

VASCULAR FLORA OF CHURCHILL RANCH, SARASOTA COUNTY, FLORIDA

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ABSTRACT

Churchill Ranch, owned by Sarasota County, contains 170 hectares with eight plant communities. A survey of vascular plant species conducted from May 2007 to August 2008 yielded 368 taxa, representing 89 families and 241 genera. Of these, 327 (88.9%) were native taxa, 41 (11.1%) exotic, 15 endemic to Florida, four state-endangered, and 29 new county distributional voucher records.

RESUMEN

El Rancho Churchill, propiedad del Sarasota County, contiene 170 hectáreas con ocho comunidades vegetales. Un estudio de las especies de plantas vasculares realizado de Mayo 2007 a Agosto 2008 sumó 368 taxa, de 89 familias y 241 géneros. De estos, 327 (88.9%) fueron nativas, el 41 (11.1%) exóticas, 15 endémicas de Florida, cuatro amenazadas en el estado, y 29 nuevo citadas con testigos en el condado.

INTRODUCTION

Churchill Ranch (CR) is a 170 ha site acquired by Sarasota County through the Environmentally Sensitive Lands Protection Program. The site, situated between Myakka River and Deer Prairie Slough, is managed as part of the nearby Deer Prairie Creek county properties (totaling ca. 3000 ha). It is located about 2.3 km ENE of the junction of Interstate 75 and County Road 777 (River Rd.), approximately 13 km ENE of the gulf coast, 27°07'03"N, 82°19'40"W; T39S, R20E, Sec 5 (Fig. 1). Border Road marks the northern boundary, and Interstate 75 marks the southern boundary of the property. Access to CR is from Border Rd. off Jacaranda Blvd. The results of this research are intended to help Sarasota County make knowledge-based management plans for its property.

SITE OVERVIEW

Geology, Topography, Hydrology, and Soils.—The mean elevation of Churchill Ranch is about 7 m above sea level. The surface soils are mostly acidic, sandy spodosols low in fertility which were deposited by seawater in the Pleistocene during receding sea level. Herein lies the Surficial Aquifer System which contains the water table 2–6 m below mean sea level (FDEP 2007). Below this is the Miocene Hawthorn Group (2–30 m below mean sea level) composed of the Peace River and Arcadia Formations which constitute the Intermediate Aquifer System. Below this is the Florida Aquifer System (100–200 m below mean sea level) which contains the Oligocene Suwannee Limestone, Eocene Ocala Limestone, and Avon Park Formation (Hyde et al. 1991; Halford and Yobbi 2006). The surface soil is 42.7% Eugallie and Myakka fine sands characterized by slash pine (*Pinus elliottii*) flatwoods; Pineda fine sand (21.5%) is largely mesic hammock; Wabasso fine sand (12.7%) is a mixture of mesic hammock and pine flatwoods; Holopan fine sand, (11.6%) occurs in herbaceous marshy depressions. Felda fine sand (7.1%) marks hydric hammocks containing open marshy sites as does Pople fine sand (3.0%). Delray fine sand (1.3%) is found partly in an herbaceous marsh in a hydric hammock as well as a basin marsh which drains into an adjacent pond (USDA 2007).

Climate.—Sarasota County has a subtropical climate with a humid, rainy summer period (June–September) and a cooler, drier period (October–May). The wet season averages 82.07 cm of rainfall and the dry season averages 52.10 cm (SWFWMD 2008) with about 100 days per year receiving precipitation (NCDC 2008). The year 2007 had the lowest amount of annual rainfall for Sarasota County in the last 92 years (SWFWMD 2008). Average wind speed annually is 13 km/hour with prevailing winds usually blowing

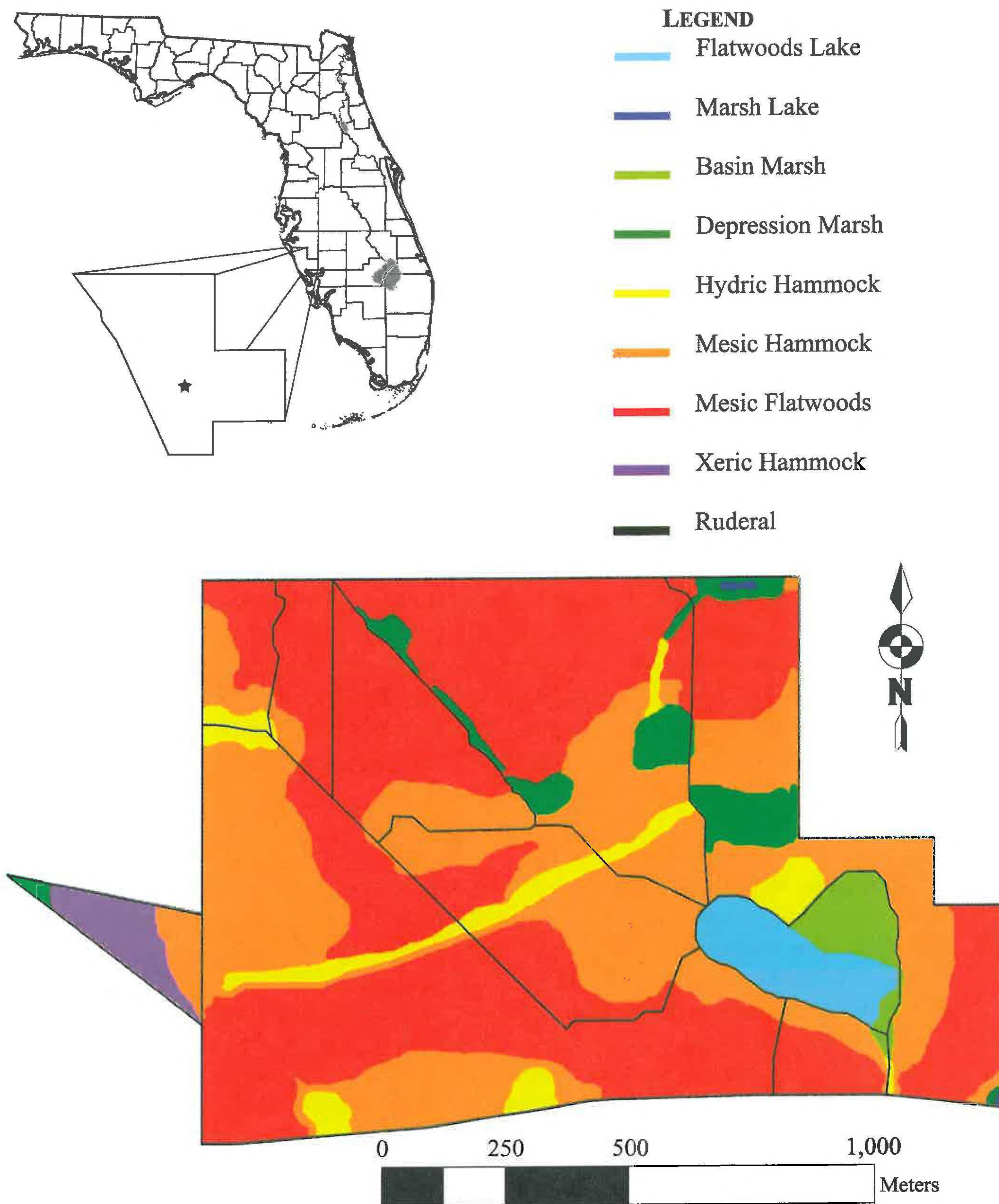


FIG. 1. The location of Churchill Ranch is indicated by the black star within Sarasota County, Florida. The color image shows the habitats within Churchill Ranch.

east. Daily maximum temperatures range from 32.69°C in August to 22.61°C in January. Daily minimum temperatures range from 23.83°C in August to 11.92°C in January. During most years freezing temperatures occur once or twice, only with occasional localized spots of frost. Relative humidity in the morning ranges from 90% in August and 86% in April. Relative humidity in the afternoon ranges from 62% in August to 49% in April. Climate data other than rainfall was averaged from weather stations in Tampa (north of Sarasota) and Ft. Myers (south of Sarasota) as recorded by the NCDC (2008).

Past Land Use.—Aerial photographs from 1948 and 1957 (UF 2004) suggest past logging and the site likely has been cattle ranched for most of the remaining years. Concomitant with this study, intermittently from December 2007 through July 2008, a cattle herd of 10–15 foraged on the land. Significant fire has likely not occurred for 10 or more years.

METHODS

Vascular plant collecting occurred once every 1–4 weeks from May 2007 to August 2008. Permits for endangered species were obtained from the Florida Department of Agriculture and Consumer Services. Voucher specimens were deposited at the University of South Florida herbarium (USF). The nomenclature used follows Wunderlin and Hansen (2003) with updates reflected on the herbarium's website *Atlas of Florida Vascular Plants* (Wunderlin & Hansen 2008). Natural community descriptions follow Florida Natural Areas Inventory (FNAI 1990).

Vascular plants of special interest include those taxa that are state-listed species and exotic species listed by the Florida Exotic Pest Plant Council (FLEPPC 2007). Taxa unreported for Sarasota County as determined by Wunderlin and Hansen (2008) are noted.

RESULTS

The inventory yielded 368 taxa representing 89 families and 241 genera at Churchill Ranch. Native species comprised 327 taxa (88.9%) and 41 (11.1%) were exotic species. The greatest numbers of taxa recorded were in the families Poaceae (59), Asteraceae (51), Cyperaceae (39), Fabaceae (18), Rubiaceae (11), Euphorbiaceae (9), and Plantaginaceae (9). *Rhynchospora*, with 10 taxa, represented the largest genus, followed by *Cyperus* (8), *Hypericum* (7), *Quercus* (7), *Panicum* (7), *Andropogon* (6), *Dichanthelium* (6), *Fimbristylis* (6), *Tillandsia* (6), *Eragrostis* (5), and *Polygala* (5). The families containing the most number of exotics were the Poaceae (13), Fabaceae (6), Asteraceae (4), and Amaranthaceae (3). Of the exotics, eight were listed as category I and three as category II invasive plant species as designated by the Florida Exotic Pest Plant Council (FLEPPC 2007) (Table 1). There were 29 new county records for Sarasota. Fifteen species (3.58%) are endemic to Florida, of which three are in the family Campanulaceae. Four endangered species, *Glandularia tampensis*, *Lythrum flagellare*, *Tillandsia fasciculata*, and *T. utriculata*, and two commercially exploited species, *Encyclia tampensis* and *Osmunda regalis* var. *spectabilis*, were found. One hybrid, *Quercus laurifolia* × *Q. pumila*, was documented.

PLANT COMMUNITIES

The classification for plant communities found within the study (Fig. 1) following the Florida Natural Areas Inventory (FNAI 1990) is discussed below from the lowest elevation to the highest followed by ruderal areas.

Flatwoods Lake.—One large pond covering 4.9 ha (2.9%) of the site is dominated by *Typha dominicensis* with other herbs such as *Eleocharis interstincta* and *Hydrocotyle umbellata* growing along its perimeter. A small island sits in the center, dominated by *Polygonum glabrum* and *Salix caroliniana*. It is accessible by land when the water level is down.

Marsh Lake.—Marsh lakes characterize the other perennial bodies of water at the site, covering 0.2 ha (<0.01%). In the extreme southeast corner a small pool of water next to Interstate 75 reaches into the site. This contains the floating aquatics *Lemna valdiviana* and *Wolffiella oblonga*. Also along Border Rd. lies a small elliptic pond where the native species *Azolla carolinensis* and *Nuphar advena*, and the exotics, *Ludwigia peruviana*, *Panicum repens*, and *Salvinia minima*, are found. During the peak of the drought, this pond was nearly dry.

Basin Marsh.—A basin marsh occurs directly adjacent to the large pond, covering 3.3 ha (1.9%). The ground is densely covered with herbs such as *Iris hexagona*, *Phyla nodiflora*, and *Polygonum punctatum*. Before the summer rains of 2008, *Baccharis halimifolia* had successfully invaded and reached maturity. However after the rains, the inundated conditions began to cause dieback of these shrubs.

TABLE 1. Exotic invasive plant species at CR found on FLEPPC's list (2007).

Category I	Category II
<i>Dioscorea bulbifera</i>	<i>Ricinus communis</i>
<i>Hymenachne amplexicaulis</i>	<i>Sphagneticola trilobata</i>
<i>Ludwigia peruviana</i>	<i>Urena lobata</i>
<i>Melinis repens</i>	
<i>Panicum repens</i>	
<i>Schinus terebinthifolia</i>	
<i>Solanum viarum</i>	

Depression Marsh.—Depression marshes occur on 15.1 ha (8.9%) of the site. From the beginning of the study and through the spring of 2008, the soils were relatively dry and never inundated. However, significant summer rain in 2008 saturated and flooded these marshes. *Hypericum fasciculatum* dominated one marsh. Other marshes are characterized by herbaceous species such as *Lythrum flagellare* and *Phyla nodiflora*. Others are dominated by *Cephalanthus occidentalis* and *Salix caroliniana* and include the exotic *Hymenachne amplexicaulis*.

Hydric Hammock.—The hydric hammocks occur on 15.5 ha (9.1%) of the site. The dominant canopy trees are *Quercus laurifolia* and *Q. virginiana* with *Ulmus americana* as an occasional associate. An isolated patch of hydric hammock is dominated by *Fraxinus caroliniana*. Various, predominantly herbaceous, marshy sites occur here. Associations include *Kosteletzkya pentacarpos*–*Ipomoea sagittata*, *Lobelia feayana*–*Sisyrinchium angustifolium*, *Cladium jamaicense*–*Hibiscus grandiflorus*, and *Helianthus agrestis*–*Campanula floridana*. Epiphytes such as *Encyclia tampensis*, *Tillandsia* spp., *Vittaria lineata*, and *Pleopeltis polypodioides* var. *michauxiana* are abundant. The exotic *Solanum viarum* also occurs here.

Mesic Hammock.—The mesic hammocks occur on 57.9 ha (34.1%) of the site with *Quercus virginiana* dominating the canopy and *Sabal palmetto* the subcanopy. *Serenoa repens* characterizes the understory, interspersed with *Callicarpa americana* and *Smilax bona-nox*. Exotic species include *Schinus terebinthifolia*, which is being treated for removal by the county, and *Sphagneticola trilobata*.

Mesic Flatwoods.—The mesic flatwoods is the dominant community, covering 69.7 ha (41.0%). The canopy consists mainly of *Pinus elliottii* with a dense understory of *Serenoa repens* of 1–2m, reaching 3–4m in a few places. The dense nature of the flatwoods is obviously due to fire suppression. Other common elements include the shrubs *Asimina reticulata*, *Ilex glabra*, *Lyonia fruticosa*, *Lyonia lucida*, *Quercus elliottii*, *Quercus minima*, and *Vaccinium darrowii* and the vines *Galactia elliottii* and *Smilax auriculata*. Common herbaceous species include *Aristida spiciformis*, *Fimbristylis puberula*, *Ludwigia maritima*, *Lygodesmia aphylla*, *Panicum anceps*, *Polygala setacea*, *Pteridium aquilinum* var. *pseudocaudatum*, and *Solidago odora* var. *chapmanii*.

Xeric Hammock.—A small ridge of land in the westernmost portion, wedged between a mesic hammock and a marsh, represents a xeric hammock of 1.7 ha (1.0%). Here the canopy is composed of *Quercus nigra* and *Quercus virginiana*. The understory has mostly *Serenoa repens* but its sparseness here allows open sites to occur. In these open areas plants such as *Gratiola hispida*, *Opuntia humifusa*, *Pityopsis graminifolia*, and *Stipulicida setacea* var. *lacerata* occur.

Ruderal.—The ruderal areas are found along the roads, trails, and firebreaks which make up about 1.7 ha (1.0%). Patches of vegetation along the roads and trails are seasonally mowed. Common in these areas are the native species *Bulbostylis stenophylla*, *Paspalum setaceum*, and *Setaria parviflora*. Common exotics are *Commelina diffusa*, *Fimbristylis schoenoides*, and *Paspalum notatum* var. *saurae*.

DISCUSSION

Disturbance, mainly fire, is a well-recognized component of Florida ecosystems. At Churchill Ranch, fire suppression has allowed the flatwoods to become thickly overgrown with woody vegetation. Other disturbances which significantly impact the plant communities include foraging by domestic cattle, feral pigs, and anthropogenic mechanical disturbance (mowing, roller chopping).

Mowing has an essential role in maintaining paths and firebreaks. However, mowing maintains herbaceous communities as disturbed sites and may favor weedy, short life cycle, high-fecundity species such as the exotics *Digitaria longiflora* and *Eragrostis atrovirens* and the native *Paspalum setaceum*. It also may replace the effects of grazing allowing the exotic *Paspalum notatum* var. *saurae* to continue. These disturbed sites may also serve as corridors for the spread of invasive species.

Roller chopping has been implemented as a way to reduce shrub vegetation, mainly *Serenoa repens* as well as *Lyonia* spp. and *Quercus* spp., to reduce fire intensity, and to increase light and resource availability to understory herbs. Approximately 50 hectares of mesic flatwoods adjacent to Interstate 75 were roller chopped at Churchill Ranch in March 2007, reducing fire hazard to drivers on the interstate. *Serenoa repens* was predominantly affected with some saplings such as *Pinus elliotii* toppled as well. A thick layer of detritus from affected plants, uncommon in flatwoods, was also left. As the roller chopping occurred near the end of this study post-treatment effects were not assessed. Roller chopping without burning at a dry prairie in nearby Myakka River State Park did not increase the abundance of native grasses (Watts et al. 2006).

Huffman (2006) estimates that most pine flatwoods have historically experienced natural fire, not started by man, at least every five years. The lack of fire disturbance, or fire suppression, may have negatively impacted the species richness of Churchill Ranch in plants as well as other organisms. Burning would be ideal for this site but is problematic due to its location next to Interstate 75.

Exotic disturbances (cattle grazing and feral hogs) and the lack of natural disturbance (fire) have likely played a large role in the ecology of CR. Plant herbivory by large animals has been intensive at CR and could have quickly reduced or extirpated some taxa. Many taxa recorded at CR seemed to occur as one delicate, reduced population. Some examples include species found exclusively along fencerows along the property boundary such as *Muhlenbergia capillaris*, *Nephrolepis exaltata*, *Osmunda regalis*, and *Thelypteris kunthii*.

ANNOTATED LIST OF VASCULAR PLANTS

The list is artificially grouped into PTERIDOPHYTES, GYMNOSPERMS, MONOCOTS, and DICOTS. Within these four groups, families are listed alphabetically, and within each family, the taxa are alphabetical by genus and species. Following each species name is its authorship, habitat in the study area, and the senior author's collection number. The habitat abbreviations are **FL**—flatwoods lake, **ML**—marsh lake, **BM**—basin marsh, **DM**—depression marsh, **HH**—hydric hammock, **MH**—mesic hammock, **MF**—mesic flatwoods, **XH**—xeric hammock, and **RU**—ruderal areas. Annotations preceding taxa are ^ for a new county record, * for exotic species, and + for taxa endemic to the state of Florida.

PTERIDOPHYTES

Azollaceae

Azolla filiculoides Lam.—ML; 403

Blechnaceae

Blechnum serrulatum Rich.—MF; 279

Woodwardia virginica (L.) Sm.—MF; 280

Dennstaedtiaceae

Pteridium aquilinum (L.) Kuhn var. *pseudocaudatum* (Clute) Clute ex A. Heller—MF; 397

Nephrolepidaceae

Nephrolepis exaltata (L.) Schott—MH; 444

Osmundaceae

Osmunda regalis L. var. *spectabilis* (Willd.) A. Gray—MH; 445

Polypodiaceae

Phlebodium aureum (L.) J. Sm.—HH; 214

Pleopeltis polypodioides (L.) E.G. Andrews & Windham var. *michauxiana* (Weath.) E.G. Andrews & Windham—MH; 199

Salviniaceae

**Salvinia minima* Baker—ML; 668

Thelypteridaceae

Thelypteris kunthii (Desv.) C.V. Morton—MH; 631

Vittariaceae

Vittaria lineata (L.) Sm.—HH; 227

GYMNOSPERMS

Pinaceae

Pinus elliotii Engelm.—MF; 217

MONOCOTS

Alismataceae

Sagittaria graminea Michx.—DM; 824

Sagittaria lancifolia L.—DM; 264

Amaryllidaceae

Crinum americanum L.—HH; 327

Araceae

- ^*Lemna valdiviana* Phil.—ML; 404
Pistia stratiotes L.—ML; 402
 ^*Wolffiella oblonga* (Phil.) Hegelm.—ML; 405

Arecaceae

- Sabal palmetto* (Walter) Lodd. ex Schult. & Schult. f.—MH; 662
Serenoa repens (W. Bartram) Small—MF; 100

Bromeliaceae

- Tillandsia balbisiana* Schult. & Schult. f.—MH; 635
Tillandsia fasciculata Sw.—MH; 374
Tillandsia recurvata (L.) L.—MH; 361
Tillandsia setacea Sw.—MH; 323
Tillandsia usneoides (L.) L.—MH; 111
Tillandsia utriculata L.—XH; 252

Commelinaceae

- **Commelina diffusa* Burm. f.—RU; 152
Commelina erecta L.—XH; 157
 **Murdannia nudiflora* (L.) Brenan—RU; 394

Cyperaceae

- Bulbostylis ciliatifolia* (Elliott) Fernald—XH; 313
Bulbostylis stenophylla (Elliott) C.B. Clarke—RU; 257
Carex lupuliformis Sartwell ex Dewey—ML; 190
 +*Carex vexans* F.J. Herm.—FL; 209
Cladium jamaicense Crantz—HH; 144
Cyperus compressus L.—RU; 333
 ^*Cyperus croceus* Vahl—RU; 228
Cyperus distinctus Steud.—BM; 270
Cyperus ligularis L.—RU; 350
Cyperus odoratus L.—BM; 191
Cyperus polystachyos Rottb.—DM; 124, 349
Cyperus retrorsus Chapm.—MF; 314
Cyperus surinamensis Rottb.—BM; 255
Eleocharis geniculata (L.) Roem. & Schult.—FL; 452
Eleocharis interstincta (Vahl) Roem. & Schult.—FL; 197
Fimbristylis autumnalis (L.) Roem. & Schult.—FL; 211
Fimbristylis cymosa R. Br.—RU; 150
 ^*Fimbristylis dichotoma* (L.) Vahl—RU; 345
Fimbristylis puberula (Michx.) Vahl—MF; 712
 **Fimbristylis schoenoides* (Retz.) Vahl—RU; 443
Fimbristylis spadicea (L.) Vahl—HH; 218
Fuirena breviseta (Coville) Coville—RU; 454
Fuirena scirpoidea Michx.—RU; 204, 654
 ^*Kyllinga odorata* Vahl—RU; 337
 ^*Lipocarpa micrantha* (Vahl) G.C. Tucker—MH; 384
 ^**Oxycaryum cubense* (Poepp. & Kunth) Palla—ML; 369
Rhynchospora colorata (L.) H. Pfeiff.—MH; 666
Rhynchospora divergens Chapm. ex M.A. Curtis—MF; 371
Rhynchospora fascicularis (Michx.) Vahl—MF; 205
 ^*Rhynchospora fernaldii* Gale—MF; 358
Rhynchospora globularis (Chapm.) Small—HH; 419
Rhynchospora inundata (Oakes) Fernald—DM; 363
Rhynchospora microcarpa Baldwin ex A. Gray—MH; 268, 419
Rhynchospora nitens (Vahl) A. Gray—ML; 413
 ^*Rhynchospora odorata* C. Wright ex Griseb.—BM; 230
Rhynchospora plumosa Elliott—MF; 267
Schoenoplectus tabernaemontani (C.C. Gmel) Palla—BM; 193

- Scleria reticularis* Michx.—RU; 412
Scleria triglomerata Michx.—XH; 253, 428

Dioscoreaceae

- **Dioscorea bulbifera* L.—RU; 296

Eriocaulaceae

- Eriocaulon decangulare* L.—ML; 275
Lachnocaulon anceps (Walter) Morong—MF; 123
Syngonanthus flavidulus (Michx.) Ruhland—MF; 115

Haemodoraceae

- Lachnanthes caroliana* (Lam.) Dandy—MF; 379

Hypoxidaceae

- Hypoxis curtissii* Rose—MH; 224
Hypoxis juncea Sm.—MF; 225

Iridaceae

- Iris hexagona* Walter—BM; 602
Sisyrinchium angustifolium Mill.—HH; 498

Juncaceae

- Juncus effusus* L. subsp. *solutus* (Fernald & Wiegand) Hämet-Ahti—BM; 174
Juncus marginatus Rostk.—DM; 206
Juncus megacephalus M.A. Curtis—DM; 781
Juncus scirpoides Lam.—MF; 435

Marantaceae

- Thalia geniculata* L.—BM; 401

Orchidaceae

- Encyclia tampensis* (Lindl.) Small—HH; 212
Habenaria floribunda Lindl.—MH; 489

Poaceae

- Androgogon glomeratus* (Walter) Britton et al. var. *glaucoptis* (Elliott) C. Mohr—MF; 659
Andropogon glomeratus (Walter) Britton et al. var. *pumilus* (Vasey) Vasey ex L.H. Dewey—MF; 331
 ^*Andropogon longiberbis* Hack.—RU; 286
Andropogon ternarius Michx.—MF; 447
 ^*Andropogon virginicus* L. var. *glaucus* Hack.—MF; 424
Andropogon virginicus L. var. *virginicus*—MF; 441
Aristida patula Chapm. ex Nash—HH; 342
Aristida purpurascens Poir. var. *tenuispica* (Hitchc.) Allred—MF; 431
Aristida spiciformis Elliott—MF; 355
Axonopus fissifolius (Raddi) Kuhl.—HH; 289
Axonopus furcatus (Flüggé) Hitchc.—HH; 166
Cenchrus spinifex Cav.—RU; 303
 **Cynodon dactylon* (L.) Pers.—RU; 202
 **Dactyloctenium aegyptium* (L.) Willd. ex Asch. & Schweinf.—RU; 340
 ^*Dichantherium aciculare* (Desv. ex Poir.) Gould & C.A. Clark—XH; 461
Dichantherium commutatum (Schult.) Gould—MH; 222
Dichantherium dichotomum (L.) Gould—MF; 364
Dichantherium ensifolium (Baldwin ex Elliott) Gould—MH; 347
Dichantherium erectifolium (Nash) Gould & C.A. Clark—MF; 441
Dichantherium laxiflorum (Lam.) Gould—MH; 169

Digitaria ciliaris (Retz.) Koeler—RU; 287
 **Digitaria longiflora* (Retz.) Pers.—RU; 288
Echinochloa muricata (P. Beauv.) Fernald—BM; 186
 +*Echinochloa paludigena* Wiegand—HH; 466
Echinochloa walteri (Pursh) A. Heller—DM; 192
 **Eleusine indica* (L.) Gaertn.—RU; 326
 **Eragrostis atrovirens* (Desf.) Trin. ex Steud.—RU; 330
 ^**Eragrostis bahiensis* (All.) Vignolo ex Janch.—RU; 219
Eragrostis hypnoides (Lam.) Britton et al.—DM; 128
Eragrostis spectabilis (Pursh) Steud.—MH; 223, 449
Eragrostis virginica (Zuccagni) Steud.—RU; 655
 **Eremochloa ophiuroides* (Munro) Hack.—RU; 271
Eustachys glauca Chapm.—HH; 229
Eustachys petraea (Sw.) Desv.—RU; 302
 **Hymenachne amplexicaulis* (Rudge) Nees—DM; 362
 **Melinis repens* (Willd.) Zizka—RU; 300
Muhlenbergia capillaris (Lam.) Trin.—MH; 453
 ^*Oplismenus hirtellus* (L.) P. Beauv.—HH; 390
Panicum anceps Michx.—MF; 396
Panicum dichotomiflorum Michx. var. *bartowense* (Scribn. & Merr.) Fernald—BM; 414
Panicum hemitomom Schult.—ML; 185
Panicum hians Elliott—RU; 285
 **Panicum repens* L.—ML; 184
 ^*Panicum tenerum* Beyr. ex Trin.—MF; 408
Panicum virgatum L.—MF; 318
 ^*Paspalum conjugatum* P. J. Bergius—MF; 410, 459
Paspalum floridanum Michx.—HH; 231
 **Paspalum notatum* Flüggé var. *saurae* Parodi—RU; 237
Paspalum setaceum Michx.—RU; 208
 ^*Reimarochloa oligostachya* (Munro ex Benth.) Hitchc.—DM; 272, 458
Saccharum giganteum (Walter) Pers.—DM; 407, 434
Sacciolepis striata (L.) Nash—BM; 210
Schizachyrium scoparium (Michx.) Nash—MF; 370, 432
Setaria parviflora (Poir.) Kerguelen—RU; 339, 382
Sorghastrum secundum (Elliott) Nash—MF; 425
Sporobolus domingensis (Trin.) Kunth—MF; 433
 **Sporobolus indicus* (L.) R. Br. var. *pyramidalis* (P. Beauv.) Veldkamp—RU; 665
Tripsacum dactyloides (L.) L.—HH; 663
 ^**Urochloa distachya* (L.) T.Q. Nguyen—RU; 376

Pontederiaceae
Pontederia cordata L.—ML; 660

Smilacaceae
Smilax auriculata Walter—MF; 416
Smilax bona-nox L.—MH; 805

Typhaceae
Typha domingensis Pers.—FL; 101
Typha latifolia L.—BM; 194

Xyridaceae
Xyris caroliniana Walter—MF; 306
Xyris elliotii Chapm.—MF; 114, 269

DICOTS

Acanthaceae

Dyschoriste oblongifolia (Michx.) Kuntze—MH; 265
 +*Justicia angusta* (Chapm.) Small—DM; 130
 ^*Stenandrium dulce* (Cav.) Nees—MH; 196

Adoxaceae

Viburnum obovatum Walter—MH; 664

Amaranthaceae

**Alternanthera sessilis* (L.) R. Br. ex DC.—HH; 622
 **Chenopodium ambrosioides* L.—RU; 360
 **Gomphrena serrata* L.—RU; 336

Anacardiaceae

Rhus copallinum L.—MF; 317
 **Schinus terebinthifolia* Raddi—MH; 175
Toxicodendron radicans (L.) Kuntze—MH; 142

Annonaceae

+*Asimina reticulata* Shuttlew. ex Chapm.—MF; 611

Apiaceae

Eryngium baldwinii Spreng.—HH; 107
Ptilimnium capillaceum (Michx.) Raf.—DM; 179

Apocynaceae

Asclepias pedicellata Walter—MF; 261
Asclepias perennis Walter—HH; 129

Aquifoliaceae

Ilex cassine L.—HH; 319, 492
Ilex glabra (L.) A. Gray—MF; 122

Araliaceae

Centella asiatica (L.) Urb.—FL; 442
Hydrocotyle umbellata L.—FL; 200

Asteraceae

^*Acmella oppositifolia* (Lam.) R.K. Jansen var. *repens* (Walter) R.K. Jansen—HH; 620
Ambrosia artemisiifolia L.—RU; 290
 ^*Baccharis glomeruliflora* Pers.—MH; 479
Baccharis halimifolia L.—BM; 464
Bidens alba (L.) DC.—RU; 242
Boltonia diffusa Elliott—ML; 281
 +*Carphephorus odoratissimus* (J.F. Gmel.) H. Hebert var. *subtropicanus* (DeLaney et al.) Wunderlin & B.F. Hansen—MF; 430
Chrysopsis mariana (L.) Elliott—HH; 470
Cirsium horridulum Michx.—MH; 234
Cirsium nuttallii DC.—MH; 137, 170
 ^*Conoclinium coelestinum* (L.) DC.—MH; 143
Conyza canadensis (L.) Cronquist—RU; 338
 +*Coreopsis leavenworthii* Torr. & A. Gray—DM; 134
Elephantopus elatus Bertol.—MF; 301
 **Emilia fosbergii* Nicolson—RU; 484
 **Emilia sonchifolia* (L.) DC.—RU; 707
Erechtites hieraciifolius (L.) Raf. ex DC.—MH; 235
Erigeron quercifolius Poir.—MH; 247
Erigeron vernus (L.) Torr. & A. Gray—MH; 346

- Eupatorium capillifolium* (Lam.) Small ex Porter & Britton—MH; 463
Eupatorium mohrii Greene—MF; 278
Eupatorium rotundifolium L.—MF; 451
Euthamia caroliniana (L.) Greene ex Porter & Britton—MF; 429
Gamochaeta pensylvanica (Willd.) Cabrera—MH; 251
Helenium amarum (Raf.) H. Rock—RU; 164
Helianthus agrestis Pollard—HH; 309
Heterotheca subaxillaris (Lam.) Britton & Rusby—RU; 809
Hieracium megacephalon Nash—XH; 256
Alva microcephala Nutt.—DM; 353
Lygodesmia aphylla (Nutt.) DC.—MF; 618
Melanthera nivea (L.) Small—HH; 329, 709
Mikania cordifolia (L. f.) Willd.—MF; 483
Mikania scandens (L.) Willd.—MH; 202
Pectis glaucescens (Cass.) D.J. Keil—RU; 307
Pectis linearifolia Urb.—RU; 366
Pectis prostrata Cav.—RU; 368
Pityopsis graminifolia (Michx.) Nutt.—XH; 321
Pluchea baccharis (Mill.) Pruski—HH; 246
Pluchea odorata (L.) Cass.—HH; 145
Pseudognaphalium obtusifolium (L.) Hilliard & B.L. Burtt—MH; 487
Pterocaulon pycnostachyum (Michx.) Elliott—MH; 118
Sericocarpus tortifolius (Michx.) Nees—MF; 393
Solidago odora Aiton var. *chapmanii* (A. Gray) Cronquist—MF; 273
Solidago stricta Aiton—MH; 481
Sphagnetica trilobata (L.) Pruski—MH; 348
Symphyotrichum bahamense (Britton) G.L. Nesom—HH; 480
Symphyotrichum carolinianum (Walter) Wunderlin & B.F. Hansen—HH; 480
Symphyotrichum dumosum (L.) G.L. Nesom—HH; 478
Tridax procumbens L.—RU; 806
Verbesina virginica L.—HH; 420
Vernonia blodgettii Small—MH; 244
- Bignoniaceae**
Campsis radicans (L.) Seemann—HH; 388
- Boraginaceae**
Heliotropium polyphyllum Lehm.—MF; 409
- Brassicaceae**
Rorippa teres (Michx.) Stuckey—HH; 603
- Cactaceae**
Opuntia humifusa (Raf.) Raf.—XH; 328
- Campanulaceae**
Campanula floridana S. Watson ex A. Gray—HH; 621
Lobelia feayana A. Gray—HH; 496
Lobelia homophylla E. Wimm.—MH; 139
- Caryophyllaceae**
Drymaria cordata (L.) Willd. ex Schult.—MH; 299
Stipulicida setacea Michx. var. *lacerata* C.W. James—XH; 332
- Chrysobalanaceae**
Licania michauxii Prance—XH; 138
- Cistaceae**
Helianthemum corymbosum Michx.—XH; 165
Lechea torreyi (Chapm.) Legg. ex Britton—MH; 471
- Clusiaceae**
Hypericum cistifolium Lam.—MH; 220
Hypericum fasciculatum Lam.—DM; 112
Hypericum gentianoides (L.) Britton et al.—MH; 154
Hypericum hypericoides (L.) Crantz—MH; 245
Hypericum mutilum L.—DM; 181
Hypericum tenuifolium Pursh—MF; 105
Hypericum tetrapetalum Lam.—MH; 710
- Convolvulaceae**
Dichondra carolinensis Michx.—MH; 493
Ipomoea cordatotriloba Dennst.—RU; 398
Ipomoea pandurata (L.) G. Mey.—HH; 633
Ipomoea sagittata Poir.—HH; 284
- Cornaceae**
Cornus foemina Mill.—HH; 248
- Cucurbitaceae**
Melothria pendula L.—HH; 310
- Ebenaceae**
Diospyros virginiana L.—MH; 708
- Ericaceae**
Bejaria racemosa Vent.—MF; 195
Lyonia fruticosa (Michx.) G.S. Torr.—MF; 104
Lyonia lucida (Lam.) K. Koch—MF; 119
Vaccinium arboreum Marshall—MH; 158
Vaccinium darrowii Camp—MF; 262
Vaccinium stamineum L.—MF; 106
- Euphorbiaceae**
Acalypha gracilens A. Gray—MH; 213
Chamaesyce hyssopifolia (L.) Small—RU; 241
Chamaesyce maculata (L.) Small—RU; 667
Cnidoscolus stimulosus (Michx.) Engelm. & A. Gray—XH; 136
Croton glandulosus L.—MH; 334
Croton michauxii G.L. Webster—MF; 203
Phyllanthus tenellus Roxb.—MH; 488
Ricinus communis L.—RU; 297
Stillingia sylvatica L.—MF; 108
- Fabaceae**
Amorpha herbacea Walter—XH; 160
Centrosema virginianum (L.) Benth.—XH; 254
Chamaecrista fasciculata (Michx.) Greene—MF; 159
Crotalaria rotundifolia J.F. Gmel.—RU; 110
Crotalaria spectabilis Roth—RU; 612
Dalea carnea (Michx.) Poir.—MF; 808
Desmodium incanum DC.—RU; 260
Desmodium triflorum (L.) DC.—RU; 377
Galactia elliotii Nutt.—MF; 162
Galactia regularis (L.) Britton et al.—MH; 163
Indigofera caroliniana Mill.—MF; 249
Macroptilium lathyroides (L.) Urb.—RU; 446
Medicago lupulina L.—RU; 499
Mimosa strigillosa Torr. & A. Gray—RU; 147
Senna obtusifolia (L.) H.S. Irwin & Barneby—RU; 146

Sesbania herbacea (Mill.) McVaugh—BM; 341
 ^*Sesbania vesicaria* (Jacq.) Elliott—DM; 462
Vicia acutifolia Elliott—HH; 601

Fagaceae

Quercus laurifolia Michx.—HH; 325
Quercus minima (Sarg.) Small—MF; 103, 392
Quercus myrtifolia Willd.—MF; 469
Quercus nigra L.—XH; 380
Quercus pumila Walter—MF; 634
Quercus virginiana Mill.—MH; 375
 ^*Quercus laurifolia* x *Q. pumila*—MF; 426, 711

Gentianaceae

Sabatia brevifolia Raf.—MF; 365
Sabatia grandiflora (A. Gray) Small—FL; 236

Hydroleaceae

Hydrolea corymbosa J. Macbr. ex Elliott—ML; 298

Lamiaceae

Callicarpa americana L.—MH; 140
Hyptis alata (Raf.) Shinnery—HH; 315
Piloblephis rigida (W. Bartram ex Benth.) Raf.—MF; 421
Salvia lyrata L.—MH; 121
Scutellaria integrifolia L.—MF; 810
Teucrium canadense L.—RU; 258
Trichostema dichotomum L.—MH; 151

Lauraceae

Cassytha filiformis L.—MH; 266
Persea palustris (Raf.) Sarg.—HH; 418

Loganiaceae

Mitreola petiolata (J.F. Gmel.) Torr. & A. Gray—HH; 226

Lythraceae

+*Lythrum flagellare* Shuttlew. ex Chapm.—DM; 117, 615

Malvaceae

Hibiscus grandiflorus Michx.—HH; 282
Kosteletzkya pentacarpos (L.) Ledeb.—HH; 283
 ^**Melochia corchorifolia* L.—MH; 316
Sida ulmifolia Mill.—RU; 438
 **Urena lobata* L.—MH; 221

Melastomataceae

Rhexia mariana L.—DM; 661

Myricaceae

Myrica cerifera L.—MF; 216

Nymphaeaceae

Nuphar advena (Aiton) Aiton—ML; 274

Oleaceae

Fraxinus caroliniana Mill.—HH; 605

Onagraceae

Gaura angustifolia Michx.—RU; 240
Ludwigia maritima R.M. Harper—MF; 259, 455
 **Ludwigia peruviana* (L.) H. Hara—ML; 657
 ^*Ludwigia repens* J.R. Forst.—DM; 171, 423
Ludwigia suffruticosa Walter—MF; 170

Orobanchaceae

Buchnera americana L.—MF; 131

Oxalidaceae

Oxalis corniculata L.—RU; 153

Phytolaccaceae

Phytolacca americana L.—RU; 312

Plantaginaceae

Bacopa monnieri (L.) Pennell—DM; 177
Gratiola hispida (Benth. ex Lindl.) Pollard—RU; 155
Gratiola pilosa Michx.—XH; 624
Linaria canadensis (L.) Chaz.—MF; 494
 **Lindernia crustacea* (L.) F. Muell.—RU; 350
Lindernia grandiflora Nutt.—DM; 180
Mecardonia acuminata (Walter) Small var. *peninsularis* (Pennell) Rossow—MF; 188
 +*Micranthemum glomeratum* (Chapm.) Shinnery—HH; 385
Scoparia dulcis L.—MF; 250

Polygalaceae

Polygala incarnata L.—MF; 440
Polygala lutea L.—MF; 277
Polygala nana (Michx.) DC.—MF; 610
Polygala setacea Michx.—MF; 276
Polygala violacea Aubl.—RU; 109

Polygonaceae

+*Polygonella polygama* (Vent.) Engelm. & A. Gray var. *brachys-tachya* (Meisn.) Wunderlin—MF; 161
Polygonum glabrum Willd.—FL; 198
Polygonum punctatum Elliott—DM; BM; 176

Rosaceae

Rubus trivialis Michx.—RU; 495

Rubiaceae

Cephalanthus occidentalis L.—DM; 183
Diodia teres Walter—RU; 243
Diodia virginiana L.—DM; 178, 383
Galium tinctorium L.—FL; 600
Houstonia procumbens (J.F. Gmel.) Standl—HH; 437
Mitchella repens L.—XH; 607
 **Oldenlandia corymbosa* L.—RU; 357
Oldenlandia uniflora L.—MF; 417
Psychotria sulzneri Small—MH; 215
 **Richardia brasiliensis* Gomes—RU; 356
Spermacoce remota Lam.—MH; 156, 395

Salicaceae

Salix caroliniana Michx.—DM; HH; 491, 653

Samolaceae

Samolus valerandi L. subsp. *parviflorus* (Raf.) Hultén—DM; 116

Sapindaceae

Acer rubrum L.—MF; 389

Sapotaceae

Sideroxylon reclinatum Michx.—MF; 187

Solanaceae

Physalis arenicola Kearney—XH; 320

Physalis pubescens L.—HH; 629

Solanum americanum Mill.—RU; 351

**Solanum viarum* Dunal—HH; 623

Tetrachondraceae

Polypremum procumbens L.—RU; 113

Ulmaceae

Ulmus americana L.—HH; 387

Urticaceae

Boehmeria cylindrica (L.) Sw.—DM; 263

Parietaria floridana Nutt.—HH; 604

Verbenaceae

+*Glandularia tampensis* (Nash) Small—HH; 632

Phyla nodiflora (L.) Greene—DM; 120

Verbena scabra Vahl—HH; 141

Violaceae

Viola sororia Willd.—MH; 497

Viscaceae

Phoradendron leucarpum (Raf.) Reveal & M.C. Johnst.—MF; 381

Vitaceae

Ampelopsis arborea (L.) Koehne—MF; 172

Parthenocissus quinquefolia (L.) Planch.—MF; 352

Vitis aestivalis Michx.—MH; 343

Vitis rotundifolia Michx.—MF; 135

Vitis shuttleworthii House—HH; 201

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