpf	Xr					
Hypericum mutilum L.; 38156			X,Xr			×	×
Hypericum myrtifolium Lam.; Rare; 38481		X,XP					
Hypericum tenuifolium Pursh [Hypericum reductum (Svenson) W.P. Adams]; Rare; 38383		×					
Hypericum tetrapetalum Lam.; 38422		X,Xr					×
COMBRETACEAE (1, 2)							
*Terminalia catappa L.; Rare; FLEPPC II; 39263							×
*Terminalia muelleri Benth.; FLEPPC II; Rare; 38305	×						
CONVOLVULACEAE (4, 7; 4, 8)							
Cuscuta compacta Juss. ex Choisy; Rare; 39296	X					Xr	
Cuscuta indecora Choisy; G.F. Guala 666; 1987 (UF)							
Dichondra carolinensis Michx.; Rare; 38475							×
Evolvulus sericeus Sw.; 38935		×					
Ipomoea alba L; 38374				×		×	
Ipomoea hederifolia L.; Rare; 38024		Xr					
Ipomoea sagittata Poir.; 38825	Хрб	X,X ^c	×	ьеХ'Х	×		
*Ipomoea triloba L.; 38375							×
CORNACEAE (1, 1)							
Cornus foemina Mill.; 38528	X ′> X ′						×
CUCURBITACEAE (2, 2)							
Melothria pendula L; 38191		X,Xr	×	X,Ym,Xr			×
*Momordica charantia L.; FLEPPC II; 38306				×			×
DROSERACEAE (1, 2)							
Drosera brevifolia Pursh; 38445		×					
Drosera capillaris Poir.; 38340		×					×
EBENACEAE (1, 1)							
Diospyros virginiana L.; Rare; 38417		×					

	APPENDIX cont.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
ERICACEAE (3, 4)							
Gaylussacia dumosa (Andrews) Torr. & A. Gray; Rare; 38446		×					
Lyonia fruticosa (Michx.) G.S. Torr.; 38192		X,Xr					
Vaccinium darrowii Camp; Rare; 38476		X,Xr					
Vaccinium myrsinites Lam.; 38341		×					
EUPHORBIACEAE (7, 21)							
*Acalypha arvensis Poepp.; Rare; 38237							×
Acalypha gracilens A. Gray; Rare ; 37979		×					×
Caperonia castaneifolia (L.) A. StHil.; Rare; 38418					×	×	
*Caperonia palustris (L.) A. StHil.; Rare; 38846							×
Chamaesyce blodgettii (Engelm. ex Hitchc.) Small; 38583							×
Chamaesyce hirta (L.) Millsp.; 38584						×	×
Chamaesyce hypericifolia (L.) Millsp.; 38153							×
Chamaesyce hyssopifolia (L.) Small; 38807		Xr					
*Chamaesyce lasiocarpa (Klotzsch) Arthur; Rare; 39480							×
Chamaesyce maculata (L.) Small; Rare; 39926							×
*Chamaesyce mendezii (Boiss.) Millsp.; Rare; 38529							×
Chamaesyce ophthalmica (Pers.) D.G. Burch; Rare; 39008							×
Chamaesyce thymifolia (L.) Millsp.; 38376							×
Croton glandulosus L. var. septentrionalis Müll. Arg. [Croton glandulosus L. var. glandulosus]; 38675							Χ'Χ
*Euphorbia graminea Jacq.; Rare; 38377							×
¤Euphorbia inundata Torr. ex Chapm. var. garrettii E.L. Bridges & Orzell ; Rare; 38809		X					
¤Euphorbia polyphylla Engelm. ex Chapm.; 39534		×					
Poinsettia cyathophora (Murray) Bartl.; Rare; 38342							×
Poinsettia heterophylla (L.) Klotzsch & Garcke ex Klotzsch; Rare; 38381							×
Stillingia aquatica Chapm. (forma with green spikes and fruits plus forma with reddish spikes and fruits); 38621		X,X ^c ,X ^r	×	X,X'			×
Stillingia sylvatica L.; 38497		×					
FABACEAE (23, 37; 24, 38)							
*Abrus precatorius L; Rare; FLEPPC I; 38498							×I
*Acacia auriculiformis A. Cunn. ex Benth.; Rare; FLEPPC I; 38477		×					×I
Aeschynomene americana L.; 38622		×					×

	APPEINDIX CON	K cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
*Aeschynomene indica L.; Rare; 39535						×	
*Albizia lebbeck (L.) Benth.; Rare; FLEPPC I; 40100							×
*Alysicarpus ovalifolius (Schumach. & Thonn.) J. Léonard; Rare; 39185							×
*Alysicarpus vaginalis (L.) DC.; Rare; 38585							×
Apios americana Medik.; 38239	×			×			
Centrosema virginianum (L.) Benth.; 38826		×					
Chamaecrista fasciculata (Michx.) Greene; Rare; 39010							×
Chamaecrista nictitans (L.) Moench var. aspera (Muhl. ex Elliott) H.S. Irwin & Barneby; 38623		×					×
Chamaecrista nictitans (L.) Moench var. nictitans; Rare; 39505		Xr					×
*Crotalaria lanceolata E. Mey; Rare; 39251		×					×
*Crotalaria pallida Aiton; 38382		Хад					×
Crotalaria rotundifolia J.F. Gmel.; 38624	Хр	X,Xr					×
Dalbergia ecastaphyllum (L.) Taub.; Rare; 38478		Xr					
Dalea carnea (Michx.) Poir. var. carnea; 39114		×					
*Desmodium incanum DC.; 38479				×		×	×
Desmodium paniculatum (L.) DC.; Rare; 39265		X,Xr					
*Desmodium triflorum (L.) DC.; 38195							×
Erythrina herbacea L.; R. Bantz s.n.; 1978 (CSS)							
Galactia elliottii Nutt.; Rare; 39001		Xr					
Galactia purshii Desv. [Galactia michauxii A.R. Franck]; Rare; 39252		×					
Galactia volubilis (L.) Britton; 39364		×				×	X
*Indigofera hirsuta L.; 38419							×
*Leucaena leucocephala (Lam.) de Wit; Rare; FLEPPC II; 38343							×
*Macroptilium lathyroides (L.) Urb.; FLEPPC II; 38480	Хр	X,Xr		×			×
Mimosa quadrivalvis L. var. floridana (Chapm.) Barneby; Rare; 39597							×
Mimosa strigillosa Torr. & A. Gray; Rare; 38692							×
*Mucuna pruriens (L.) DC.; Rare; 38433		Xr					
Piscidia piscipula (L.) Sarg.; Rare; 38345		×					
Senna ligustrina (L.) H.S. Irwin & Barneby; Rare; 38025							×
Senna obtusifolia (L.) H.S. Irwin & Barneby; Rare; 38240							×
*Senna occidentalis (L.) Link; Rare; 39149							×
*Senna pendula (Humb. & Bonpl. ex Willd.) H.S. Irwin & Barneby; FLEPPC I; 38586		×	×		×	×	

	APPENDIX CONT.	x cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Sesbania herbacea (Mill.) McVaugh; 38827					×	×	×
Vicia acutifolia Elliott; 38344				ωX	×	X,Xr	×
Vigna Iuteola (Jacq.) Benth.; 38241		X,X ^c	×c	×	×	×	×
FAGACEAE (1, 3)							
Quercus laurifolia Michx.; 38421	X ,X', X	X,X°,X'		×	×		×
Quercus minima (Sarg.) Small; 38094		×					
Quercus virginiana Mill.; 38587	X,Xpf	×					×
GENTIANACEAE (2, 6)							
Bartonia virginica (L.) Britton et al.; Rare; 38676		×					
Sabatia brevifolia Raf.; 38196		×					
Sabatia calycina (Lam.) A. Heller; 38346	X ^c ,X ^r			×			
Sabatia decandra (Walter) R.M. Harper [Sabatia bartramii Wilbur]; Rare; 38828		ΣX'X	×	×			Хьұ-с
Sabatia grandiflora (A. Gray) Small; 38447		×	×				
Sabatia stellaris Pursh; 38197		Xr					×
GERANIACEAE (1, 1)							
Geranium carolinianum L.; Rare; 38677						×	×
HALORAGACEAE (2, 3)							
?Myriophyllum sp. (sterile); Rare; 39687							X(flooded)
Proserpinaca palustris L.; 37985	×	X,X ^c ,X ^r	×	×	×	×	×
Proserpinaca pectinata Lam.; 39115		X,X ^c ,X ^r	×				×
HYDROLEACEAE (1, 1)							
Hydrolea corymbosa J. Macbr. ex Elliott; 38102		×	×		×		
ITEACEAE (1, 1)							
Itea virginica L.; 38026	X,X ^c			×			
LAMIACEAE (10, 10)							
Callicarpa americana L.; 38104	X,XPf	X,Xr					×
*Cantinoa americana (Aubl.) Harley & J.F.B. Pastore [Hyptis spicigera Lam.]; 38589		×					×
*Condea verticillata (Jacq.) Harley & J.F.B. Pastore [Hyptis verticillata Jacq.]; Rare; 38531							×
Hyptis alata (Raf.) Shinners; 38448	X ′ _{jd} X	X'Xc'Xı	x,X ^m	×	×		
Lycopus rubellus Moench; 38027		X,X ^c	Xc	X,Xr			
*Mesosphaerum pectinatum (L.) Kuntze [Hyptis pectinata (L.) Poit.]; Rare; 39187		X,X					

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	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Physostegia purpurea (Walter) S.F. Blake; 38625		×					
Piloblephis rigida (W. Bartram ex Benth.) Raf.; 38532		X,Xr					
Scutellaria integrifolia L.; Rare; 39599							×
Teucrium canadense L.; 38845		ьеХ					
LAURACEAE (2, 2)							
Cassytha filiformis L.; 38028		X,X ^c	×				
Persea palustris (Raf.) Sarg.; 38423	X ′>X′X	X,Xc,Xr	×	×	×	×	
LENTIBULARIACEAE (2, 12)							
Pinguicula caerulea Walter; Rare; 38627		×					
Pinguicula pumila Michx. (white-flowered, blue-flowered, and yellow-flowered formas); 38628		X,X ^c					X,Xpf-c
Utricularia cornuta Michx.; 38829			×	X,X			×
Utricularia foliosa L.; 38198		×	×	×	×	×	X(flooded)
Utricularia gibba L.; 38773					×	×	
Utricularia inflata Walter; Rare; 38702						×	
Utricularia juncea Vahl; 39267		X,X					X(flooded)
Utricularia purpurea Walter; 39231		×	×	×	×		X(flooded)
Utricularia radiata Small; 38533			×		×		
Utricularia resupinata B. D. Greene ex Bigelow; Rare; 38678				Xr	×		
Utricularia simulans Pilg.; 39268		X,Xr					
Utricularia subulata L.; 38535		×					×
LINACEAE (1, 2)							
Linum floridanum (Planch.) Trel.; Rare; 38812		×	×				
Linum medium (Planch.) Britton; Rare; 38626		×		×			
LINDERNIACEAE (3, 5)							
Lindernia dubia (L.) Pennell var. anagallidea (Michx.) Cooperr; Rare; 39153							×
Lindernia dubia (L.) Pennell var. dubia; Rare ; 39154							×
Lindernia grandiflora Nutt.; 38161		X,X ^c		X,Xr		×	×
¤Micranthemum glomeratum (Chapm.) Shinners (terrestrial forma plus the submerged-aquatic forma with frequent whorled phyllotaxy); 38162	×			X			×
*Torenia crustacea (L.) Cham. & Schltdl. [Lindernia crustacea (L.) F. Muell.]; 38815		X,Xr					×
LOGANIACEAE (1, 2)							
Mitreola petiolata (J.F. Gmel.) Torr. & A. Gray; 38486		X ^c ,X ^r	×	X,Xr	×	×	×
Mitreola sessilifolia (J.F. Gmel.) G. Don; 39116		X,Xr					

	APPENDIX cont.	X cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
LYTHRACEAE (4, 5)							
Ammannia coccinea Rottb.; Rare; 39481							×
Ammannia latifolia L.; 38029		×	×	×		×	×
*Cuphea carthagenensis (Jacq.) J.F. Macbr.; 39002		×	×			×	×
Lythrum alatum Pursh (pink-flowered forma plus a white-flowered forma); 38813		X,Xr	, X, X,		×	×	X'X
Rotala ramosior (L.) Koehne; 38425		X,Xr					×
MAGNOLIACEAE (1, 1)							
Magnolia virginiana L.; 38030	Xpf	X'Xc	mX,X	×			
MALVACEAE (6, 10)							
Hibiscus coccineus Walter; 38844	×			×	×		
Hibiscus grandiflorus Michx; 38774			X,Xc	×	×	×	
Kosteletzkya pentacarpos (L.) Ledeb. [Kosteletzkya virginica (L.) C. Presl ex A. Gray]; 38590		×	×		×	×	
*Melochia corchorifolia L.; Rare; 39253					×		×
Melochia spicata (L.) Fryxell (purple-flowered forma plus a white-flowered forma); 39190	Xpf	X,Xr	×				×
*Sida cordifolia L.; Rare; 39189							×
Sida rhombifolia L.; 38307		Xr	×			×r	×
Sida ulmifolia Mill. [Sida acuta Burm. f., Sida antillensis Urb.]; Rare; 38591							×
*Urena lobata L.; FLEPPC I; 38308	X ′ _{yd} X′X	X'Xc'Xı	×	×		Xr	×
Waltheria indica L.; 39191		X,Xr					
MELASTOMATACEAE (1, 3)							
Rhexia cubensis Griseb.; Rare; 38776			×				
Rhexia mariana L.; 38592		X,Xr					×
Rhexia nuttallii C.W. James; 38350		×					
MENYANTHACEAE (1, 1; 1, 2)							
Nymphoides aquatica (J.F. Gmel.) Kuntze; Rare; 38242			×		×		
*Nymphoides sp.—possibly Nymphoides peltata (Gmel.) Kuntze; (photograph); S. Stein; 39960. (SWF)							
MORACEAE (2, 3)							
Ficus aurea Nutt.; 38031	X,X ^c ,X', X	X,X ^c	Xc	x,X ^m		×	×
*Ficus microcarpa L. f.; Rare; FLEPPC I; 38385				×			
Morus rubra L.; Rare; 39485	×						

	APPEINDIA CON	A COTIL.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
MYRICACEAE (1, 1)							
Morella cerifera (L.) Small [Myrica cerifera L].; 38426	x ,×	X,X ^c ,X ^r	X,Xc	X,X ^m ,X ^r	×	X,X	×
MYRSINACEAE (3, 4)							
Anagallis minima (L.) E.H.L. Krause; 38489			X,Xr			Xr	×
Anagallis pumila Sw.; Rare; 38455		×r					
Ardisia escallonioides Schiede & Deppe ex Schltdl. & Cham.; Rare; 38244	×						
Myrsine cubana A. DC. [Rapanea punctata (Lam.) Lundell]; 38106	X'Xc'Xpt'Xr' X	X,X ^c ,X ^r		wX,X		×	×
MYRTACEAE (6, 7)							
Eugenia axillaris (Sw.) Willd.; Rare; 38246	×						
*Melaleuca quinquenervia (Cav.) S.T. Blake; FLEPPC I; 38593		x,x'			×		×
Myrcianthes fragrans (Sw.) McVaugh; 38201	×						
*Psidium cattleianum Sabine; Rare; FLEPPC J; 39677	ydX						
*Psidium guajava L.; Rare; FLEPPC l; 39074				×			
*Rhodomyrtus tomentosa (Aiton) Hassk.; Rare; FLEPPC I; 37942		X,Xr		×			×
*Syzygium cumini (L.) Skeels; FLEPPC I; 38487	X,Xpf	X,X ^c ,X ^r		×	×		×
NYMPHAEACEAE (2, 5)							
Nuphar advena (Aiton) Aiton f.; Rare; 38594						×	
Nymphaea elegans Hook.; 39075		X(flooded)	X,Xc	×		×	X(flooded)
Nymphaea jamesoniana Planch.; 37903		(papool))X	X'Xc	×r	×	×	X(flooded)
Nymphaea mexicana Zucc.; Rare; 39232					×		
Nymphaea odorata Sol.; Rare; 39235					×		
OLEACEAE (1, 1)							
Fraxinus caroliniana Mill.; 38247	X ',X'X	Xc		×	×		
ONAGRACEAE (2, 12)							
Ludwigia alata Elliott; Rare; 39379		Χc			×		
Ludwigia curtissii Chapm.; 38451		×	×				×
Ludwigia erecta (L.) H. Hara; 39380							×
Ludwigia leptocarpa (Nutt.) H. Hara; Rare; 39381						×	
Ludwigia linifolia Poir.; Rare; 39571			×				
Ludwigia maritima R.M. Harper; 38680		X,Xr					
Ludwigia microcarpa Michx.; 39722		X,Xr	×			Xr	×
Ludwigia octovalvis (Jacq.) Raven; 38630		×			×	×	×
*Ludwigia peruviana (L.) H. Hara; FLEPPC I; 38595	×	X,X ^c ,XP	×	wX'X	×	X,Xr	×

	APPENDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Ludwigia repens J.R. Forst.; 39382		×	×	×	×	×	×
Ludwigia suffruticosa Walter; Rare ; 38351		ďΧ					
Oenothera simulans (Small) W.L. Wagner & Hoch [Gaura angustifolia Michx.]; 39003		×					×
OROBANCHACEAE (2, 4)							
Agalinis fasciculata (Elliott) Raf.; Rare; 39958		×					
Agalinis harperi Pennell; 38982		×	x,x				
Agalinis linifolia (Nutt.) Britton; Rare; 38839				×			
Buchnera americana L. (blue-flowered forma plus a white-flowered forma); 38256		×					X,Xpf-c
OXALIDACEAE (1, 2)							
Oxalis corniculata L. sensu lato; 38386		×					×
*Oxalis debilis Kunth; Rare ; 38387							×
PAPAVERACEAE (1, 1)							
Argemone mexicana L.; Rare; 39689							×
PASSIFLORACEAE (1, 1)							
Passiflora suberosa L.; 38388	×	×					×
PHYLLANTHACEAE (2, 5)							
*Bischofia javanica Blume; Rare; FLEPPC I; 39264	×						
Phyllanthus caroliniensis Walter; 37939		×					
*Phyllanthus debilis J.G. Klein ex Willd.; Rare; 39225		X,X					×
*Phyllanthus tenellus Roxb.; Rare; 38238							×
*Phyllanthus urinaria L.; 38194		X,Xr					
PHYTOLACCACEAE (2, 2)							
Phytolacca americana L.; Rare; 38352						Xr	×
Rivina humilis L.; 38248	×						×
PLANTAGINACEAE (8, 12)							
Bacopa caroliniana (Walter) B.L. Rob.; 38814		×	×	x,x	X'X	×	×
Bacopa innominata (M. Gómez) Alain; 39013							×
Bacopa monnieri (L.) Pennell; 39016	_{>} X′X			×		×	×
*Bacopa repens (Sw.) Wettst.; 39018							×
Callitriche peploides Nutt. (?) (flowering material); 37993							×
Gratiola ramosa Walter; 38597		X,X ^c	×	Xr			
*Limnophila sessiliflora Blume; FLEPPC II; 38392		X,X	×	×		×	×

	APPEINDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Linaria canadensis (L.) Chaz.; 38393				×			×
¤Mecardonia acuminata (Walter) Small subsp. peninsularis (Pennell) Rossow; 38457		X,X'					×
Mecardonia procumbens (Mill.) Small; 38394							×
Scoparia dulcis L.; 38430		×					×
Sophronanthe hispida Benth. ex Lindl. [Gratiola hispida (Benth. ex Lindl.) Pollard]: 39580		×					
POLYGALACEAE (2, 9)							
Asemeia violacea (Aubl.) J.F.B. Pastore & J.R. Abbott [Polygala violacea Aubl.]; 38203	Хрі	X,X ^c	×			X,X′	×
Polygala balduinii Nutt; 38631		x,x	×				
Polygala cruciata L.; 38679		×					
Polygala incarnata L. (pink-flowered forma plus a white-flowered forma); 38596		×					
Polygala lutea L; 38389		X,Xr					
Polygala nana (Michx.) DC.; Rare; 38453		×					
Polygala ramosa Elliott; 38632		Xr					
¤Polygala rugelii Shuttlew. ex Chapm.; 38353		x,x					×
Polygala setacea Michx.; Rare; 38454		×					
POLYGONACEAE (2, 8)							
Persicaria glabra (Willd.) M. Gómez [Polygonum glabrum Willd.; Polygonum densiflorum Meisn.] (pink-flowered forma plus a white-flowered forma); 38488	x			x,X ^m	×	X,X'	×I
Persicaria hydropiperoides (Michx.) Small [Polygonum hydropiperoides Michx.]; 38633		X,Xr	×		×	×	X(flooded)
Persicaria lapathifolia (L.) Delarbre [Polygonum lapathifolium L.]; 38705							×
Persicaria punctata (Elliott) Small [Polygonum punctatum Elliott]; 38205		×	×	x,X ^m	×	×	×
Persicaria setacea (Baldwin) Small [Polygonum setaceum Baldwin]; 38833		×		×	×		
*Rumex obovatus Danser; Rare; 39603							×
*Rumex paraguayensis Parodi; Rare; 38834						×	×
Rumex verticillatus L.; Rare; 38835				×			
PORTULACACEAE (1, 3)							
*Portulaca amilis Speg.; Rare; 38778							×
Portulaca oleracea L.; Rare; 39004							×
Portulaca pilosa L.; 38249							×

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	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
RANUNCULACEAE (1, 1)							
¤Clematis baldwinii Torr. & A. Gray; Rare; 39768		×					
RHAMNACEAE (1, 1; 2, 2)							
Berchemia scandens (Hill) K. Koch; Rare; 38836	×	X,X ^c					
Sageretia minutiflora (Michx.) C. Mohr; Anonymous s.n.; 1982 (CSS)							
ROSACEAE(1,1)							
Rubus trivialis Michx.; 38251	X,Xpf	X,XP,Xr					×
RUBIACEAE (11, 17)							
Cephalanthus occidentalis L.; 38034	X ′-X		mX,X	mX,X	×	×	
Chiococca alba (L.) Hitchc.; 38837		x,x'					
Diodia teres Walter; Rare ; 39540		×					
Diodia virginiana L.; 37987	X	y,X¢	×	×	×	×	×
Galium tinctorium L.; 38159		×c		×		×	×
Hamelia patens Jacq.; 38428	×	×					×
Houstonia procumbens (J.F. Gmel.) Standl.; Rare; 38634		×					
*Oldenlandia corymbosa L. [Hedyotis corymbosa (L.) Lam.]; 38537							×
Oldenlandia uniflora L. [Hedyotis uniflora (L.) Lam.]; 38490		x,xr					×
Pentodon pentandrus (Schumach. & Thonn.) Vatke; 39770				X(in opening)		×	×
Psychotria nervosa Sw.; 38390	×			×			
Psychotria sulzneri Small; Rare; 38252	×						
*Richardia brasiliensis Gomes; 38035							×
*Richardia grandiflora (Cham. & Schltdl.) Schult. & Schult. f.; FLEPPC II; 38206		Xr					×
*Richardia scabra L.; Rare; 39512							×
Spermacoce remota Lam. [Spermacoce assurgens Ruiz & Pav.]; 38207		x,xr				×	×
*Spermacoce verticillata L.; FLEPPC II; 38208	Xpt	X,Xr	X,X ^c			×	×
RUTACEAE (2, 3)							
*Citrus reticulata Blanco; Rare; 38036							×
*Citrus sp. (sterile, with conspicuously winged petioles); Rare; 38492	X,X						
Zanthoxylum fagara (L.) Sarg.; 38253	×					×	
SALICACEAE (1, 1)							
Salix caroliniana Michx.; 38635	X,×	Xc,Xr	x,X ^m	x,Xm	×	×	×

	APPENDIX CONT.	cont.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
SAMOLACEAE (1, 2)							
Samolus ebracteatus Kunth; 38456		X,Xr					
Samolus valerandi L.; 38706							×
SAPINDACEAE (2, 2)							
Acer rubrum L.; 37929	X 'Xc'Xbt' X	X ^c ,X ^r	mX,X	wX,X ^m	×	x,x	×
*Cupaniopsis anacardioides (A. Rich.) Radlk; Rare; FLEPPC I; 39685				×			
SAPOTACEAE (2, 3)							
Chrysophyllum oliviforme L.; Rare; 38254	×						
Sideroxylon foetidissimum Jacq.; 38209	×						
Sideroxylon reclinatum Michx. subsp. reclinatum; 38210	x '×	dX,X	×	×		×	
SAURURACEAE (1, 1)							
Saururus cernuus L.; 39625	X ′>X′X			×	×		
SCHOEPFIACEAE (1, 1)							
Schoepfia schreberi J.F. Gmel. [Schoepfia chrysophylloides (A. Rich.) Planch.]; Rare; 38255	×						
SOLANACEAE (2, 7)							
Physalis angulata L.; Rare ; 39236		X,Xr				×	×
Physalis angustifolia Nutt. (possibly Physalis angustifolia Nutt. xPhysalis walteri Nutt.); Rare; 38683		Xr					×
Physalis pubescens L.; Rare; 39881						×	×
Physalis walteri Nutt; 38354		×					×
Solanum americanum Mill.; 38395		×		×	×	X,Xr	×
*Solanum capsicoides All.; Rare; 39607	(Supplied (Specified))						
*Solanum lycopersicum L. [Lycopersicon esculentum Mill.]; Rare; 39626				×			
TETRACHONDRACEAE (1, 1)							
Polypremum procumbens L.; 38581		Xr					×
TURNERACEAE (1, 1)							
Piriqueta cistoides (L.) Griseb. (yellow-flowered forma plus a white-flowered forma [Rare]); 38111		×	×				×
ULMACEAE (1, 1)							
*Ulmus sp. (sterile; possibly Ulmus crassifolia Nutt.); D. Workman s.n.; 1997 (USF)							
URTICACEAE (4, 5)							
Boehmeria cylindrica (L.) Sw.; 38637	X ',X<, X	X,X ^c	×	X,Xm,Xr	×	X,X'	×

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	AFFEINDIA LOVIC	COME.					
	Hardw	Pinefl	Prairie	Cypr	Marsh	Aq-rud	Rud
Parietaria floridana Nutt.; 38163				×		×	×
Parietaria praetermissa Hinton; Rare; 39683							×
Pilea microphylla (L.) Liebm.; 38816		×					
*Pouzolzia zeylanica (L.) Benn.; 38257	×						×
VERBENACEAE (4, 4)							
*Lantana strigocamara R.W. Sanders [Lantana camara L.]; Rare; FLEPPC I; 38636							×
Phyla nodiflora (L.) Greene; 38309		×	X,X ^c	×	×	×	×
Stachytarpheta jamaicensis (L.) Vahl; Rare ; 38396		×					×
Verbena scabra Vahl; 38356				×			×
VIOLACEAE (1, 3)							
Viola lanceolata L.; 38148	Xpt	×	×				×
Viola palmata L.; Rare; 38707		×					
Viola sp. (sterile); Rare; 39629	×						×
VITACEAE (4, 5)							
Ampelopsis arborea (L.) Koehne; 38431	X ′ _{>} X′X	X,Xr	×	×	×	×	×
Cissus verticillata (L.) Nicolson & C.E. Jarvis; 38164	×			×			×
Parthenocissus quinquefolia (L.) Planch.; 38310	JdX'XX'X	X,Xr		wX,X		×	×
Vitis cinerea (Engelm.) Engelm. ex Millardet; 38037	×	×	×				
Vitis rotundifolia Michx; 38432	×	X,X ^c ,X ^r		×		Xr	×
XIMENIACEAE (1, 1)							
Ximenia americana L.; 38258	X,X ^{pf} ,X ^r	Xr				Xr	

ADDENDUM

An additional species, Stachytarpheta cayennensis (Rich.) Vahl, was documented for CSS after submission of the manuscript of this paper (Wilder and McCombs 40345; 23 Nov 2017). Plants of that species grew as escapes within, and on ruderal land surrounding, an old flower bed.

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¹ For purposes of organization the previously compiled, unpublished checklists for the flora and/or fauna of CSS are grouped together at the end of this section.

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PREVIOUSLY COMPILED UNPUBLISHED CHECKLISTS FOR CORKSCREW SWAMP SANCTUARY

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⁵MACKIE, A.J. ET AL. 1999. Corkscrew Swamp Sanctuary naturalist handbook. IV. Plants, fungi, lichens.

² J. Butler was at CSS from 1970 to 1971; thus, he probably compiled this checklist during that time period.

^{3.4.5} The checklists of Hammer, Judd, and Mackie are emendations of checklists compiled by previous workers; hence, we cite them as Hammer et al., Judd et al., and Mackie et al., respectively.