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# Vascular Plant Flora of the Solon Dixon Forestry Education Center, Alabama

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## Abstract

A survey of the vascular plant flora was conducted at the Solon Dixon Forestry Education Center in south-central Alabama. Over 2000 vascular plant specimens were collected from the 2144 ha site comprising 152 families, 498 genera and 1015 species. This represented a density of 47 species/km<sup>2</sup> and accounted for 25% of all known vascular plant species from the state of Alabama, highlighting the unusually rich biodiversity of this site. The most diverse plant families in this flora were Asteraceae (132 spp.), Poaceae (108), Fabaceae (74), Cyperaceae (69), and Lamiaceae (24). The most diverse genera in the survey included *Carex* (23 spp.), *Quercus* (20), *Juncus* (15), *Cyperus* (15), *Dichanthelium* (14) and *Hypericum* (14). A total of 133 non-native species were identified (13.1% of the flora) including 22 state-listed invasive species. Rare and threatened species tracked by the ALNHP made up 2.1% (21 species) of the flora and included notable taxa such as *Stewartia malacodendron*, *Hamamelis ovalis*, *Epidendrum magnoliae*, *Pityopsis oligantha*, *Lilaeopsis carolinensis* and *Stylisma aquatica* among others. A brief description of the geology, geography, climate and historical land use of the property is included along with a checklist of taxa.

## Introduction

Auburn University's Solon Dixon Forestry Education Center (hereafter the Center) is home to several teaching, research and extension programs that provide students, landowners and working forestry professionals with training in various aspects of sustainable forest management. The biodiversity value of this property is also increasingly recognized with uses including biological research and animal or plant-based ecotourism.

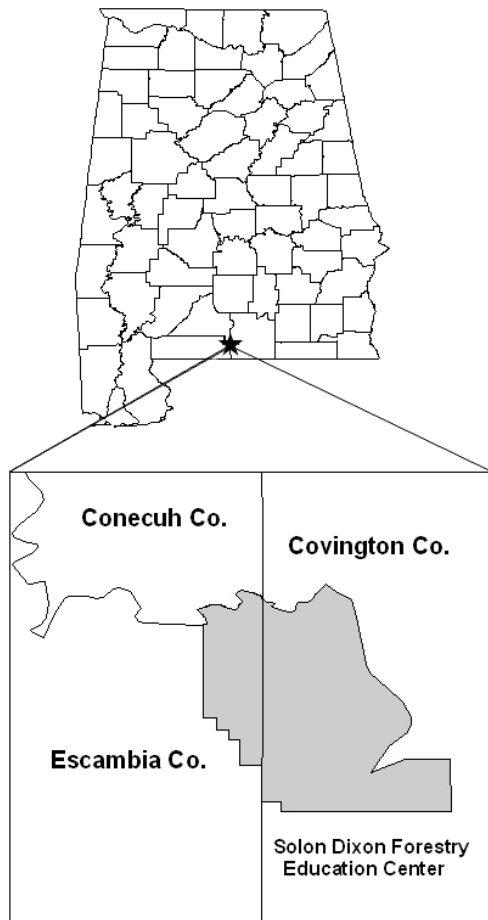
Previous research studies of the vascular flora on the Center focused primarily on the considerable tree diversity (Carter *et al* 2004) while an even broader array of shrubs, ferns, grasses and forbs have been relatively poorly characterized. This project was initiated with the goal to collect,

voucher and document the rich vascular plant diversity occurring on the Center, providing a data resource and stimulus for future research.

## Geology and Geography

The 2144 ha site in south-central Alabama straddles the Covington and Escambia County line with Conecuh County bordering the northwest corner of the property. The Center is bounded by the Conecuh River to the north, the Conecuh National Forest to the south and by private or leased holdings to the east and west (Fig. 1). Elevation ranges from 30 m at the Conecuh River to 91 m near the central part of the property (31.163 947°, -86.7028°). The Conecuh River that runs along the northern border of the Center is one of two major watersheds in south Alabama responsible for draining the Lower Coastal Plain Hills to the Gulf of Mexico (Lacefield 2000). Numerous small streams and seeps on the Center drain either north into the Conecuh River or flow south into an underground network of limestone sinks and tunnels before reemerging elsewhere.

Numerous habitat types occur on the Center ranging from dry, sandy longleaf pine/oak ridges, mature hardwood-dominated mesic slopes to bald cypress/tupelo gum wetlands, open, sandy pitcher-plant bogs, longleaf pine forests and pine savannahs, riverine habitats, ponds, pastures, food plots, bottomland hardwoods, cultivated field edges, to a network of dirt roads and a paved highway corridor. The Center's soils are primarily of sandy substrate, but contains diverse geology including limestone outcrops and sink-holes, dry, iron-encrusted sandstone ridges, natural spring-fed ponds and streams, and rich, loamy slopes. The entire study area sits squarely in the East Gulf Coastal Plain (EGCP) Ecoregion, part of the larger Coastal Plain Province defined by the exposed portions of the continental shelf running continuously from south Texas to the Florida Keys (Gleason & Cronquist 1964; Takhtajan 1986; Thorne 1993). A sharp geologic boundary called the fall-line separates the Cretaceous sedimentary deposits of the Coastal Plain from the older Pale-



**Figure 1.** Location and approximate boundary of the Solon Dixon Forestry Education Center in south Alabama.

ozoic formations of the Piedmont Plateau to the northeast (Gentry 1986) and the Mississippi Embayment, an extensive inland projection of the Coastal Plain from Mississippi to southern Illinois (Fennemann 1938; Hunt 1974; Walker & Coleman 1987) which further divides the EGCP into western and eastern regions. The EGCP is circumscribed from northeastern Louisiana across southern Mississippi and Alabama, to the Florida panhandle and into south-western Georgia (Gleason & Cronquist 1964; Sorrie & Weakley 2001).

The Center is located in a warm, humid, sub-tropical climate region typified by long hot summers and short mild winters regulated by the climatological effects of the Gulf of Mexico. From 2010 to 2013 the warmest months recorded were June through August and the coolest were December through February (Table 1). During this time period, average temperatures in August ranged from 25.1 °C to 27.2 °C and for January the averages were 7.8 °C to 12.8 °C. Annual average temperature for the region ranged from 11.1 °C to 26.3 °C. Precipitation recorded for the Center ranged between 16.3 cm in February, the wettest month, to 3.0 cm in October, the driest month, with a total average annual regional precipitation of 124.7 cm (Table 2).

**Table 1.** Monthly and yearly average temperatures (°C) reported for the past four years from the Dixie weather station, which is located on Center property. (<http://chiliweb.southalabama.edu>; accessed Dec 2013.)

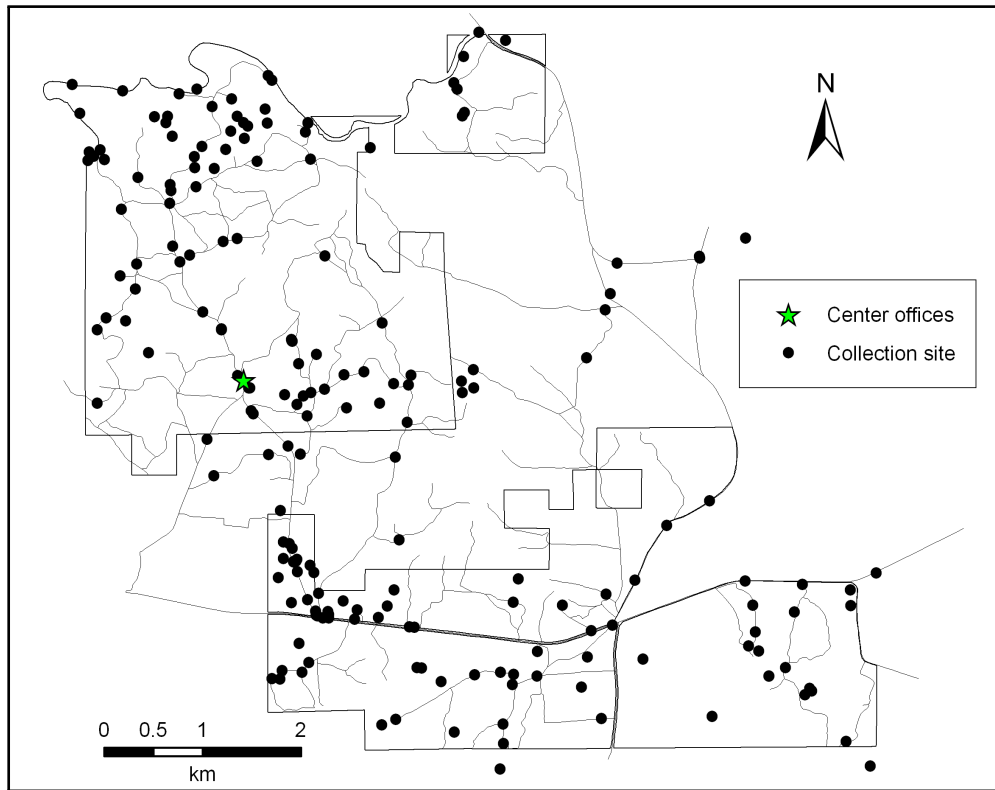
Month	2010	2011	2012	2013	Average
Jan	-	7.78	12.75	12.83	11.12
Feb	-	11.79	12.36	11.55	11.88
Mar	14.87	16.61	19.15	11.90	15.63
Apr	19.23	20.63	19.53	18.31	19.43
May	24.12	22.52	23.51	21.41	22.89
Jun	27.16	26.69	24.57	25.62	26.01
Jul	27.45	26.90	26.33	24.21	26.22
Aug	27.14	27.21	25.62	25.17	26.29
Sep	25.54	23.09	23.59	24.50	24.18
Oct	19.52	17.22	18.21	19.37	18.58
Nov	14.59	14.45	12.57	12.79	13.60
Dec	7.13	11.90	11.97	16.63	11.91
Average	20.68	18.90	19.18	18.69	

### Historic Land Use

Forestry was and remains the primary industry in Covington and Escambia Counties and the Dixon family and their property played a significant role in the history of forestry and timber production in the region. By 1830 the Dixon family arrived from North Carolina to homestead in south Alabama and had developed water-powered sawmills on Eden Creek and later on Blue Creek (Dixon 1982; Ward 2010). They focused primarily on harvesting and milling common pine species found in south Alabama at the time including, slash pine (*Pinus elliottii* Engelm.), shortleaf pine (*P. echinata* P. Mill.), longleaf pine (*P. palustris* P. Mill.), loblolly pine (*P. taeda* L.) and to a much lesser extent, pond pine (*P. serotina* Michx.) (Dixon 1982). In the 1860s, many of the second generation Dixons had purchased additional land and moved to the Rome community (located on current day Center property) where they operated a steam-powered saw mill and hewed timber that was floated down the Conecuh River and sold in Pensacola, Florida. Around 1900, a second steam-powered mill was

**Table 2.** Monthly precipitation averages and yearly totals (cm) reported for the past four years from the Dixie weather station, which is located on Center property. (<http://chiliweb.southalabama.edu>; accessed Dec 2013).

Month	2010	2011	2012	2013	Average
Jan	-	12.14	14.20	9.75	12.03
Feb	-	9.93	11.84	27.00	16.26
Mar	1.45	16.00	12.29	5.26	8.75
Apr	7.34	6.35	9.42	12.70	8.95
May	12.01	3.66	11.30	3.56	7.63
Jun	6.83	12.37	0.76	23.19	10.79
Jul	4.09	24.64	19.08	6.91	13.68
Aug	17.25	4.95	28.75	2.69	13.41
Sep	7.34	20.04	13.23	18.21	14.71
Oct	4.01	0.97	4.27	2.77	3.01
Nov	16.21	8.51	3.40	3.81	7.98
Dec	2.46	12.60	12.85	2.16	7.52
Totals	78.99	132.16	141.40	118.01	124.72



**Figure 2.** Map of the Solon Dixon Forestry Education Center showing collection sites visited during the study. Each dot represents a GPS point marked near the center of a 1-2 acre plot of significant collection activity.

built on Blue Creek near the confluence with the Conecuh River and continuously operated for 30 years (Dixon 1982; Ward 2010).

By 1909, Alabama’s production of economically and strategically important naval stores (extraction and distillation of turpentine, rosin, tar, pitch, creosote, and phenols from longleaf and slash pine) ranked third in the U.S. (Outland 2004) and three Dixon brothers of the third generation, later built a successful naval stores operation on the Center during the 1930s. They continued their success in the timber industry well into the 1980s during which time they developed the largest and most modern lumber and plywood mills in and around Covington County including in the towns of Andalusia, Brantley, Lockhart, Evergreen and River Falls (Ward 2010).

In 1978, Mr. Solon Dixon donated over 5000 acres of land to Auburn University to be developed into the Solon Dixon Forestry Education Center. The land plus a large monetary contribution, totaling \$3 million, amounted to the largest private donation to Auburn University by a living person in its history (Dixon 1982; Ward 2010).

The Center is now part of the School of Forestry and Wildlife Sciences where forestry and wildlife students fulfill a practicum requirement — hands-on field training and courses covering numerous aspects of forest and wildlife management. The Center is self-sustaining through selective timber harvesting and managed for multiple additional uses including hunting and row crop agriculture.

## Methods

While attempting to survey the Center flora exhaustively, emphasis was placed on collecting reproductively mature specimens (flowering and/or fruiting) to reduce duplication and increase the likelihood of positive identification. Collection efforts were directed temporally, spatially and taxonomically over the duration of the study to sample as much diversity as possible.

Targeted temporal collecting was performed to maximize the success of finding reproductive material during each season of the year and we successfully sampled in every month except December (Table 3). From 2008–2013, in a total of 33 visits to the Center, plants were sampled from 193 sites (Fig. 2).

Collection efforts were also focused spatially to sample across the diversity of habitat types found on the Center.

**Table 3.** Yearly and monthly collecting trips made for the survey.

	J	F	M	A	M	J	J	A	S	O	N	D
2008		•				•		•		•		
2009			•	•	•		•				•	
2010		•			•	•				•	•	
2011			•		•	•	•	•	•	•	•	
2012	•	•	•	•	•	•	•		•	•		
2013							•			•	•	

These areas included wetland bogs, open longleaf forests, hardwood slopes, ephemeral cypress swamps, stream and lake sides, disturbed roadsides, field edges, etc., yielding a rich diversity of plants. Collection sites and habitat types were mapped using GPS and GIS throughout the course of the study so that under-represented areas could be identified and targeted for subsequent exploration. In several cases, additional species were identified by comparing plant checklists from similar or surrounding regions to identify specific taxa that might be found on the Center, which then became the specific focus of a more intensive planthunt. The four comparison checklists were from the Conecuh National Forest (Diamond & Woods 2011), unpublished forest stand surveys from the Center (D. Brockaway pers. comm.) and two published studies from work done on and around the Center (Carter *et al* 1999, 2004). Appendix II (see page 27) includes 84 taxa reported from these four studies that could not be verified in the current study.

Plants were collected in the field, pressed in standard herbarium presses and returned to Auburn University and allowed to dry in herbarium driers at ca. 32°C for a minimum of five days. All post-collection processing of vouchers including identification, label creation, mounting and filing was carried out at the John D. Freeman Herbarium (AUA), part of the Auburn University Museum of Natural History (AUMNH). The primary sources used for identification and nomenclature include: Flora of North America (Flora of North America Editorial Committee 1993+), Weakley (2008, 2012), Cronquist (1980), Isely (1990), and Radford *et al* (1968). Additional sources used for specific plant groups or surrounding regions included, Godfrey & Wooten (1979, 1981), Hitchcock (1971), Isely (1998), Rollins (1993), and Wunderlin & Hansen (2011). Limited duplicates have been distributed to AMAL, TROY, UNA, and UWAL as well as to other regional and national herbaria. Attempts have been made to organize and compile this checklist following the guidelines of Palmer & Richardson (2012).

## Taxonomic Scope

The checklist was grouped into the following vascular plant divisions: Lycophyta, Monilophyta, Coniferophyta and Magnoliophyta. Within each division taxa were listed alphabetically by family, genus and species names. Where applicable, hybrid taxa with their parentage were included in the checklist. Classification of Lycophyta and Monilophyta generally followed Christenhusz *et al* (2011a) and Smith *et al* (2006). Classification of Coniferophyta followed Christenhusz *et al* (2011b). Familial classification of Magnoliophyta followed Angiosperm Phylogeny Group

**Table 4.** Collection totals by Vascular Plant Division.

Division	Families	Genera	Species	Infrataxa
Lycophyta	2	3	5	0
Monilophyta	13	18	20	4
Coniferophyta	2	4	12	2
Magnoliophyta	135	473	978	134
Total	152	498	1015	140

(2009) and Reveal & Chase (2011) with additional insight from the Angiosperm Phylogeny Website (Stevens 2012). Due to the existence of alternate names for many taxa, only limited nomenclatural synonymy for selected taxa were included, primarily from Flora of North America (Flora of North America Editorial Committee 1993+), Kartesz (2013), Radford *et al* (1968) and Weakley (2012).

## Results

This survey identified a total of 1015 vascular plant species representing 498 genera in 152 families from the Center property (Table 4). No federally listed rare or threatened species were encountered, but 21 (2.1%) taxa tracked and ranked by the Alabama Natural Heritage Program (2013) were documented (Table 5). Non-native and invasive taxa were represented by 133 species and accounted for 13.1% of the flora. Twenty-two of the non-native species (2.2%) were categorized by the Alabama Invasive Plant Council (2012) as invasive and are listed in Table 7. The five families with the greatest number of species were Asteraceae (132 spp.), Poaceae (108), Fabaceae (74), Cyperaceae (69), and Lamiaceae (24) (Table 6). The ten most represented genera in the checklist were *Carex* (23 spp.), *Quercus* (20), *Juncus* (15), *Cyperus*, (15), *Dichanthelium* (14), *Hypericum* (14), *Rhynchospora* (13), *Desmodium* (11), *Eupatorium* (11) and *Solidago* (10) (Table 6). The complete checklist is presented as Appendix I beginning on page 10.

**Table 5.** Globally and state ranked vascular plants identified in the study. G = global, S = state, 1 = critically imperiled, 2 = imperiled, 3 = vulnerable, rare or uncommon, 4 = apparently secure, 5 = clearly secure, Q = taxonomic distinctiveness is questionable (See ALNHP 2013 for complete category descriptions).

Taxon	Global rank	State rank
<i>Astragalus villosus</i>	G4	S2
<i>Brickellia cordifolia</i>	G2G3	S2
<i>Chamaecrista deeringiana</i>	G2G4Q	S1
<i>Coreopsis gladiata</i>	G4G5	S2
<i>Eleocharis melanocarpa</i>	G4	S1
<i>Eleocharis olivacea</i>	G5	S1
<i>Epidendrum magnoliae</i>	G4	S2
<i>Gordonia lasianthus</i>	G5	S1
<i>Hamamelis ovalis</i>	G1	S1
<i>Helenium brevifolium</i>	G4	S1
<i>Lilaeopsis carolinensis</i>	G3G5	S1
<i>Lycopodiella cernua</i>	G5	S1S2
<i>Pieris phillyreifolia</i>	G3	S2
<i>Pinus clausa</i>	G4	S2
<i>Pinus serotina</i>	G5	S1
<i>Pityopsis oligantha</i>	G2G4	S1
<i>Rhododendron austrinum</i>	G3	S2S3
<i>Sarracenia leucophylla</i>	G3	S3
<i>Stewartia malacodendron</i>	G4	S2S3
<i>Stylisma aquatica</i>	G4	S1
<i>Tridens carolinianus</i>	G3G4	S1

**Table 6.** Plant families and genera with the greatest representation in the Center flora.

Family	No.(%)	Genus	No.
Asteraceae	132 (13.0)	<i>Carex</i>	23
Poaceae	108 (10.6)	<i>Quercus</i>	20
Fabaceae	74 (7.3)	<i>Juncus</i>	15
Cyperaceae	69 (6.8)	<i>Cyperus</i>	15
Lamiaceae	24 (2.4)	<i>Dichanthelium</i>	14
Fagaceae	22 (2.2)	<i>Hypericum</i>	14
Ericaceae	22 (2.2)	<i>Rhynchospora</i>	13
Rosaceae	22 (2.2)	<i>Desmodium</i>	11
Euphorbiaceae	21 (2.1)	<i>Eupatorium</i>	11
Rubiaceae	17 (1.7)	<i>Solidago</i>	10
Juncaceae	16 (1.6)	<i>Symphotrichum</i>	10
Apiaceae	15 (1.5)	<i>Paspalum</i>	9
Onagraceae	15 (1.5)	<i>Ipomoea</i>	9
Hypericaceae	14 (1.4)	<i>Pinus</i>	8

## Discussion

### Biodiversity

The EGCP is home to a distinctive vascular plant flora, rich in species endemism, and is considered to be a major biodiversity hotspot in North America, north of Mexico (Gleason & Cronquist 1964; Gentry 1986; Takhtajan 1986; Thorne 1993; Flather *et al* 1998; Chaplin *et al* 2000). The rich plant and animal diversity and unique endemism of this region may be largely attributed to geology and climate. Alabama is uniquely situated at the convergence of several large physiographic regions including the Coastal Plain, Piedmont Plateau, Ridge and Valley, Appalachian Ridges, Cumberland Plateau and Highland Rim. Specifically, the sharp geologic boundary change from the Piedmont Plateau to Coastal Plain is so closely mirrored by dramatic changes in plant assemblages, that Takhtajan (1986) considered the coastal plain to be the best defined floristic province in all of North America (see also Sorrie & Weakley 2001). This region was never glaciated during the most recent Pleistocene glaciation event and has been occupied continuously by plants since at least the Cretaceous, giving ample time for narrowly endemic species to evolve (Estill & Cruzan 2001; NatureServe 2013). The Nature Conservancy (2013) ranked Alabama the fifth most biologically diverse state in the U.S. though it ranks 30th in total area.

### Botany in South Alabama

Southern Alabama has been a center of active botanical exploration evidenced by the number of floristic works published in the last 20 years. Critical to the success of the Alabama statewide checklist (Kral *et al* 2011) were the efforts and collections by previous students and botanists to document the flora in numerous regional areas and counties in south Alabama. There are several floras, reports and checklists concentrating on counties and locations within this region including publications dedicated to pteridophytes (Diamond & Woods 2007; Woods & Diamond 2008) and gymnosperms (Woods & Diamond 2005).

**Table 7.** Invasive taxa identified in the survey. Category 1 = extensive and dense infestations in Alabama, Category 2 = scattered and localized infestations in Alabama, A = Watch, recently appearing in Alabama as free-living infestations (See ALIPC 2012 for complete category descriptions).

Taxon	Rank
<i>Albizia julibrissin</i>	1
<i>Cantinoa mutabilis</i>	A
<i>Elaeagnus umbellata</i>	2
<i>Imperata cylindrica</i>	1
<i>Lantana camara</i>	2
<i>Lespedeza bicolor</i>	2
<i>Ligustrum japonicum</i>	2
<i>Ligustrum sinense</i>	1
<i>Lonicera japonica</i>	1
<i>Lygodium japonicum</i>	1
<i>Melia azedarach</i>	2
<i>Nandina domestica</i>	2
<i>Paspalum urvillei</i>	2
<i>Phyllanthus urinaria</i> ssp. <i>urinaria</i>	2
<i>Phyllostachys aurea</i>	2
<i>Pueraria montana</i> var. <i>lobata</i>	1
<i>Pyrus calleryana</i>	2
<i>Sesbania punicea</i>	2
<i>Sorghum halepense</i>	2
<i>Triadica sebifera</i>	1
<i>Vernicia fordii</i>	2
<i>Wisteria sinensis</i>	1

In addition, plant checklists have been completed for the following southern counties: Coffee (Martin *et al* 2002, 797 spp.), Conecuh (Diamond & Freeman 1993, 1034 spp. updated), Crenshaw (Diamond 2011, 1171 spp.), Dale (Dransfield & Woods 2004, 921 spp.), Mobile (Lelong 1977, 876 spp.), and Pike (Diamond 2003, 1190 spp.). Ongoing floristic studies continue in the following southern counties: Bullock, Butler, Montgomery (A.R. Diamond pers. comm.), Marengo (B. Keener pers. comm.) and Clarke and Monroe (W. Barger pers. comm.). Updated floras for Baldwin and Mobile Counties (H. Horne pers. comm.) are also in preparation. Other important plant checklists from regions in the Coastal Plain of south Alabama include: noteworthy collections from Baldwin and Mobile Counties (Lelong 1988a,b), poisonous plants of the Coastal Plain of Alabama (Moore 1971), Conecuh National Forest (Diamond & Woods 2011, 346 spp., Conecuh Co.), Dauphin Island (Deramus 1970, 584 spp., Mobile Co.: being updated by H. Horne, pers. comm.: 750 spp.), Pensacola FL region (Wilhelm 1984, incl. Baldwin and Escambia Cos., AL), Pike County Lake (Woods & Reiss 1998, 274 spp.), Pike County Pocosin (Diamond *et al* 2002, 348 spp.), Dale County Lake (Woods *et al* 2001, 407 spp.), Ech Lake (Rundell & Woods 2001, 550 spp., Dale Co.), Fort Rucker, AL (Mount & Diamond 1992, 549 spp., Coffee Co.), Perdido River Forever Wild Tract (Barger *et al* 2013, 713 spp., Baldwin Co.), Old Cahawba Forever Wild Tract (Barger *et al* 2014, 691 spp., Dallas Co.), Red Hills Forever Wild Tract (Barger and Holt, pers. comm., 511 spp., Monroe Co., in review), Red Hills (Diamond 1987, 880 spp.: incl. parts of four counties: Butler, Conecuh, Wilcox, and Monroe) and the bottomland forest and adjacent uplands of

the Tombigbee River (Crouch & Golden 1997, 450 spp., Choctaw Co.). Two critical studies of the ecological land classification and species composition of the southern loam hills by Carter *et al* (1999, 2004) were projects carried out on Center property and provided details of the many habitat types that exist in and around the property and included plant lists of species seen in surveys. Other checklists and floristic surveys, many unpublished, exist for sites in southern Alabama and are not catalogued here.

### Notable Findings

Several noteworthy collections and observations were made during this survey. Originally described from southern Mississippi by Leonard (2006) and only recently reported for south Alabama by Keener (2010), *Hamamelis ovalis* was collected on Center property in 2011. *Hamamelis ovalis* differs from the more common *H. virginiana* in having larger leaves covered with densely stellate tomentum abaxially (vs. glabrous or scabridulous tomentum restricted to veins), reddish petals (vs. yellow), phenology beginning in late December (vs. ending late December) and a stong clonal habit (Leonard 2006). The population on the Center was found on rich mesic slopes and ravines above the Conecuh River with an overstory dominated by *Fagus grandifolia*, *Magnolia grandiflora*, *Cornus florida*, *Ilex opaca*, *Rhododendron austrinum*, *R. canescens*, *Carya tomentosa* and several species of *Quercus*.

Along these same ravines and mesic slopes, several individuals of *Stewartia malacodendron* were discovered. This member of the tea family is endemic to the southeastern United States and has been reported primarily in coastal states from southeast Virginia to extreme eastern Texas (Kartesz 2013). While this plant is listed as G4, apparently secure across its range, it is listed in Alabama as imperiled or vulnerable (S2S3) with estimated occurrences from six to 100 (Alabama Natural Heritage Program 2013). *Stewartia malacodendron* was seen on Center property in the early 1990s by DCP but was “lost” until now, nearly 25 years after the original discovery.

Given the extent and variety of seeps, bogs, ponds, streams, lakes and other wet areas found on the Center, the apparent paucity of Ranunculaceae was a continual source of amazement. Other than two species of *Clematis* and one non-native buttercup no other representatives of the family could be found despite several springtime searches dedicated to this pursuit. In contrast, there was a noticeable increase in the number of weedy *Cantinoa mutabilis* (tropical bush-mint) encountered over the five years of the survey. This species is spreading along roadsides, field edges, forest openings and other disturbed sites in dense patches and is worth monitoring as a potential invasive in the southern part of the state.

Species-area (SA) relationships are a common parameter in discussions of species richness and biodiversity (Macarthur & Wilson 1967; Whittaker & Matthews 2014; Gerstner *et al* 2014). In general they suggest that the number of species encountered increases relative to the size of the area searched (Ricklefs 1990). While this study did not set out to formally measure a SA relationship and

simple comparisons of such relationships to other floras may be misleading (Gotelli & Colwell 2001), reflecting little more than a collection-effort bias (Funk & Richardson 2002), it is interesting to place the data gathered here in the context of other studies. The Center covers 21.44 km<sup>2</sup> and has 1015 plant species, equating to 47 spp./km<sup>2</sup>. By comparison, other surrounding county-level floras with their respective areas, species numbers and SA ratios include; Coffee (1759.1 km<sup>2</sup>, 797 spp. for 0.45 spp./km<sup>2</sup>), Conecuh (2203.8 km<sup>2</sup>, 1034 spp. for 0.47 spp./km<sup>2</sup>), Crenshaw (1578.8 km<sup>2</sup>, 1171 spp. for 0.74 spp./km<sup>2</sup>), Dale (1453.2 km<sup>2</sup>, 921 spp. for 0.63 spp./km<sup>2</sup>), Mobile (3194.5 km<sup>2</sup>, 876 spp. for 0.27 spp./km<sup>2</sup>) and Pike (1738.1 km<sup>2</sup>, 1190 spp. for 0.68 spp./km<sup>2</sup>). In addition to the high species density observed, the Center flora rivals several nearby counties in total species number. The Alabama Plant Atlas (2014; accessed Dec 2013) website currently reports 4042 plant species for Alabama, a state covering 135 765 km<sup>2</sup>. At 1015 plant species, the Center accounts for a full 25% of the plant diversity of Alabama on less than one tenth of one percent of the land area.

Though not intended as a county checklist, this survey further identified over 240 species that are apparently new reports from both Covington and Escambia Counties. After searching respective county lists available online from the Alabama Plant Atlas (2014) and the Floristic Synthesis of North America (2013), we noted over 80 species from Escambia County and over 160 species from Covington County not yet reported at the county level. Many of these taxa are however, common in this region and are mentioned here in anticipation that future county-specific floristic surveys will use these data as a baseline for collecting.

This survey is the first to systematically document and catalogue the vascular plant flora of the Solon Dixon Forestry Education Center. Over 2000 collections were made representing 152 families, 498 genera and 1015 species. Significant additional biodiversity likely remains to be discovered as the Center is well-situated in the species-rich Coastal Plain and contains a wide variety of habitats. Previous surveys have likewise yielded impressive results for lichens (Hansen & Lendemer 2008) and bryophytes (Hansen, unpublished data). Utilization of the Center for future surveys of other groups of organisms is strongly encouraged as it will likely add greatly to our understanding of the overall biodiversity, ecology and ecosystem functioning of the Coastal Plain.

## Acknowledgments

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## References

- Alabama Invasive Plant Council (2012) List of Alabama's invasive plants by land-use and water-use categories. <http://www.se-eppc.org/alabama>.
- Alabama Natural Heritage Program (2013) Alabama Inventory List: The Rare, Threatened and Endangered Plants & Animals of Alabama. Provided by the Alabama Natural Heritage Program. [http://www.alnhp.org/tracking\\_list.php](http://www.alnhp.org/tracking_list.php).
- Alabama Plant Atlas Editorial Committee (2014) Alabama Plant Atlas. University of West Alabama, Livingston. [S.M. Landry and K.N. Campbell - original application development, Florida Center for Community Design and Research, University of South Florida]. [www.floraofalabama.org](http://www.floraofalabama.org).
- Angiosperm Phylogeny Group (2009) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society*, **161**, 105–121.
- Barger TW, Holt BD, Derry L, Matthews J (2014) The vascular flora of the Old Cahawba Forever Wild Tract, Dallas County, Alabama. In press.
- Barger TW, Spaulding DD, Holt BD (2013) The vascular flora of the Perdido River Forever Wild Tract, Baldwin County, Alabama. *Castanea*, **78**, 119–133.
- Carter RE, MacKenzie MD, Gjerstad DH (1999) Ecological land classification in the Southern Loam Hills of south Alabama. *Forest Ecology and Management*, **114**, 395–404.
- Carter RE, MacKenzie MD, Gjerstad DH, Jones D (2004) Species composition of fire disturbed ecological land units in the Southern Loam Hills of south Alabama. *Southeastern Naturalist*, **3**, 297–308.
- Chaplin SJ, Gerrard RA, Watson HM, Master LL, Flack SR (2000) The geography of imperilment: targeting conservation toward critical biodiversity areas. In *Precious Heritage: The Status of Biodiversity in the United States* (edited by BA Stein, LS Kutner, JS Adams), pp. 159–200. Oxford University Press, New York, New York.
- Christenhusz MJM, Zhang XC, Schneider H (2011a) A linear sequence of extant families and genera of lycophytes and ferns. *Phytotaxa*, **19**, 7–54.
- Christenhusz MJM, Reveal JL, Farjon A, Gardner MF, Mill RR, Chase MW (2011b) A new classification and linear sequence of extant gymnosperms. *Phytotaxa*, **19**, 55–70.
- Cronquist A (1980) *Vascular Flora of the Southeastern United States. Vol. 3. Asteraceae*. The University of North Carolina Press, Chapel Hill, North Carolina.
- Crouch VE, Golden MS (1997) Floristics of a bottomland forest and adjacent uplands near the Tombigbee River, Choctaw County, Alabama. *Castanea*, **62**, 219–228.
- Deramus R (1970) *Studies on the Flora of the Vascular Plants of Dauphin Island, Mobile County, Alabama*. Ph.D. thesis, The University of Alabama, Tuscaloosa, Alabama.
- Diamond AR, Freeman JD (1993) A checklist of the vascular flora of Conecuh County, Alabama. *Sida*, **15**, 623–638.
- Diamond Jr AR (1987) *A Flora of the Mesic Ravines of the Central Red Hills of Alabama*. Master's thesis, Auburn University, Auburn, Alabama.
- Diamond Jr AR (2003) A checklist of the vascular flora of Pike County, Alabama. *Castanea*, **68**, 143–159.
- Diamond Jr AR (2011) A checklist of the vascular plants of Crenshaw County, Alabama. *Castanea*, **76**, 64–82.
- Diamond Jr AR, Woods M (2007) Pteridophytes of southeast Alabama. *Journal of the Alabama Academy of Science*, **78**, 21–28.
- Diamond Jr AR, Woods M (2011) *A Study of the Understory Vegetation in a Longleaf Restoration Project, Conecuh National Forest*. Submitted to the United States Department of Agriculture, Forest Service in Alabama, July 19, 2011, Montgomery, Alabama.
- Diamond Jr AR, Woods M, Hall JA, Martin BH (2002) The vascular flora of the Pike County Pocosin Nature Preserve. *Southeastern Naturalist*, **1**, 45–54.
- Dixon S (1982) *The Dixon Legend; as told to John Burgess*. Strode Publishers, Huntsville, Alabama.
- Dransfield TP, Woods M (2004) The vascular flora of Dale County, Alabama. *Southeastern Naturalist*, **3**, 495–516.
- Estill JC, Cruzan MB (2001) Phytogeography of rare plant species endemic to the southeastern United States. *Castanea*, **66**, 3–23.
- Fennemann M (1938) *Physiography of Eastern United States*. McGraw-Hill, New York, New York.
- Flather CH, Knowles MS, Kendall IA (1998) Threatened and endangered species geography. *BioScience*, **48**, 365–376.
- Flora of North America Editorial Committee (1993+) *Flora of North America North of Mexico*. vol. 16+. Oxford University Press, New York and Oxford.
- Funk VA, Richardson KS (2002) Systematic data in biodiversity studies: use it or lose it. *Systematic Biology*, **51**, 303–316.
- Gentry A (1986) Endemism in the tropical versus temperate plant communities. In *Conservation Biology* (edited by ME Soule), pp. 153–181. Sinauer Associates, Sunderland, Massachusetts.
- Gerstner K, Dormann CF, Václavík T, Kreft H, Seppelt R (2014) Accounting for geographical variation in species–area relationships improves the prediction of plant species richness at the global scale. *Journal of Biogeography*, **41**, 261–273.
- Gleason HA, Cronquist A (1964) *The Natural Geography of Plants*. Columbia University Press, New York, New York.
- Godfrey RK, Wooten JW (1979) *Aquatic and Wetland Plants of the Southeastern United States. Monocotyledons*. The University of Georgia Press, Athens, Georgia.
- Godfrey RK, Wooten JW (1981) *Aquatic and Wetland Plants of the Southeastern United States. Dicotyledons*. The University of Georgia Press, Athens, Georgia.
- Gotelli NJ, Colwell RK (2001) Quantifying biodiversity: procedures and pitfalls in the measurement and comparison of species richness. *Ecology Letters*, **4**, 379–391.
- Hansen CJ, Lendemer JC (2008) A checklist of lichens collected during the 2007 Blomquist Foray in southern Alabama, U.S.A. *Evansia*, **25**, 26–33.

- Hitchcock AS (1971) *Manual of the Grasses of the United States: in two volumes*. Dover Publications, Inc, New York, New York.
- Hunt CB (1974) *Natural Regions of the United States*. W. H. Freeman and Co., San Francisco, California.
- Isely D (1990) *Vascular Flora of the Southeastern United States. Vol. 3, Part 2. Leguminosae (Fabaceae)*. The University of North Carolina Press, Chapel Hill, North Carolina.
- Isely D (1998) *Native and Naturalized Leguminosae (Fabaceae) of the United States: (exclusive of Alaska and Hawaii)*. Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
- Kartesz JT (2013) Floristic Synthesis of the North American Flora. Version 2. In press. Biota of North America (BONAP). [www.bonap.org](http://www.bonap.org).
- Keener BR (2010) Noteworthy Collections. Alabama. *Castanea*, **75**, 500.
- Kral R, Diamond Jr AR, Ginzburg SL, et al (2011) Annotated checklist of the vascular plants of Alabama. *Sida, Botanical Miscellany*, **36**, 1–112.
- Lacefield J (2000) *Lost Worlds in Alabama Rocks. A Guide to the State's Ancient Life and Landscapes*. Alabama Geological Society, Tuscaloosa, Alabama.
- Lelong MG (1977) Annotated list of vascular plants in Mobile, Alabama. *Sida*, **7**, 118–146.
- Lelong MG (1988a) Noteworthy monocots of Mobile and Baldwin Counties, Alabama. *Sida*, **13**, 101–113.
- Lelong MG (1988b) Noteworthy dicots of Mobile and Baldwin Counties, Alabama. *Sida*, **13**, 223–240.
- Leonard SW (2006) A new species of witch-hazel (*Hamamelis*: Hamamelidaceae) apparently endemic to southern Mississippi. *Sida*, **22**, 849–856.
- Macarthur RH, Wilson EO (1967) *The theory of Island Biogeography*. Princeton University Press, Princeton, New Jersey.
- Martin BH, Woods M, Diamond Jr AR (2002) The vascular flora of Coffee County, Alabama. *Castanea*, **67**, 227–246.
- Moore HD (1971) *Poisonous Plants of the Coastal Plain of Alabama and Adjacent Western Florida*. Master's thesis, Auburn University, Auburn, Alabama.
- Mount RH, Diamond Jr AR (1992) Final Survey of the Fauna and Flora of Fort Rucker, Alabama. Department of Defense Contract No. DABT01-C-0162.
- NatureServe (2013) NatureServe Explorer. Version 7 [web application]. [http://www.landscope.org/explore/natural\\_geographies/ecoregions/EastGulfCoastalPlain](http://www.landscope.org/explore/natural_geographies/ecoregions/EastGulfCoastalPlain).
- Outland III RB (2004) *Tapping the Pines: The Naval Stores Industry in the American South*. Louisiana State University Press, Baton Rouge, Louisiana.
- Palmer MW, Richardson JC (2012) Biodiversity data in the information age: Do 21st century floras make the grade? *Castanea*, **77**, 46–59.
- Radford AE, Ahles HE, Bell CR (1968) *Manual of the Vascular Flora of the Carolinas*. University of North Carolina Press, Chapel Hill, North Carolina.
- Reveal JL, Chase MW (2011) APG III: bibliographical information and synonymy of magnoliidae. *Phytotaxa*, **19**, 71–134.
- Ricklefs RE (1990) *Ecology*. W. H. Freeman and Company, New York, New York.
- Rollins R (1993) *The Cruciferae of Continental North America: Systematics of the Mustard Family from the Arctic to Panama*. Stanford University Press, Stanford, California.
- Rundell H, Woods M (2001) The vascular flora of Ech Lake, Alabama. *Castanea*, **66**, 352–362.
- Smith AR, Pryer KM, Schuettpelz E, Korall P, Schneider H, Wolf PG (2006) A classification for extant ferns. *Taxon*, **55**, 705–731.
- Sorrie BA, Weakley AS (2001) Coastal Plain vascular plant endemics: phytogeographic patterns. *Castanea*, **66**, 50–82.
- Stevens PF (2012) Angiosperm Phylogeny Website. Version 12. [continuously updated]. <http://www.mobot.org/MOBOT/Research/APweb>.
- Takhtajan A (1986) *Floristic Regions of the World*. University of California Press, Berkeley, California.
- The Nature Conservancy (2013) Alabama. [onlinetrill web application]. <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/alabama/index.htm>.
- Thorne RF (1993) Phytogeography. In *Flora of North America North of Mexico* (edited by Flora of North America Editorial Committee), vol. 1, pp. 132–153. Oxford University Press, New York, New York.
- Walker J, Coleman JM (1987) Atlantic and Gulf Coastal Province. In *Geomorphic Systems of North America. Centennial Special Volume 2* (edited by WL Graf), vol. 2, pp. 51–110. Geological Society of America, Boulder, Colorado.
- Ward WD (2010) *History of Forestry in Covington County, Alabama*. Published by the author, 808 East Three Notch Street, Andalusia, Alabama.
- Weakley AS (2008) *Flora of the Carolinas, Virginia, Georgia, Northern Florida, and Surrounding Areas [working draft]*. University of North Carolina Herbarium, North Carolina Botanical Garden, Chapel Hill, North Carolina.
- Weakley AS (2012) *Flora of the Southern and Mid-Atlantic States. [working draft]*. University of North Carolina, Chapel Hill, North Carolina. <http://www.herbarium.unc.edu/flora.htm>.
- Whittaker RJ, Matthews TJ (2014) The varied form of species-area relationships. *Journal of Biogeography*, **41**, 209–210.
- Wilhelm GS (1984) *Vascular Flora of the Pensacola Region*. Ph.D. thesis, Southern Illinois University, Carbondale, Illinois.
- Woods M, Diamond Jr AR (2005) Gymnosperms of southeast Alabama. *Journal of the Alabama Academy of Science*, **76**, 224–238.
- Woods M, Diamond Jr AR (2008) Pteridophytes of southeast Alabama: dichotomous keys, illustrations and distribution maps. *Journal of the Alabama Academy of Science*, **79**, 200–237.



Woods M, Prazinko B, Diamond Jr AR (2001) The vascular flora of Dale County Lake, Alabama. *Journal of the Alabama Academy of Science*, **72**, 64–81.

Woods M, Reiss J (1998) The vascular flora of Pike County Lake, Alabama. *Journal of the Alabama Academy of Science*, **69**, 190–203.

Wunderlin RP, Hansen BF (2011) *Guide to the Vascular Plants of Florida, 3rd Edition*. University Press of Florida, Gainesville, Florida.

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## Appendix I. Annotated Checklist

The checklist that follows summarizes information about each plant taxon collected in this study area. Each entry includes the collector (Hansen=Curtis Hansen; Pancake=Dale Pancake; others as indicated), voucher number or year collected and limited synonymy enclosed in square brackets. Abbreviations used in the annotated checklist are found below. Unless otherwise indicated all specimens are deposited in the John D. Freeman Herbarium (AUA) at the Auburn University Museum of Natural History.

### Format for each taxon entry

*Latin binomial* (with infraspecific taxa, if appropriate)  
Authority: (collector(s) and voucher number(s) or year;  
[=*Synonym* Authority]

*Crocanthemum rosmarinifolium* (Pursh) Janchen: (Hansen 4754, 5067); [= *Helianthemum rosmarinifolium* Pursh]

### Key to symbols following some taxa.

- † = non-native or adventive in Alabama (Kral *et al* 2011)
- ‡ = invasive plant in Alabama (Alabama Invasive Plant Council 2012)
- ✕ = tracked by the Alabama Natural Heritage Program (2013)
- ▲ = cultivated
- = known from study site but not collected
- ★ = affinity toward a particular species or infraspecies

## LYCOPHYTA

### LYCOPODIACEAE

*Lycopodiella alopecuroides* (L.) Cranfill (Hansen 3508, 3631)

*Lycopodiella appressa* (Chapm.) Cranfill (Hansen 5484)

*Lycopodiella prostrata* (Harper) Cranfill (Hansen 3509)

*Palhinhaea cernuua* (L.) Franco & Vasc. ✕ (Hansen 5847)

### SELAGINELLACEAE

*Selaginella apoda* (L.) Spring (Hansen 5585)

## MONILOPHYTA

### ASPLENIACEAE

*Asplenium platyneuron* (L.) B.S.P. (Hansen 3740, 4543)

### BLECHNACEAE

*Woodwardia areolata* (L.) T. Moore (Hansen 3518, 3988)

*Woodwardia virginica* (L.) Sm. (Hansen 5560, 5615)

### DENNSTAEDTIACEAE

*Pteridium aquilinum* (L.) Kuhn var. *pseudocaudatum* (Clute) Heller (Hansen 3304, 5534)

### DRYOPTERIDACEAE [see also WOODSIACEAE]

*Polystichum acrostichoides* (Michx.) Schott (Hansen 3252, 3286, 5393)

### EQUISETACEAE

*Equisetum hyemale* L. var. *affine* (Engelm.) A.A. Eat. (Hansen 4811)

### LYGODIACEAE

*Lygodium japonicum* (Thunb. ex Murr.) Sw. ‡ (Hansen 3378)

### ONOCLEACEAE

*Onoclea sensibilis* L. (Hansen 5000, 5040)

### OPHIOGLOSSACEAE

*Botrypus virginianus* (L.) Holub (Hansen 5390)  
[=*Botrychium virginianum* (L.) Sw.]

*Sceptridium biternatum* (Sav.) Lyon (Hansen 5572)  
[=*Botrychium biternatum* (Sav.) Underwood]

### OSMUNDACEAE

*Osmunda spectabilis* Willd. (Hansen 4083, 4810)  
[=*Osmunda regalis* L. var. *spectabilis* (Willd.) Gray]

*Osmundastrum cinnamomeum* (L.) K. Presl (Hansen 3342, 3690, 5523) [= *Osmunda cinnamomea* L.]

### POLYPODIACEAE

*Pleopeltis polypodioides* (L.) Andrews & Windham ssp. *michauxiana* (Weatherby) Andrews & Windham (Hansen 3444, 3689)

### PTERIDACEAE

*Adiantum capillus-veneris* L. (Hansen 3287)

### THELYPTERIDACEAE

*Christella dentata* (Forssk.) Brownsey & Jermy † (Hansen 5316) [= *Thelypteris dentata* (Forssk.) E. St. John]

*Christella hispidula* (Dcne.) Holttum (Hansen 5363, 5581) [= *Thelypteris hispidula* (Dcne.) C.F. Reed var. *versicolor* (R. St. John) Lellinger]

*Macrothelypteris torresiana* (Gaud.) Ching † (Hansen 3389, 5003, 5580)

*Thelypteris kunthii* (Desv.) Morton (Hansen 3289, 5179, 5314)

### WOODSIACEAE

*Athyrium filix-femina* (L.) Roth ssp. *asplenioides* (Michx.) Hultén (Hansen 3987, 4125, 5002, 5073, 5178, 5579)  
[=*Athyrium asplenioides* (Michx.) A.A. Eat.]

*Debaria petersenii* (Kunze) M. Kato † (Hansen 3388, 5001)

## CONIFEROPHYTA

### CUPRESSACEAE

*Chamaecyparis thyoides* (L.) B.S.P. (Hansen 4146)

*Juniperus virginiana* L. var. *virginiana* (Hansen 3608)

*Taxodium ascendens* Brongn. (Hansen 4865)  
*Taxodium distichum* (L.) L.C. Rich. (Hansen 3402)

## PINACEAE

*Pinus clausa* (Chapm. ex Engelm.) Vasey ex Sarg. ✕  
 (Pancake s.n., 2011)  
*Pinus echinata* P. Mill. (Pancake s.n., 2011)  
*Pinus elliotii* Engelm. var. *elliottii* (Pancake s.n., 2011)  
*Pinus glabra* Walt. (Hansen 4121)  
*Pinus palustris* P. Mill. (Pancake s.n., 2011)  
*Pinus serotina* Michx. ✕ (Pancake s.n., 2011)  
*Pinus taeda* L. (Hansen 3594)  
*Pinus virginiana* P. Mill. (Pancake s.n., 2011)

## MAGNOLIOPHYTA

## ACANTHACEAE

*Justicia ovata* (Walt.) Lindau var. *lanceolata* (Chapm.)  
 R.W. Long (Hansen 4849, 5033, 5554)  
*Ruellia caroliniensis* (J.F. Gmel.) Steud. (Hansen 3420,  
 4076)  
*Ruellia ciliosa* Pursh var. *cinerascens* Fern. (Hansen  
 5291, 5642)  
*Yeatsia viridiflora* (Nees) Small (Hansen 3425-atypical,  
 4823, 4845, 5032)

[ACERACEAE — see SAPINDACEAE]

## ADOXACEAE

*Sambucus nigra* L. ssp. *canadensis* (L.) R. Bolli (Hansen  
 3371)  
*Viburnum dentatum* L. var. *dentatum* (Hansen 3652,  
 3974, 5604, 5605)  
*Viburnum nudum* L. (Hansen 3357, 3722, 3989, 4056,  
 4834, 5008, 5151)  
*Viburnum rufidulum* Raf. (Hansen 5518)

[AGAVACEAE — see ASPARAGACEAE]

## ALISMACEAE

*Sagittaria latifolia* Willd. var. *latifolia* (Hansen 4848)

[ALLIACEAE — see AMARYLLIDACEAE]

## ALTINGIACEAE

*Liquidambar styraciflua* L. (Hansen 3654)

## AMARANTHACEAE

*Amaranthus palmeri* S. Wats. † (Hansen 5648)  
*Amaranthus spinosus* L. † (Hansen 5825)  
*Amaranthus viridis* L. † (Hansen 5116, 5672, 5826)  
*Dysphania ambrosioides* (L.) Mosyakin & Clemants †  
 (Hansen 4539, 5109, 5344, 5748, 5769)  
 [= *Chenopodium ambrosioides* L.]  
*Dysphania carinata* (R. Br.) Mosyakin & Clemants †  
 (Hansen 5729)  
*Dysphania multifida* (L.) Mosyakin & Clemants † (Larsen  
 s.n., 1982 [AUA]) [= *Chenopodium multifidum* L.]

*Froelichia floridana* (Nutt.) Moq. (Hansen 5247)

## AMARYLLIDACEAE

*Allium ampeloprasum* L. † (Hansen 3674)  
*Allium canadense* L. var. *canadense* (Hansen 5505)  
*Allium canadense* L. var. *mobile* (Regel) Ownbey  
 (Pancake s.n., 2012)  
*Hymenocallis* aff. *occidentalis* (Le Conte) Kunth • ★  
 — non-reproductive specimens only, no voucher taken.  
*Lycoris radiata* (L'Hér.) Herbert † (Pancake s.n., 2013)  
*Narcissus* aff. *intermedius* Loisel. † ★ (Hansen 5375)  
 — non-reproductive specimens only, leaves and bulbs  
 collected.  
*Nothoscordum bivalve* (L.) Britt. (Hansen 3421, 3634,  
 5360, 5451)  
*Zephyranthes atamasca* (L.) Herbert (Hansen 4965)

ANACARDIACEAE

*Rhus copallinum* L. var. *latifolia* Engler (Hansen 3501,  
 3584)  
*Rhus glabra* L. (Hansen 4872)  
*Toxicodendron pubescens* P. Mill. (Hansen 3702)  
*Toxicodendron radicans* (L.) Kuntze var. *radicans*  
 (Hansen 3676)  
*Toxicodendron vernix* (L.) Kuntze (Hansen 4833)

ANNONACEAE

*Asimina parviflora* (Michx.) Dunal (Hansen 3443)

APIACEAE

*Angelica venenosa* (Greenway) Fern. (Hansen 3505, 4118,  
 5698, 5726)  
*Centella erecta* (L. f.) Fern. (Hansen 3365)  
*Chaerophyllum tainturieri* Hook. var. *tainturieri* (Hansen  
 3664, 5408)  
*Cyclosporum leptophyllum* (Pers.) Sprague ex Britt. &  
 P. Wilson † (Hansen 5459)  
*Daucus carota* L. † (Hansen 4698)  
*Eryngium integrifolium* Walt. (Pancake s.n., 2010)  
*Eryngium yuccifolium* Michx. var. *synchaetum* Gray ex  
 Coult. & Rose (Hansen 5218)  
*Eryngium yuccifolium* Michx. var. *yuccifolium* (Hansen  
 4131, 4682)  
*Lilaeopsis carolinensis* Coult. & Rose ✕ (Hansen 4994,  
 5371)  
*Oxyopsis rigidior* (L.) Raf. (Hansen 4480)  
*Ptilimnium capillaceum* (Michx.) Raf. (Hansen 3981,  
 5503, 5614)  
*Sanicula canadensis* L. (Hansen 3386, 4769)  
*Spermolepis divaricata* (Walt.) Raf. ex Ser. (Hansen  
 3663, 5490)  
*Thaspium chapmanii* (Coult. & Rose) Small (Hansen  
 3967, 5029, 5851)  
*Thaspium trifoliatum* (L.) Gray var. *aureum* Britt.  
 (Hansen 3292, 5038, 5549, 5852)

*Tiedemannia filiformis* (Walt.) Feist & S.R. Downie ssp. *filiformis* (Hansen 3530, 5160) [= *Oxyopolis filiformis* (Walt.) Britt.]

#### APOCYNACEAE

*Amsonia ciliata* Walt. var. *ciliata* (Hansen 3955)  
*Amsonia tabernaemontana* Walt. (Hansen 5083)  
*Asclepias amplexicaulis* Sm. (Hansen 5548)  
*Asclepias humistrata* Walt. (Hansen 5432)  
*Asclepias michauxii* Dcne. (Hansen 4679, 5443)  
*Asclepias obovata* Ell. (Hansen 3485)  
*Asclepias tuberosa* L. ssp. *tuberosa* (Hansen 3305)  
*Asclepias variegata* L. (Hansen 3295, 3963, 4105, 4722)  
*Catharanthus roseus* (L.) G. Don † ▲ (Hansen 5671)  
*Gonolobus suberosus* (L.) R. Br. var. *suberosus* (Hansen 3264, 3385, 4668, 5035) [= *Matelea gonocarpus* (Walt.) Shinners]  
*Thyrsanthella difformis* (Walt.) Pichon (Hansen 4072, 4560, 4790) [= *Trachelospermum difforme* (Walt.) Gray]

#### AQUIFOLIACEAE

*Ilex ambigua* (Michx.) Torr. (*Pancake s.n.*, 2011)  
*Ilex coriacea* (Pursh) Chapm. (Hansen 3236, 3384, 4964, 5437)  
*Ilex decidua* Walt. (Hansen 3278, 3442, 5416)  
*Ilex glabra* (L.) Gray (Hansen 3241, 3326, 3588)  
*Ilex myrtifolia* Walt. (Hansen 3394)  
*Ilex opaca* Ait. var. *opaca* (Hansen 3265)  
*Ilex vomitoria* Ait. (Hansen 3311)

#### ARACEAE

*Arisaema dracontium* (L.) Schott (Hansen 4808)  
*Arisaema triphyllum* (L.) Schott (*Pancake s.n.*, 2010)  
*Orontium aquaticum* L. (Hansen 4027)  
*Peltandra sagittifolia* (Michx.) Morong (Hansen 4026)

#### ARALIACEAE

*Aralia spinosa* L. (Hansen 3965, 4137)  
*Hydrocotyle verticillata* Thunb. (Hansen 5006, 5510)

#### ARECACEAE

*Rhapidophyllum hystrix* (Pursh) H. Wendl. & Drude ex Drude (Hansen 3249)  
*Sabal minor* (Jacq.) Pers. (Hansen 3240, 3273, 3281)

#### ARISTOLOCHIACEAE

*Endodeca serpentaria* (L.) Raf. (Hansen 5027)  
[= *Aristolochia serpentaria* L.]  
*Hexastylis arifolia* (Michx.) Small var. *arifolia* (Hansen 3246)  
*Isotrema tomentosum* (Sims) Huber (Hansen 5155)  
[= *Aristolochia tomentosa* Sims]

[ASCLEPIADACEAE — see APOCYNACEAE]

#### ASPARAGACEAE

*Asparagus officinalis* L. † (Hansen 5857)  
*Manfreda virginica* (L.) Salisb. ex Rose var. *virginica* (Hansen 5111)  
*Polygonatum biflorum* (Walt.) Ell. (Hansen 5180)  
*Yucca flaccida* Haw. (Hansen 3316)

#### ASTERACEAE

*Acanthospermum australe* (Loefl.) Kuntze † (Hansen 4554, 5250, 5476)  
*Acanthospermum hispidum* DC. † (Hansen 5707)  
*Acmella repens* (Walt.) L.C. Rich. (Hansen 3605, 5754)  
*Ageratina aromatica* (L.) Spach (Hansen 4488, 4921, 5296, 5764) [= *Eupatorium aromaticum* L.]  
*Ambrosia artemisiifolia* L. (Hansen 3478, 4485, 5760)  
*Arnoglossum ovatum* (Walt.) H.E. Robins. var. *lanceolatum* (Nutt.) D.B. Ward (Hansen 4509)  
*Arnoglossum ovatum* (Walt.) H.E. Robins. var. *ovatum* (Hansen 3447, 4509A)  
*Baccharis halimifolia* L. (Hansen 3564)  
*Baldwinia uniflora* Nutt. (Hansen 4943, 5719, 5833)  
*Berlandiera pumila* (Michx.) Nutt. (Hansen 3315, 3469, 3544, 3703)  
*Bidens bipinnata* L. (Hansen 4540, 4894, 5335, 5540)  
*Bidens mitis* (Michx.) Sherff (Hansen 3369, 4519, 4537, 4936, 4938, 5501, 5784)  
*Bigelovia nudata* (Michx.) DC. (Hansen 3457, 4945)  
*Brickellia cordifolia* Ell. ✕ (Hansen 5338, 5689)  
*Brintonia discoidea* (Ell.) Greene (Hansen 4552)  
*Carphephorus pseudoliatris* Cass. (Hansen 4940)  
*Chaptalia tomentosa* Vent. (Hansen 3250)  
*Chrysopsis gossypina* (Michx.) Ell. ssp. *hyssopifolia* (Nutt.) Semple (Hansen 4470)  
*Chrysopsis mariana* (L.) Ell. (Hansen 3561, 4493, 4925)  
*Cirsium horridulum* Michx. (Hansen 3716, 5703)  
*Conoclinium coelestinum* (L.) DC. (Hansen 3590)  
*Conyza bonariensis* (L.) Cronq. † (Hansen 3990)  
*Conyza canadensis* (L.) Cronq. (Hansen 3472, 5139)  
*Coreopsis gladiata* Walt. ✕ (Hansen 4939)  
*Coreopsis linifolia* Nutt. (Hansen 5720, 5834)  
*Coreopsis major* Walt. (Hansen 3481)  
*Coreopsis tripteris* L. (Hansen 5272, 5683)  
*Croptilon divaricatum* (Nutt.) Raf. (Hansen 3489, 4548, 5245)  
*Doellingeria umbellata* (P. Mill.) Nees var. *umbellata* (Hansen 4496, 5744)  
*Elephantopus carolinianus* Raeusch. (Hansen 4553, 5586)  
*Elephantopus elatus* Bertol. (Hansen 4920, 5195)  
*Elephantopus tomentosus* L. (Hansen 3445, 3493)  
*Erechtites hieraciifolius* (L.) Raf. ex DC. (Hansen 3416, 4084) [= *Senecio hieraciifolius* L.]  
*Erigeron annuus* (L.) Pers. (Hansen 5856)

- Erigeron strigosus* Muhl. ex Willd. aff. var. *beyrichii* (Fisch. & C.A. Mey.) Torr. & Gray ex Gray ★ (Hansen 3301)
- Erigeron strigosus* Muhl. ex Willd. var. *strigosus* (Hansen 3749, 4030, 5182, 5488)
- Erigeron vernus* (L.) Torr. & Gray (Hansen 5561)
- Eupatorium album* L. (Hansen 4127, 4922, 5193)
- Eupatorium capillifolium* (Lam.) Small (Hansen 3601)
- Eupatorium compositifolium* Walt. (Hansen 3555, 3582, 3602, 5763)
- Eupatorium hyssopifolium* L. (Hansen 3470, 3520)
- Eupatorium leucolepis* (DC.) Torr. & Gray (Hansen 3479)
- Eupatorium linearifolium* Walt. (Hansen 3483)
- Eupatorium mohrii* Greene (Hansen 3559)
- Eupatorium pilosum* Walt. (Hansen 4857, 5163, 5256, 5730)
- Eupatorium rotundifolium* L. (Hansen 3302, 3526, 5162)
- Eupatorium semiserratum* DC. (Hansen 3519, 5264)
- Eupatorium serotinum* Michx. (Hansen 3603, 5332, 5740)
- Euthamia caroliniana* (L.) Greene ex Porter & Britt. (Hansen 3554, 5341, 5772)
- Euthamia leptcephala* (Torr. & Gray) Greene ex Porter & Britt. (Hansen 4952)
- Eutrochium fistulosum* (Barratt) E.E. Lamont (Hansen 3517, 5171) [= *Eupatorium fistulosum* Barratt]
- Facelis retusa* (Lam.) Sch. Bip. † (Hansen 3646)
- Gaillardia aestivalis* (Walt.) H. Rock (Hansen 5249)
- Gamochaeta antillana* (Urban) Anderberg (Hansen 5455)
- Gamochaeta argyrynea* Nesom (Hansen 4584, 4688)
- Gamochaeta chionesthes* Nesom † (Hansen 4013)
- Gamochaeta coarctata* (Willd.) Kerguelen † (Hansen 3377, 3993, 5456)
- Gamochaeta pennsylvanica* (Willd.) Cabrera † (Hansen 3662, 5377, 5453)
- Gamochaeta purpurea* (L.) Cabrera (Hansen 3658, 3704, 3748, 5438, 5445, 5454)
- Helenium amarum* (Raf.) H. Rock var. *amarum* (Hansen 3375)
- Helenium brevifolium* (Nutt.) Wood ✕ (Hansen 3322)
- Helenium flexuosum* Raf. (Hansen 3300, 4086, 4683, 4798, 5061)
- Helianthus angustifolius* L. (Hansen 3589)
- Helianthus heterophyllus* Nutt. (Hansen 3524, 5718, 5832)
- Helianthus hirsutus* Raf. (Hansen 5808)
- Helianthus microcephalus* Torr. & Gray (Hansen 4494)
- Helianthus radula* (Pursh) Torr. & Gray (Hansen 5725)
- Heliopsis helianthoides* (L.) Sweet var. *gracilis* (Nutt.) Gandhi & Thomas (Hansen 3417, 3435)
- Heterotheca subaxillaris* (Lam.) Britt. & Rusby var. *latifolia* (Buckl.) Gandhi & Thomas (Hansen 5858)
- Hieracium gronovii* L. (Hansen 4924, 5733, 5783, 5841)
- Hypochaeris radicata* L. † (Hansen 4974)
- Ionactis linariifolia* (L.) Greene (Hansen 3549, 3570, 4464)
- Krigia caespitosa* (Raf.) K.L. Chambers (Hansen 3660, 3746, 4064, 5404)
- Lactuca canadensis* L. (Hansen 5152)
- Lactuca floridana* (L.) Gaertn. (Hansen 5756)
- Lactuca graminifolia* Michx. var. *graminifolia* (Hansen 4075, 5176, 5593)
- Liatris elegans* (Walt.) Michx. (Hansen 3550, 4468, 5263, 5300, 5678)
- Liatris gracilis* Pursh (Hansen 3575, 4469, 4486, 5299, 5319, 5679A)
- Liatris microcephala* (Small) K. Schum. (Hansen 5775)
- Liatris spicata* (L.) Willd. var. *resinosa* (Nutt.) Gaiser (Hansen 3527, 4570)
- Liatris squarrosa* (L.) Michx. (Hansen 3503)
- Liatris tenuifolia* Nutt. (Hansen 4931)
- Marshallia graminifolia* (Walt.) Small (Hansen 3525, 4951, 5812)
- Melanthera nivea* (L.) Small (Hansen 3428, 4840, 5689A)
- Mikania scandens* (L.) Willd. (Hansen 3535)
- Nabalus serpentarius* (Pursh) Hook. (Hansen 4484) [= *Prenanthes serpentaria* Pursh]
- Packera anonyma* (Wood) W.A. Weber & A. Löve (Hansen 5012, 5499)
- Packera glabella* (Poir.) C. Jeffrey (Hansen 5406)
- Pityopsis aspera* (Shuttlw. ex Small) Small var. *adenolepis* (Fern.) Semple & Bowers (Hansen 3487, 5197, 5326)
- Pityopsis aspera* (Shuttlw. ex Small) Small var. *aspera* (Hansen 5302)
- Pityopsis graminifolia* (Michx.) Nutt. var. *graminifolia* (Hansen 3548)
- Pityopsis oligantha* (Chapm. ex Torr. & Gray) Small ✕ (Hansen 5216, 5557, 5613)
- Pluchea baccharis* (P. Mill.) Pruski (*Pancake s.n.*, 2012) [= *Pluchea rosea* Godfrey]
- Pluchea camphorata* (L.) DC. (Hansen 4522, 4846, 5183)
- Pluchea foetida* (L.) DC. (Hansen 3464, 4785, 4885, 5141)
- Pseudognaphalium obtusifolium* (L.) Hilliard & Burt (Hansen 3557, 4490)
- Pyrrhopappus carolinianus* (Walt.) DC. (Hansen 3477)
- Rudbeckia hirta* L. (Hansen 4133, 4745, 5102)
- Rudbeckia laciniata* L. (*Pancake s.n.*, 2011)
- Sericocarpus asteroides* (L.) B.S.P. (Hansen 3298, 3321, 3484, 3500, 4087, 4760, 5208, 5325, 5664)
- Sericocarpus tortifolius* (Michx.) Nees (Hansen 3471, 3556, 3576, 4504, 5297)
- Silphium asteriscus* L. var. *angustatum* Gray (Hansen 3309)
- Silphium compositum* Michx. var. *ovatifolium* Torr. & Gray (Hansen 3397, 4132)
- Smallanthus wedalius* (L.) Mackenzie ex Small (Hansen 3291) [= *Polymnia wedalia* L.]
- Solidago altissima* L. (Hansen 3566)
- Solidago caesia* L. var. *zedia* R.E. Cook & Semple (Hansen 3607, 5347)

*Solidago fistulosa* P. Mill. (Hansen 4942)  
*Solidago gigantea* Ait. (Hansen 3604)  
*Solidago hispida* Muhl. ex Willd. (Hansen 5737)  
*Solidago odora* Ait. var. *odora* (Hansen 3482, 3563, 4499)  
*Solidago petiolaris* Ait. (Hansen 4941, 5663, 5746)  
*Solidago rugosa* P. Mill. (s. lat.) (Hansen 3474, 3480, 3565, 4472, 4497, 5333, 5342, 5692)  
*Solidago stricta* Ait. (Hansen 5721)  
*Solidago ulmifolia* Muhl. ex Willd. var. *ulmifolia* (Hansen 4498)  
*Soliva sessilis* Ruiz & Pavón (Hansen 4691)  
*Sonchus asper* (L.) Hill † (Hansen 4724)  
*Symphyotrichum adnatum* (Nutt.) Nesom (Hansen 3455, 3586, 5323)  
*Symphyotrichum concolor* (L.) Nesom (Hansen 3552, 3572, 3585, 4463, 4487, 5294, 5780)  
*Symphyotrichum cordifolium* (L.) Nesom (Hansen 5346, 5853)  
*Symphyotrichum dumosum* (L.) Nesom (Hansen 3571, 3587, 5235, 5301, 5662, 5742, 5750)  
*Symphyotrichum laeve* (L.) A. Löve & D. Löve var. *concinnum* (Willd.) Nesom (Hansen 5458)  
*Symphyotrichum* aff. *lanceolatum* (Willd.) Nesom ★ (Hansen 4520)  
*Symphyotrichum lateriflorum* (L.) A. Löve & D. Löve var. *lateriflorum* (Hansen 3606, 5749, 5846)  
*Symphyotrichum patens* (Ait.) Nesom (Hansen 5298, 5776, 5840)  
*Symphyotrichum pilosum* Willd. (Hansen 5821)  
*Symphyotrichum praealtum* (Poir.) Nesom var. *praealtum* (Hansen 5758)  
*Tetragonotheca helianthoides* L. (Hansen 3310, 4042)  
*Trilisa odoratissima* (Walt. ex J.F. Gmel.) Cass. (Hansen 3528, 3551) [= *Carphephorus odoratissimus* (Walt. ex J.F. Gmel.) Herbert]  
*Verbesina aristata* (Ell.) Heller (Hansen 4126, 4916, 5231)  
*Verbesina virginica* L. var. *virginica* (Hansen 5655, 5757)  
*Vernonia angustifolia* Michx. var. *angustifolia* (Hansen 3396)  
*Vernonia angustifolia* Michx. var. *mohrii* S.B. Jones (Hansen 5170, 5194, 5324)  
*Vernonia gigantea* (Walt.) Trel. ex Branner & Coville (Hansen 5172)  
*Vernonia missurica* Raf. (Hansen 3511, 4523, 5654)  
*Xanthium strumarium* L. † (Hansen 5766)  
*Youngia japonica* (L.) DC. † (Hansen 3991, 4976)

BERBERIDACEAE  
*Nandina domestica* Thunb. † (Pancake s.n., 2011)

BETULACEAE  
*Alnus serrulata* (Ait.) Willd. (Hansen 5378, 5463)  
*Betula nigra* L. (Hansen 4544, 4813)  
*Carpinus caroliniana* Walt. (Hansen 3565, 4542, 4958)

*Ostrya virginiana* (P. Mill.) K. Koch (Hansen 3643)

BIGNONIACEAE  
*Bignonia capreolata* L. (Pancake s.n., 2011)  
*Campsis radicans* (L.) Seem. ex Bureau (Hansen 3491, 5072)  
*Catalpa bignonioides* Walt. (Hansen 4891)

BORAGINACEAE  
*Heliotropium indicum* L. † (Hansen 4789, 5068)

BRASSICACEAE  
*Capsella bursa-pastoris* (L.) Medik. † (Hansen 4992)  
*Cardamine concatenata* (Michx.) Sw. (Hansen 3247, 5359)  
*Cardamine debilis* D. Don (Hansen 4969)  
*Cardamine hirsuta* L. † (Hansen 4592, 5362)  
*Draba brachycarpa* Nutt. ex Torr. & Gray (Hansen 4588)  
*Lepidium didymum* L. (Hansen 4590)  
*Lepidium virginicum* L. (Hansen 5086)  
*Raphanus raphanistrum* L. † (Hansen 3256, 5504)

BROMELIACEAE  
*Tillandsia usneoides* (L.) L. (Hansen 3392)

[BUDDLEJACEAE — see TETRACHONDRAEAE]

BURMANNIACEAE  
*Apteria aphylla* (Nutt.) Barnh. ex Small (Hansen 5132)  
*Burmanna capitata* (J.F. Gmel.) Mart. (Hansen 4953)

CABOMBACEAE  
*Brasenia schreberi* J.F. Gmel. (Hansen 4763)

CACTACEAE  
*Opuntia humifusa* (Raf.) Raf. (Hansen 4984)

[CALLITRICHACEAE — see PLANTAGINACEAE]

CALYCANTHACEAE  
*Calycanthus floridus* L. (Hansen 4035, 5355)

CAMPANULACEAE  
*Lobelia brevifolia* Nutt. ex A. DC. (Hansen 4500)  
*Lobelia cardinalis* L. (Hansen 5752)  
*Lobelia glandulosa* Walt. (Hansen 4935, 5831)  
*Lobelia nuttallii* J.A. Schultes (Hansen 3349, 3998, 4695, 5148, 5220, 5629)  
*Lobelia puberula* Michx. (Hansen 3558, 4459, 4502, 4889, 4934, 5687, 5739)  
*Triodanis perfoliata* (L.) Nieuwl. ssp. *biflora* (Ruiz & Pavón) Lammers (Hansen 4978) [= *Triodanis biflora* (Ruiz & Pavón) Greene]  
*Triodanis perfoliata* (L.) Nieuwl. ssp. *perfoliata* (Hansen 3661)  
*Wahlenbergia marginata* (Thunb.) A. DC. † (Hansen 3324, 3671, 3994)

## CANNABACEAE

- Celtis laevigata* Willd. (Hansen 3636, 4802)  
*Celtis* aff. *occidentalis* L. ★ (Hansen 4803)  
*Celtis tenuifolia* Nutt. (Hansen 4046, 5026)

## CAPRIFOLIACEAE [see also ADOXACEAE]

- Lonicera japonica* Thunb. † (Hansen 3370)  
*Lonicera sempervirens* L. var. *sempervirens* (Hansen 3650, 5047, 5439)

## CARYOPHYLLACEAE

- Arenaria lanuginosa* (Michx.) Rohrb. (Hansen 3969, 4582, 4824, 4842, 5727)  
*Arenaria serpyllifolia* L. † (Hansen 5368, 5388)  
 [= *Arenaria leptoclados* (Reichenb.) Guss.]  
*Cerastium glomeratum* Thuill. † (Hansen 4585, 4977)  
*Paronychia baldwinii* (Torr. & Gray) Fenzl ex Walp. (Hansen 5273, 5695)  
*Silene antirrhina* L. (Hansen 5415)  
*Silene virginica* L. (Hansen 5685)  
*Stellaria media* (L.) Vill. † (Hansen 4587)  
*Stipulicida setacea* Michx. var. *setacea* (Hansen 3949)

## CELASTRACEAE

- Euonymus americanus* L. (Hansen 4551, 5696)

## [CELTIDACEAE — see CANNABACEAE]

## CHRYSOBALANACEAE

- Licania michauxii* Prance (Hansen 3398, 3951)

## CISTACEAE

- Crocanthemum carolinianum* (Walt.) Spach (Hansen 3721, Pancake s.n., 2011) [= *Helianthemum carolinianum* (Walt.) Grosser]  
*Crocanthemum rosmarinifolium* (Pursh) Janchen (Hansen 4754, 5067) [= *Helianthemum rosmarinifolium* Pursh]  
*Lechea minor* L. (Hansen 5530, 5722, 5657)  
*Lechea mucronata* Raf. (Hansen 4573, 4753, 5066, 5649, 5679)  
*Lechea sessiliflora* Raf. (Hansen 4574, 5190, 5736)

## CLETHRACEAE

- Clethra alnifolia* L. (Hansen 3314, 3338, 3341)

## [CLUSIACEAE — see HYPERICACEAE]

## COLCHICACEAE

- Uvularia* aff. *sessilifolia* L. ● ★ —non-reproductive specimens only, no voucher taken.

## COMMELINACEAE

- Commelina diffusa* Burm. f. † (Hansen 4896)  
*Commelina erecta* L. var. *angustifolia* (Michx.) Fern. (Pancake s.n., 2011)  
*Commelina virginica* L. (Hansen 5571)  
*Tradescantia ohiensis* Raf. (Hansen 3744, 5449, 5688)

## CONVOLVULACEAE

- Cuscuta compacta* Juss. ex Choisy (Hansen 3422, 5181, 5836)  
*Dichondra carolinensis* Michx. (Hansen 3728)  
*Ipomoea coccinea* L. (Hansen 3410, 5860) (non-native *vide* Kartesz 2013)  
*Ipomoea cordatotriloba* Dennst. var. *cordatotriloba* (Hansen 4892, 5149, 5282)  
*Ipomoea hederacea* Jacq. † (Hansen 4897, 5286)  
*Ipomoea hederifolia* L. † (Pancake s.n., 2011)  
*Ipomoea lacunosa* L. (Pancake s.n., 2011)  
*Ipomoea muricata* (L.) Jacq. † (Hansen 5829) [= *Ipomoea turbinata* Lag.]  
*Ipomoea pandurata* (L.) G. Mey. (Hansen 3331, 5547, 5625)  
*Ipomoea purpurea* (L.) Roth † (Hansen 4062, 4899)  
*Ipomoea quamoclit* L. † (Hansen 5278)  
*Jacquemontia tamnifolia* (L.) Griseb. † (Hansen 3434)  
*Merremia dissecta* (Jacq.) Hallier f. † ▲ (Hansen 5699) — adventive in the East Gulf Coastal Plain.  
*Stylisma aquatica* (Walt.) Raf. ✕ (Pancake s.n., 2011)  
*Stylisma humistrata* (Walt.) Chapm. (Hansen 4116)  
*Stylisma patens* (Desr.) Myint (Hansen 3333, 3352, 5546, 5591, 5623)

## CORNACEAE

- Cornus amomum* P. Mill. (Hansen 5046, 5277)  
*Cornus asperifolia* Michx. (Hansen 4809, 4821, 4843, 5057, 5064)  
*Cornus florida* L. (Hansen 3698)  
*Cornus stricta* Lam. (Hansen 3639, 3971, 4669) [= *Cornus foemina* P. Mill.]  
*Nyssa biflora* Walt. (Hansen 4071, 4077)  
*Nyssa sylvatica* Marsh. (Hansen 3694, 3715, 3727)

## CUCURBITACEAE

- Melothria pendula* L. (Hansen 3413)

## CYPERACEAE

- Bulbostylis barbata* (Rottb.) C.B. Clarke † (Hansen 5669)  
*Bulbostylis ciliatifolia* (Ell.) Fern. var. *coarctata* (Ell.) Kral (Hansen 5638)  
*Carex abscondita* Mackenzie (*Diamond* 9570)  
*Carex atlantica* L.H. Bailey ssp. *atlantica* (Hansen 3741, 4010)  
*Carex atlantica* L.H. Bailey ssp. *capillacea* (L.H. Bailey) Reznicek (Hansen 4996, 5385, 5405, 5519)  
*Carex caroliniana* Schwein. (Hansen 4694, 4714, 4725)  
*Carex complanata* Torr. & Hook. (Hansen 5053)  
*Carex debilis* Michx. var. *debilis* (Hansen 5573)  
*Carex glaucescens* Ell. (Hansen 4511, 5127, 5535, 5633)  
*Carex grayi* Carey (Hansen 4778)  
*Carex intumescens* Rudge (Hansen 5042)  
*Carex jooorii* Bailey (Hansen 4098, 4478)  
*Carex laxiflora* Lam. (Hansen 5392, 5395)  
*Carex leptalea* Wahlenb. var. *harperi* (Fern.) Weatherby & Grisc. (Hansen 5526)  
*Carex lonchocarpa* Willd. (Hansen 5601)

- Carex lupuliformis* Sartwell ex Dewey (Hansen 3284)  
*Carex lupulina* Muhl. ex Willd. (Hansen 5009, 5650)  
*Carex lurida* Wahlen. (Hansen 4025, 4708, 4776, 5077)  
*Carex muehlenbergii* Schkuhr ex Willd. (Hansen 5448)  
*Carex normalis* Mackenzie (Hansen 3732, 4009, 4113, 5016)  
*Carex tenax* Chapm. ex Dewey (Hansen 3953)  
*Carex tribuloides* Wahlenb. (Hansen 5044)  
*Carex turgescens* Torr. (Hansen 5525, 5640)  
*Carex typhina* Michx. (Hansen 3285, 5043)  
*Carex verrucosa* Muhl. (Hansen 3514)  
*Carex willdenowii* Schkuhr ex Willd. (Diamond 8329 [TROY])  
*Cyperus compressus* L. (Hansen 5822)  
*Cyperus cuspidatus* Kunth (Hansen 5823)  
*Cyperus echinatus* (L.) Wood (Hansen 3283, 4757, 5238, 5670)  
*Cyperus esculentus* L. † (Hansen 5172, 5827)  
*Cyperus filiculmis* Vahl (Hansen 5531, 5637, 5676)  
*Cyperus haspan* L. (Hansen 4100, 5169, 5745)  
*Cyperus lupulinus* (Spreng.) Marcks (Hansen 5198)  
*Cyperus odoratus* L. (Hansen 5869)  
*Cyperus plukenetii* Fern. (Hansen 5340)  
*Cyperus pseudovegetus* Steud. (Hansen 4101)  
*Cyperus refractus* Engelm. ex Böckler (Hansen 3437)  
*Cyperus retrofractus* (L.) Torr. (Hansen 4103A, 5339)  
*Cyperus retrorsus* Chapm. (Hansen 5236, 5824)  
*Cyperus rotundus* L. † (Hansen 5863)  
*Cyperus strigosus* L. (Hansen 3438, 4103, 4507)  
*Dulichium arundinaceum* (L.) Britt. var. *arundinaceum* (Hansen 5125)  
*Eleocharis baldwinii* (Torr.) Chapm. (Hansen 4533)  
*Eleocharis melanocarpa* Torr. ✕ (Hansen 3705, 5483)  
*Eleocharis microcarpa* Torr. (Hansen 4093, 4482)  
*Eleocharis* aff. *olivacea* Torr. ✕ ★ (Hansen 3980, 5014)  
*Eleocharis tuberculosa* (Michx.) Roemer & J.A. Schultes (Hansen 4004, 4709, 5619)  
*Fimbristylis dichotoma* (L.) Vahl (Hansen 5838)  
*Fimbristylis puberula* (Michx.) Vahl var. *puberula* (Pancake s.n., 2010)  
*Fuirena breviseta* (Coville) Coville (Hansen 5706A)  
*Fuirena pumila* (Torr.) Spreng. (Hansen 4003, 4145)  
*Fuirena squarrosa* Michx. (Hansen 4510, 5251)  
*Kyllinga pumila* Michx. (Hansen 4530)  
*Rhynchospora cephalantha* Gray (Hansen 5252)  
*Rhynchospora chalarocephala* Fern. & Gale (Hansen 3523, 5128)  
*Rhynchospora corniculata* (Lam.) Gray var. *corniculata* (Hansen 4752, 4850)  
*Rhynchosproa corniculata* (Lam.) Gray var. *interior* Fern. (Hansen 5184)  
*Rhynchospora fascicularis* (Michx.) Vahl var. *fascicularis* (Hansen 3708)  
*Rhynchospora globularis* (Chapm.) Small var. *globularis* (Hansen 4000, 4703, 5480, 5635)  
*Rhynchospora glomerata* (L.) Vahl (Hansen 4007, 4107, 4737, 4738, 4750, 5079, 5140, 5205, 5620, 5675)  
*Rhynchospora grayi* Kunth (Hansen 3954, 4687, 5199)  
*Rhynchospora megalocarpa* Gray (Hansen 5636)  
*Rhynchospora miliacea* (Lam.) Gray (Hansen 4777)  
*Rhynchospora nitens* (Vahl) Gray (Hansen 5130)  
*Rhynchospora plumosa* Ell. (Hansen 3999, 5743)  
*Rhynchospora pusilla* Chapm. ex M.A. Curtis (Hansen 5495)  
*Rhynchospora rariflora* (Michx.) Ell. (Hansen 5529)  
*Scirpus cyperinus* (L.) Kunth (Hansen 4739, 5075)  
*Scleria muehlenbergii* Steud. (Hansen 5674)  
*Scleria pauciflora* Muhl. ex Willd. var. *caroliniana* (Willd.) Wood (Hansen 5532)  
*Scleria triglomerata* Michx. (Hansen 3707, 4001, 4751, 5078, 5397, 5429, 5536)  
**CYRILLACEAE**  
*Cliftonia monophylla* (Lam.) Britt. ex Sarg. (Hansen 4020)  
*Cyrilla racemiflora* L. (Hansen 3347, 4081)  
**DIOSCOREACEAE**  
*Dioscorea villosa* L. (Hansen 4079, 4489, 4700, 5527)  
**DROSERACEAE**  
*Drosera capillaris* Poir. (Hansen 3364, 3510)  
*Drosera intermedia* Hayne (Hansen 5607)  
*Drosera tracyi* MacFarlane (Hansen 4052)  
**EBENACEAE**  
*Diospyros virginiana* L. (Hansen 3655, 3706, 4045)  
**ELAEAGNACEAE**  
*Elaeagnus umbellata* Thunb. † (Hansen 3717, 4864, 5665)  
**ELATINACEAE**  
*Elatine americana* (Pursh) Arn. (Hansen 3737, 4139, 4908)  
**ERICACEAE**  
*Eubotrys racemosa* (L.) Nutt. (Hansen 3393, 4962, 5118, 5124, Pancake s.n., 1997) [= *Leucothoe racemosa* (L.) Gray]  
*Gaylussacia dumosa* (Andrews) Torr. & Gray var. *dumosa* (Hansen 3683)  
*Gaylussacia mosieri* Small (Hansen 3343, 3693, 4019)  
*Gaylussacia nana* (Gray) Small (Hansen 4684, 4747, Pancake s.n., 2008)  
*Kalmia latifolia* L. (Hansen 3325)  
*Leucothoe axillaris* (Lam.) D. Don (Hansen 5037)  
*Lyonia ligustrina* (L.) DC. var. *foliosiflora* (Michx.) Fern. (Hansen 4746, 4963)  
*Lyonia lucida* (Lam.) K. Koch (Hansen 3653, 3738, 3984, 4772, 4961, 5420)  
*Monotropa hypopithys* L. (Sasser s.n., 2001 [TROY])  
*Monotropa uniflora* L. (Pancake s.n., 2011)  
*Oxydendrum arboreum* (L.) DC. (Hansen 3336, 3598)  
*Pieris phillyreifolia* (Hook.) DC. ✕ (Hansen 3637)



- Rhododendron alabamense* Rehd. (Hansen 5417)  
*Rhododendron austrinum* (Small) Rehd. ✕ (Hansen 3638, 5062, 5370, 5389, 5520)  
*Rhododendron canescens* (Michx.) Sweet (Hansen 3678, 4981, 5383, 5419)  
*Rhododendron viscosum* (L.) Torr. (Hansen 5051, 5117, 5600)  
*Vaccinium arboreum* Marsh. (Hansen 3597)  
*Vaccinium corymbosum* L. (Hansen 3692)  
*Vaccinium darrowii* Camp (Hansen 3244, 3346, 3507, 4580, 4685, 4983)  
*Vaccinium elliottii* Chapm. (Hansen 3235, 3632, 3691, 4686)  
*Vaccinium myrsinites* Lam. (Pancake s.n., 2008)  
*Vaccinium stamineum* L. (Hansen 3682, 5050, 5101, 5435, 5461) (s. lat.)
- ERIOCAULACEAE**  
*Eriocaulon compressum* Lam. (Hansen 3354, 3355, 5253)  
*Eriocaulon decangulare* L. (Hansen 5641)  
*Lachnocaulon anceps* (Walt.) Morong (Hansen 3348, 3996, 4663, 4701, 5475)
- EUPHORBIACEAE**  
*Acalypha gracilens* Gray (Hansen 3279, 3427A, 3547, 4095, 5136, 5800)  
*Acalypha rhomboidea* Raf. (Hansen 3427, 5751)  
*Acalypha virginica* L. (Hansen 5336)  
*Cnidioscolus urens* (L.) Arthur var. *stimulosus* (Michx.) Govaerts (Hansen 3303, 3651)  
*Croton argyranthemus* Michx. (Hansen 3950, 5049)  
*Croton glandulosus* L. var. *septentrionalis* Muell. Arg. (Hansen 3318, 3424, 3499, 4927, 5268)  
*Croton willdenowii* G.L. Webster (Hansen 3543)  
*Ditrysinia fruticosa* (Bartr.) Govaerts & Frodin (Hansen 3267, 3972, 4080) [= *Sebastiania fruticosa* (Bartr.) Fern.]  
*Euphorbia corollata* L. (Hansen 4119, 4671, 4761, 4764, 5630)  
*Euphorbia cyathophora* Murr. (Hansen 4901)  
*Euphorbia discoidalis* Chapm. (Hansen 3473)  
*Euphorbia floridana* Chapm. (Hansen 3852, 4123, 5192)  
*Euphorbia hyssopifolia* L. (Hansen 5813) [= *Chamaesyce hyssopifolia* (L.) Small]  
*Euphorbia maculata* L. (Hansen 5628, 5668) [= *Chamaesyce maculata* (L.) Small]  
*Euphorbia pubentissima* Michx. (Hansen 3294, 5154)  
*Tragia cordata* Michx. (Hansen 4827)  
*Tragia smallii* Shinnars (Hansen 3400)  
*Tragia urens* L. (Hansen 4069)  
*Tragia urticifolia* Michx. (Hansen 4740)  
*Triadica sebifera* (L.) Small ‡ (Hansen 5007)  
*Vernicia fordii* (Hemsl.) Airy-Shaw ‡ (Hansen 4871)
- FABACEAE**  
*Albizia julibrissin* Durazz. ‡ (Hansen 4558, 5065)  
*Amorpha fruticosa* L. (Hansen 3274, 3970, 4800, 5174)  
*Amphicarpaea bracteata* (L.) Fern. (Hansen 5849)  
*Apios americana* Medik. (Hansen 5015, 5166)  
*Arachis hypogaea* L. † (Hansen 4786) — as a roadside waif.  
*Astragalus villosus* Michx. ✕ (Hansen 5400)  
*Baptisia lanceolata* (Walt.) Ell. var. *tomentosa* (Larisey) Isely (Hansen 3700, 3956, 4689, 5426)  
*Centrosema virginianum* (L.) Benth. (Hansen 3492, 5201, 5684)  
*Cercis canadensis* L. (Hansen 5553)  
*Chamaecrista deeringiana* Small & Pennell ✕ (Hansen 4741, 5735)  
*Chamaecrista fasciculata* (Michx.) Greene var. *fasciculata* (Hansen 3488)  
*Chamaecrista nictitans* (L.) Moench var. *nictitans* (Hansen 4549, 4919, 5723)  
*Clitoria mariana* L. var. *mariana* (Hansen 4718, 5108, 5626)  
*Crotalaria purshii* DC. (Hansen 3497, 4680, 4743, 5643)  
*Crotalaria rotundifolia* J.F. Gmel. (Hansen 3697, 4911, 5188, 5230)  
*Crotalaria sagittalis* L. (Pancake s.n., 1991)  
*Crotalaria spectabilis* Roth † (Hansen 4564, 5802)  
*Dalea pinnata* (J.F. Gmel.) Barneby (Hansen 5782)  
*Desmodium canescens* (L.) DC. (Hansen 4910)  
*Desmodium ciliare* (Muhl. ex Willd.) DC. (Hansen 4918)  
*Desmodium cuspidatum* (Muhl. ex Willd.) DC. ex Loud. (Hansen 5690)  
*Desmodium laevigatum* (Nutt.) DC. (Hansen 5781)  
*Desmodium lineatum* DC. (Hansen 4917)  
*Desmodium nudiflorum* (L.) DC. (Hansen 3441)  
*Desmodium obtusum* (Muhl. ex Willd.) DC. (Hansen 5331)  
*Desmodium paniculatum* (L.) DC. (Hansen 5577)  
*Desmodium pauciflorum* (Nutt.) DC. (Hansen 3533)  
*Desmodium tenuifolium* Torr. & Gray (Hansen 4888, 5269)  
*Desmodium tortuosum* (Sw.) DC. (Hansen 4898, 5244)  
*Erythrina herbacea* L. (Hansen 4036)  
*Galactia floridana* Torr. & Gray (Hansen 5652)  
*Galactia microphylla* (Chapm.) H.J. Rogers ex D.W. Hall & D.B. Ward (Hansen 5189)  
*Galactia mollis* Michx. (Hansen 5267)  
*Galactia regularis* (L.) B.S.P. (Hansen 3411, 5229)  
*Galactia volubilis* (L.) Britt. (Hansen 3465)  
*Gleditsia triacanthos* L. (Hansen 4877)  
*Glycine max* (L.) Merr. † ▲ (Hansen 5135) — as a roadside waif.  
*Kummerowia stipulacea* (Maxim.) Makino † (Hansen 4866, 4886)  
*Kummerowia striata* (Thunb.) Schindl. † (Hansen 5320)  
*Lespedeza bicolor* Turcz. ‡ (Hansen 3961)  
*Lespedeza capitata* Michx. (Hansen 3460)  
*Lespedeza hirta* (L.) Hornem. (Hansen 4873, 5330, 5656)  
*Lespedeza procumbens* Michx. (Hansen 5610)

*Lespedeza repens* (L.) W. Bart. (Hansen 4887, 5442)  
*Lespedeza stuevei* Nutt. (Hansen 4854, 5246, 5266, 5337)  
*Lespedeza virginica* (L.) Britt. (Hansen 5588, 5845)  
*Mimosa microphylla* Dry. (Hansen 3319, 3995)  
*Pediomelum canescens* (Michx.) Rydb. (Hansen 4048, 4129)  
*Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen & S. Almeida ‡ (Hansen 4904)  
*Rhynchosia reniformis* DC. (Hansen 4912, 5210)  
*Rhynchosia tomentosa* (L.) Hook. & Arn. (Hansen 5260)  
*Robinia pseudoacacia* L. (Hansen 4759)  
*Senna obtusifolia* (L.) Irwin & Barneby † (Hansen 4563)  
*Sesbania punicea* (Cav.) Benth. ‡ (Hansen 5511)  
*Strophostyles* aff. *helvola* (L.) Ell. ★ (Hansen 4799, 5753)  
*Strophostyles umbellata* (Muhl. ex Willd.) Britt. (Hansen 3412, 4853)  
*Stylosanthes biflora* (L.) B.S.P. (Hansen 3399, 4771)  
*Tephrosia chrysophylla* Pursh (Hansen 4742, 5186)  
*Tephrosia floridana* (Vail) Isely (Hansen 3454)  
*Tephrosia spicata* (Walt.) Torr. & Gray (Hansen 3335, 4743A, 5187, 5207, 5724)  
*Tephrosia virginiana* (L.) Pers. (Hansen 4717)  
*Trifolium campestre* Schreber † (Hansen 3747, 5460)  
*Trifolium carolinianum* Michx. (Hansen 4973, 5413)  
*Trifolium dubium* Sibthorp † (Hansen 4586, 4967)  
*Trifolium incarnatum* L. † (Hansen 3672, 5352)  
*Trifolium reflexum* L. † (Hansen 4723)  
*Trifolium repens* L. † (Pancake s.n., 2013)  
*Vicia caroliniana* Walt. (Hansen 4986, 5365)  
*Vicia minutiflora* F.G. Dietrich (Hansen 5367)  
*Vicia sativa* L. ssp. *nigra* (L.) Ehrh. † (Hansen 3670)  
*Vicia tetrasperma* (L.) Schreb. † (Pancake s.n., 2013)  
*Vicia villosa* Roth ssp. *varia* (Host) Corb. † (Hansen 4696)  
*Wisteria frutescens* (L.) Poir. (Hansen 5465)  
*Wisteria sinensis* (Sims) DC. ‡ (Hansen 4991)

FAGACEAE

*Castanea pumila* (L.) P. Mill. (Hansen 4043)  
*Fagus grandifolia* Ehrh. (Hansen 3599)  
*Lithocarpus henryi* Rehder & E. H. Wilson ▲ (Hansen 3404)  
*Quercus alba* L. (Hansen 3684, 4034)  
*Quercus austrina* Small (Pancake s.n., 1986)  
*Quercus falcata* Michx. (Hansen 3595)  
*Quercus geminata* Small (Hansen 4479)  
*Quercus hemisphaerica* Bartr. ex Willd. (Hansen 3569, 3958, 4780, 5373)  
*Quercus incana* Bartr. (Hansen 3957, 4136, 5200)  
*Quercus* aff. *laevis* Walt. ★ (Hansen 3959, 4006, 5202, 5257)  
*Quercus laurifolia* Michx. (Hansen 3976)  
*Quercus lyrata* Walt. (Hansen 4816)  
*Quercus margarettae* Ashe ex Small (Hansen 5258, 5680)

*Quercus marilandica* (L.) Muenchh. (Hansen 4120)  
*Quercus michauxii* Nutt. (Hansen 4770)  
*Quercus muehlenbergii* Engelm. (Pancake s.n., 1996)  
*Quercus nigra* L. (Hansen 3583)  
*Quercus pagoda* Raf. (Hansen 3743)  
*Quercus phellos* L. (Hansen 3713, 3719, 3975)  
*Quercus shumardii* Buckl. (Pancake s.n., 2004)  
*Quercus stellata* Wangenh. (Hansen 3701, 4044)  
*Quercus velutina* Lam. (Pancake s.n., 2011)  
*Quercus virginiana* P. Mill. (Hansen 4546)

#### GELSEMIACEAE

*Gelsemium sempervirens* (L.) Ait. f. (Hansen 3245)

#### GENTIANACEAE

*Bartonia paniculata* (Michx.) Muhl. ssp. *paniculata* (Hansen 3529)

*Gentiana villosa* L. (Hansen 5290)

*Sabatia bartramii* Wilbur (Pancake s.n., 1991)

*Sabatia calycina* (Lam.) Heller (Hansen 5060)

*Sabatia gentianoides* Ell. (Hansen 5212)

#### GERANIACEAE

*Geranium carolinianum* L. (Hansen 4970)

#### HAEMODORACEAE

*Lachnanthes caroliniana* (Lam.) Dandy (Hansen 3362)

#### HALORAGACEAE

*Proserpinaca pectinata* Lam. (Hansen 4702)

#### HAMAMELIDACEAE [see also ALTINGIACEAE]

*Hamamelis ovalis* S.W. Leonard ✠ (Hansen 5025)

*Hamamelis virginiana* L. (Hansen 3641, 3983, 4779)

#### [HIPPOCASTANACEAE — see SAPINDACEAE]

#### HYDRANGEACEAE

*Decumaria barbara* L. (Hansen 4032, 5058)

*Hydrangea arborescens* L. (Hansen 3968)

*Hydrangea quercifolia* Bartr. (Hansen 3290)

#### HYDROLEACEAE

*Hydrolea quadrivalvis* Walt. (Hansen 4844)

#### HYPERICACEAE

*Hypericum brachyphyllum* (Spach) Steud. (Hansen 3360, 5143, 5798)

*Hypericum cistifolium* Lam. (Hansen 3258, 3451, 3512, 5221, 5797)

*Hypericum crux-andre* (L.) Crantz (Hansen 3458, 3468, 4781, 4878, 5185, 5222)

*Hypericum galioides* Lam. (Hansen 4555, 5361, 5584)

*Hypericum gentianoides* (L.) Britt. (Hansen 3466)

*Hypericum gymnanthum* Engelm. & Gray (Hansen 5069, 5612)

*Hypericum hypericoides* (L.) Crantz (Hansen 3312, 3467, 3977)

*Hypericum mutilum* L. (Hansen 4140)  
*Hypericum punctatum* Lam. (Hansen 4028)  
*Hypericum setosum* L. (Hansen 3504, 4567, 5213, 5796)  
*Hypericum suffruticosum* P. Adams & Robson (Hansen 5444)  
*Hypericum tubulosum* Walt. (Hansen 5031, Larsen s.n., 1982) [= *Triadenum tubulosum* (Walt.) Gleason]  
*Hypericum virginicum* L. (Hansen 4142, 5112)  
 [= *Triadenum virginicum* (L.) Raf.]  
*Hypericum walteri* J.G. Gmel. (Hansen 4521, 4847)  
 [= *Triadenum walteri* (J.G. Gmel.) Gleason]

## HYPOXIDACEAE

*Hypoxis curtissii* Rose (Hansen 4550, 5755)  
*Hypoxis hirsuta* (L.) Coville (Hansen 3709)

[ILLICACEAE — see SCHISANDRACEAE]

## IRIDACEAE

*Iris verna* L. (Hansen 4990)  
*Iris virginica* L. var. *virginica* (Pancake s.n., 2011)  
*Sisyrinchium atlanticum* Bickn. (Hansen 3675)  
*Sisyrinchium nashii* Bickn. (Hansen 3649, 4059, 5399)  
*Sisyrinchium rosulatum* Bickn. (Hansen 3724, 3725, 3739, 4707)

## ITEACEAE

*Itea virginica* L. (Hansen 3532)

## JUGLANDACEAE

*Carya aquatica* (Michx. f.) Nutt. (Hansen 4820)  
*Carya cordiformis* (Wangenh.) K. Koch (Hansen 4505)  
*Carya glabra* (P. Mill.) Sweet (Pancake s.n., 2011)  
*Carya illinoensis* (Wangenh.) K. Koch (Hansen 4804, 4900)  
*Carya pallida* (Ashe) Engler & Graebn. (Pancake s.n., 1996)  
*Carya tomentosa* (Lam. ex Poir.) Nutt. (Hansen 4134, 4806) [= *Carya alba* (L.) Nutt. ex Ell.]

## JUNCACEAE

*Juncus acuminatus* Michx. (Hansen 4665, 5618)  
*Juncus coriaceus* Mackenzie (Hansen 5106)  
*Juncus debilis* Gray (Hansen 4008)  
*Juncus dichotomus* Ell. (Hansen 3334, 3380, 3733, 4092, 4109, 4110, 4692, 4693, 5771)  
*Juncus effusus* L. ssp. *solutus* (Fern. & Wiegand) Hämet-Ahti (Hansen 3720, 4005, 5206)  
*Juncus elliottii* Chapm. (Hansen 4112)  
*Juncus* aff. *longii* Fern. ★ (Hansen 4666)  
*Juncus marginatus* Rostk. (Hansen 3731, 4002, 4073, 4667, 4720, 4721)  
*Juncus polycephalus* Michx. (Hansen 5678A)  
*Juncus repens* Michx. (Hansen 4765, 5243)  
*Juncus scirpoides* Lam. (Hansen 4102, 4111)  
*Juncus secundus* Beauv. ex Poir. (Hansen 4705)  
*Juncus tenuis* Willd. (Hansen 4063, 5133)  
*Juncus trigonocarpus* Steud. (Hansen 3734, 4946, 5835)  
*Juncus validus* Coville (Hansen 3372, 5126)

*Luzula bulbosa* (Wood) Smyth & Smyth (Pancake s.n., 2013)  
*Luzula echinata* (Small) F.J. Herm. (Hansen 4959, 4980, 5379, 5396)

## LAMIACEAE

*Callicarpa americana* L. (Hansen 3266)  
*Cantinoa mutabilis* (A. Rich.) Harley & J.F.B. Pastore † (Hansen 3275, 4115, 4545) [= *Hyptis mutabilis* (A. Rich.) Briq.]  
*Clinopodium georgianum* Harper (Hansen 3609, 4571)  
*Collinsonia anisata* Sims (Hansen 4471, 5292, 5524, 5673)  
*Collinsonia punctata* Ell. (Hansen 5597)  
*Collinsonia tuberosa* Michx. (Hansen 4767, Pancake s.n., 2012)  
*Dicerandra fumella* R.B. Huck (Hansen 3574, 4462)  
*Hedeoma hispida* Pursh (Hansen 5493)  
*Hyptis alata* (Raf.) Shinnars (Hansen 4495)  
*Lamium amplexicaule* L. † (Hansen 4589)  
*Lycopus rubellus* Moench (Hansen 4491, 4536, 4538, 4907)  
*Lycopus virginicus* L. (Hansen 4512)  
*Monarda punctata* L. var. *punctata* (Hansen 4874, 5270, 5694)  
*Prunella vulgaris* L. ssp. *lanceolata* (W. Bart.) Hultén † (Hansen 3423)  
*Pycnanthemum albescens* Torr. & Gray ex Gray (Hansen 3502, 5226)  
*Pycnanthemum muticum* (Michx.) Pers. (Hansen 5107, 5227, 5842)  
*Pycnanthemum nudum* Nutt. (Hansen 3456, 4856, 5214)  
*Salvia azurea* Michx. ex Lam. var. *azurea* (Hansen 3553, 5761)  
*Salvia lyrata* L. (Hansen 5369)  
*Salvia urticifolia* L. (Hansen 5349)  
*Scutellaria incana* Biehler var. *australis* (Epling) Collins (Hansen 3495, 4097, 5100, 5223, 5627, 5677)  
*Scutellaria integrifolia* L. (Hansen 4674, 4676, 4749, 5487)  
*Trichostema dichotomum* L. (Hansen 4466, 4572)  
*Trichostema setaceum* Houtt. (Hansen 3542, 4467)

LAIACEAE

*Persea palustris* (Raf.) Sarg. (Hansen 3239, 3711, 4021, 5522)  
*Sassafras albidum* (Nutt.) Nees (Hansen 3718)

LENTIBULARIACEAE

*Pinguicula primuliflora* Wood & Godfrey (Hansen 5203, 5354)  
*Utricularia gibba* L. (Hansen 4138, 5241, 5603)  
*Utricularia juncea* Vahl (Hansen 5716)  
*Utricularia purpurea* Walt. (Hansen 5602)  
*Utricularia radiata* Small (Hansen 4762)

*Utricularia subulata* L. (Hansen 3997, 4049)

LILIACEAE [see also AMARYLLIDACEAE,  
ASPARAGACEAE, COLCHICACEAE,  
MELANTHIACEAE, TOFIELDIACEAE]

*Lilium michauxii* Poir. (Hansen 5682)

*Medeola virginiana* L. (Hansen 5517)

LINACEAE

*Linum floridanum* (Planch.) Trel. var. *floridanum*  
(Hansen 3351, 5104)

*Linum medium* (Planch.) Britt. var. *texanum* (Planch.)  
Fern. (Hansen 3297, 5589)

*Linum striatum* Walt. (Hansen 5599)

LINDERNIACEAE

*Lindernia crustacea* (L.) F. Muell. † (Hansen 4867)

*Lindernia dubia* (L.) Pennell (Hansen 4795)

*Micranthemum umbrosum* (J.F. Gmel.) Blake (Hansen  
3730, 5871)

LOGANIACEAE [see also GELSEMIACEAE]

*Mitreola petiolata* (J.F. Gmel.) Torr. & Gray (Hansen  
4915, 5105, 5799)

*Mitreola sessilifolia* (J.F. Gmel.) G. Don (Hansen 3522,  
4481)

*Spigelia marilandica* (L.) L. (Hansen 3296, 3415, 4037)

LYTHRACEAE

*Ammannia coccinea* Rottb. (Hansen 5830)

*Cuphea carthagenensis* (Jacq.) J.F. Macbr. † (Hansen  
4525)

*Lagerstroemia indica* L. † (Hansen 5113)

*Rotala ramosior* (L.) Koehne (Hansen 4794)

MAGNOLIACEAE

*Liriodendron tulipifera* L. (Hansen 5289)

*Magnolia acuminata* (L.) L. (Hansen 4826)

*Magnolia grandiflora* L. (Hansen 3600)

*Magnolia pyramidata* Bartr. (Hansen 4039, Pancake  
*s.n.*, 2011)

*Magnolia virginiana* L. (Hansen 3531, 3982)

MALVACEAE

*Gossypium hirsutum* L. † (Hansen 4565)

*Hibiscus aculeatus* Walt. (Hansen 3367)

*Modiola caroliniana* (L.) G. Don (Hansen 5265)

*Sida elliotii* Torr. & Gray var. *elliottii* (Hansen 4096,  
5350)

*Sida rhombifolia* L. var. *rhombifolia* † (Hansen 3379,  
5310)

*Tilia americana* L. var. *caroliniana* (P. Mill.) Castig.  
(Hansen 3966)

MAYACACEAE

*Mayaca fluviatilis* Aubl. (Hansen 3979, 4024, 4531,  
4745A, 5485)

MELANTHIACEAE

*Amianthium muscitoxicum* (Walt.) Gray (Hansen 4054,  
5606)

*Trillium decipiens* J.D. Freeman (Hansen 4988)

*Trillium underwoodii* Small (Hansen 3248, 4989, 5381,  
5516)

*Veratrum virginicum* (L.) Ait. f. (Hansen 4460)  
[= *Melanthium virginicum* L.]

*Zigadenus glaberrimus* Michx. (Hansen 5700)

MELASTOMATACEAE

*Rhexia alifanus* Walt. (Hansen 3313, 3340)

*Rhexia lutea* Walt. (Hansen 3359, 4053)

*Rhexia mariana* L. (Hansen 3329, 3368, 3452, 4569)

*Rhexia petiolata* Walt. (Hansen 3453, 3516, 4506, 4855)

*Rhexia virginica* L. (Hansen 4527)

MELIACEAE

*Melia azedarach* L. † (Hansen 3668)

MENISPERMACEAE

*Calycocarpum lyonii* (Pursh) Gray (Hansen 4726, 5034)

*Cocculus carolinus* (L.) DC. (Hansen 5036)

MOLLUGINACEAE

*Mollugo verticillata* L. (Hansen 3430, 3433, 4796)

MORACEAE

*Morus alba* L. † (Hansen 4835)

*Morus rubra* L. (Hansen 3978)

MYRICACEAE

*Morella caroliniensis* (P. Mill.) Small (Hansen 3238,  
5421) [= *Myrica caroliniensis* P. Mill.]

*Morella cerifera* (L.) Small (Hansen 3710, 5398)  
[= *Myrica cerifera* L.]

*Morella inodora* (Bartr.) Small (Hansen 3712) [= *Myrica*  
*inodora* Bartr.]

MYRTACEAE

*Eucalyptus benthamii* Maiden & Cabbage † ▲ (Hansen  
4535) — grown in test plots for biomass production.

NARTHECIACEAE

*Aletris aurea* Walt. (Hansen 3361, 4061, 4784, 5701)

NYMPHAEACEAE

*Nuphar advena* (Ait.) Ait. f. ssp. *orbiculata* (Small) D.  
Padgett (Hansen 5487, 5644)

*Nymphaea odorata* Ait. ssp. *odorata* (Hansen 4055, 5806)

[NYSSACEAE — see CORNACEAE]

OLEACEAE

*Cartrema americana* (L.) Raf. (Hansen 3243, 3687)

[= *Osmanthus americanus* (L.) Benth. & Hook. f. ex  
Gray]

*Chionanthus virginicus* L. (Hansen 3677, 5074)

*Forestiera acuminata* (Michx.) Poir. (Hansen 5028)

*Frazinus americana* L. (Hansen 5468)

*Frazinus pennsylvanica* Marsh. (Hansen 4031, 4541, 4561)

*Ligustrum japonicum* Thunb. ‡ ▲ (Pancake s.n., 2013)

*Ligustrum sinense* Lour. ‡ (Hansen 3381)

#### ONAGRACEAE

*Gaura filipes* Spach (Hansen 4483, 4923)

*Ludwigia alternifolia* L. (Hansen 3459, 5150, 5624)

*Ludwigia decurrens* Walt. (Hansen 4526, 4869, 4870, 4879)

*Ludwigia glandulosa* Walt. (Hansen 4090, 4802, 5715)

*Ludwigia hirtella* Raf. (Hansen 3498)

*Ludwigia leptocarpa* (Nutt.) Hara (Hansen 4528, 5120, 5807)

*Ludwigia linearis* Walt. (Hansen 3592, 4881, 4947, 5158)

*Ludwigia maritima* Harper (Hansen 3323, 4135, 5144, 5219)

*Ludwigia palustris* (L.) Ell. (Hansen 4793)

*Ludwigia pilosa* Walt. (Hansen 4515, 4883, 5167, 5773)

*Ludwigia sphaerocarpa* Ell. (Hansen 5121)

*Ludwigia virgata* Michx. (Hansen 3344, 4783, 5211)

*Oenothera biennis* L. (Hansen 4556, 4902, 5280)

*Oenothera grandiflora* L'Hér. ex Ait. (Hansen 5767)

*Oenothera laciniata* Hill (Hansen 3382, 3669)

#### ORCHIDACEAE

*Calopogon tuberosus* (L.) B.S.P. var. *tuberosus* (Hansen 5528)

*Cleistes bifaria* (Fern.) Catling & Gregg (Hansen 4050, 4664) [= *Cleistesopsis oricamporum* P.M. Brown fide Weakley 2012]

*Epidendrum magnoliae* Muhl. ✕ (Hansen 5030)  
[= *Epidendrum conopseum* R. Br.]

*Habenaria repens* Nutt. (Hansen 5839)

*Listera australis* Lindl. (Hansen 5351, 5391)

*Platanthera ciliaris* (L.) Lindl. (Hansen 3450, 5653)

*Platanthera clavellata* (Michx.) Luer (Hansen 5131)

*Platanthera cristata* (Michx.) Lindl. (Hansen 3513)

*Spiranthes cernua* (L.) L.C. Rich. (Hansen 5521)

*Spiranthes laciniata* (Small) Ames (Hansen 4051)

*Spiranthes tuberosa* Raf. (Hansen 5592)

*Spiranthes vernalis* Engelm. & Gray (Hansen 4070)

*Tipularia discolor* (Pursh) Nutt. (Hansen 3255, 3448)

#### OROBANCHACEAE

*Agalinis fasciculata* (Ell.) Raf. (Hansen 3546)

*Agalinis purpurea* (L.) Pennell (Hansen 3573, 4461)

*Agalinis setacea* (J.F. Gmel.) Raf. (Hansen 5295, 5321, 5738)

*Agalinis tenuifolia* (Vahl) Raf. (Pancake s.n., 2012)

*Aureolaria laevigata* (Raf.) Raf. (Hansen 3476)

*Aureolaria pectinata* (Nutt.) Pennell (Hansen 3490, 5191)

*Buchnera americana* L. (Hansen 5010)

*Conopholis americana* (L.) Wallr. (Hansen 3534)

*Epifagus virginiana* (L.) W. Bart. (Hansen 4581, 5875)

*Seymeria cassioides* (J.F. Gmel.) Blake (Hansen 3578)

*Seymeria pectinata* Pursh (Hansen 3577, 4503, 5225)

#### OXALIDACEAE

*Oxalis articulata* Savigny (Hansen 5279, 5313)

*Oxalis corniculata* L. † (Hansen 5770)

*Oxalis dillenii* Jacq. (Hansen 3374, 3647, 3992)

*Oxalis stricta* L. (Hansen 4011, 5384, 5457)

*Oxalis violacea* L. (Hansen 3667)

#### PAPAVERACEAE

*Corydalis micrantha* (Engelm. ex Gray) Gray (Hansen 5376)

*Sanguinaria canadensis* L. (Hansen 4987, 5090)

#### PASSIFLORACEAE

*Passiflora incarnata* L. (Hansen 3299)

*Passiflora lutea* L. (Hansen 4078, 5173, 5552)

#### PENTHORACEAE

*Penthorum sedoides* L. (Hansen 4797, 5714, 5866)

#### PHRYMACEAE

*Phryma leptostachya* L. (Hansen 5550)

#### PHYLLANTHACEAE

*Phyllanthus carolinensis* Walt. ssp. *caroliniensis* (Hansen 3431, 4791)

*Phyllanthus tenellus* Roxb. (Hansen 5114A)

*Phyllanthus urinaria* L. ssp. *urinaria* ‡ (Hansen 4518, 5114)

#### PHYTOLACCACEAE

*Phytolacca americana* L. (Hansen 3327)

#### PLANTAGINACEAE

*Callitriche peploides* Nutt. (Hansen 4578)

*Gratiola virginiana* L. (Hansen 4960, 5356)

*Mecardonia acuminata* (Walt.) Small (Hansen 4863, 4876, 4880)

*Nuttallanthus canadensis* (L.) D.A. Sutton (Hansen 5366, 5414, 5446)

*Nuttallanthus texanus* (Scheele) D.A. Sutton (Hansen 5371A)

*Penstemon australis* Small (Hansen 4699, 5778)

*Penstemon laevigatus* Ait. (Pancake s.n., 2011)

*Plantago aristata* Michx. (Hansen 5506)

*Plantago virginica* L. (Hansen 3673, 4065, 4675, 4966)

*Scoparia dulcis* L. (Hansen 3515, 4893)

*Sophranthe pilosa* (Michx.) Small (Hansen 3496, 4143, 4517, 4744, 5611) [= *Gratiola pilosa* Michx.]

*Veronica arvensis* L. † (Hansen 4583)

#### PLATANACEAE

*Platanus occidentalis* L. (Hansen 3403)



POACEAE

- Agrostis hyemalis* (Walt.) B.S.P. (Hansen 4706, 5494)  
*Agrostis perennans* (Walt.) Tuckerman (Hansen 4862, 5865)  
*Andropogon gyrans* Ashe (Hansen 3568, 4928)  
*Andropogon ternarius* Michx. (Hansen 5318, 5327, 5747)  
*Andropogon virginicus* L. (Graves 89 [AUA])  
*Anthaenantia rufa* (Nutt.) J.A. Schultes (Hansen 4948)  
*Anthaenantia villosa* (Michx.) Beauv. (Hansen 3579, 4130, 4913, 5307)  
*Aristida beyrichiana* Trin. & Rupr. (Hansen 5431, 5436)  
*Aristida lanosa* Muhl. ex Ell. (Hansen 4930, 5308, 5845)  
*Aristida longespica* Poir. (Hansen 3580, 5261)  
*Aristida mohrii* Nash (Pancake s.n., 2011)  
*Aristida purpurascens* Poir. (Pancake s.n., 2011)  
*Aristida virgata* Trin. (Hansen 5732) [= *Aristida purpurascens* Poir. var. *virgata* (Trin.) Allred]  
*Arundinaria gigantea* (Walt.) Walt. (Hansen 3506, 5462)  
*Arundinaria tecta* (Walt.) Muhl. (Hansen 5558)  
*Avena sativa* L. † (Hansen 3665)  
*Axonopus fissifolius* (Raddi) Kuhl. (Pancake s.n., 2013)  
*Bothriochloa laguroides* (DC.) Herter ssp. *torreyana* (Steud.) Allred & Gould † (Hansen 4474)  
*Briza minor* L. † (Hansen 3695)  
*Bromus catharticus* Vahl † (Hansen 5576)  
*Bromus commutatus* Schrad. † (Hansen 5508)  
*Cenchrus echinatus* L. (Hansen 4099, 5708)  
*Chasmanthium latifolium* (Michx.) Yates (Hansen 3272, 4812)  
*Chasmanthium laxum* (L.) Yates (Hansen 5621)  
*Chasmanthium sessiliflorum* (Poir.) Yates (Hansen 3271, 3440, 4094, 5248)  
*Coelorachis cylindrica* (Michx.) Nash (Hansen 3439, 5809)  
*Coleataenia anceps* (Michx.) Soreng ssp. *anceps* (Hansen 3462, 4933, 5146, 5237, 5712) [= *Panicum anceps* Michx. var. *anceps*]  
*Coleataenia anceps* (Michx.) Soreng ssp. *rhizomata* (A.S. Hitchc. & Chase) Soreng (Hansen 5660) [= *Panicum anceps* Michx. var. *rhizomatum* (A.S. Hitchc. & Chase) Fern.]  
*Ctenium aromaticum* (Walt.) Wood (Hansen 4566, 4858)  
*Cynodon dactylon* (L.) Pers. † (Hansen 5512)  
*Dactyloctenium aegyptium* (L.) Willd. † (Hansen 5709, 5765)  
*Danthonia sericea* Nutt. (Hansen 3685, 3960, 4715)  
*Dichantherium aciculare* (Desv. ex Poir.) Gould & C.A. Clark ssp. *aciculare* (Hansen 3391, 4755, 5288)  
*Dichantherium aciculare* (Desv. ex Poir.) Gould & C.A. Clark ssp. *angustifolium* (Desv. ex Poir.) Freckmann & Lelong (Hansen 3681, 4017, 5533, 5634)  
*Dichantherium acuminatum* (Sw.) Gould & C.A. Clark ssp. *acuminatum* (Hansen 5474, 5609)  
*Dichantherium acuminatum* (Sw.) Gould & C.A. Clark ssp. *fasciculatum* (Torr.) Freckman & Lelong (Hansen 3426)  
*Dichantherium acuminatum* (Sw.) Gould & C.A. Clark ssp. *leucothrix* (Nash) Freckman & Lelong (Hansen 5004)  
*Dichantherium boscii* (Poir.) Gould & Clark (Hansen 3536, 5081, 5430)  
*Dichantherium commutatum* (J.A. Schultes) Gould ssp. *ashei* (Pearson ex Ashe) Freckmann & Lelong (Hansen 3268, 5005, 5575)  
*Dichantherium commutatum* (J.A. Schultes) Gould ssp. *commutatum* (Hansen 3268, 5394, 5433, 5452, 5542, 5659)  
*Dichantherium* aff. *depauperatum* (Muhl.) Gould ★ (Hansen 5134)  
*Dichantherium dichotomum* (L.) Gould ssp. *dichotomum* (Hansen, 4141, 4736, 5041)  
*Dichantherium dichotomum* (L.) Gould ssp. *microcarpon* (Muhl. ex Ell.) Freckmann & Lelong (Hansen 4015)  
*Dichantherium dichotomum* (L.) Gould aff. ssp. *roanokense* (Ashe) Freckmann & Lelong ★ (Hansen 5608)  
*Dichantherium ensifolium* (Baldw. ex Ell.) Gould ssp. *curtifolium* (Nash) Freckmann & Lelong (Hansen 5472)  
*Dichantherium ensifolium* (Baldw. ex Ell.) Gould ssp. *ensifolium* (Hansen 4662, 5441, 5617)  
*Dichantherium laxiflorum* (Lam.) Gould (Hansen 4971, 5382, 5473, 5543)  
*Dichantherium ovale* (Ell.) Gould & C.A. Clark ssp. *villosissimum* (Nash) Freckmann & Lelong (Hansen 5478)  
*Dichantherium ravenelii* (Scribn. & Merr.) Gould (Hansen 5658)  
*Dichantherium scabriusculum* (Ell.) Gould & C.A. Clark (Hansen 4023, 4704, 5502)  
*Dichantherium scoparium* (Lam.) Gould (Hansen 4734, 5598)  
*Dichantherium sphaerocarpon* (Ell.) Gould (Hansen 3383, 5479)  
*Dichantherium tenue* (Muhl.) Freckmann & Lelong (Hansen 3680, 5434)  
*Digitaria ciliaris* (Retz.) Koel. (Hansen 4106, 4477, 4756, 5070, 5137)  
*Digitaria filiformis* (L.) Koel. var. *filiformis* (Hansen 4929)  
*Digitaria filiformis* (L.) Koel. var. *villosa* (Walt.) Fern. (Hansen 5304)  
*Digitaria violascens* Link † (Pancake s.n., 2011)  
*Echinochloa colona* (L.) Link † (Hansen 4091)  
*Echinochloa muricata* (P. Beauv) Fern. var. *muricata* † (Hansen 5868)  
*Eleusine indica* (L.) Gaertn. † (Hansen 5283)  
*Elymus virginicus* L. (Hansen 3269, 4787, 4822)  
*Eragrostis hirsuta* (Michx.) Nees (Hansen 5693)  
*Eragrostis refracta* (Muhl.) Scribn. (Hansen 5259, 5303)  
*Eragrostis spectabilis* (Pursh) Steud. (Hansen 3591)

- Eremochloa ophiuroides* (Munro) Hack. † (Hansen 4559)  
*Imperata cylindrica* (L.) Beauv. ‡ (Diamond 8653)  
*Leersia hexandra* Sw. (Hansen 5129, 5177)  
*Leersia lenticularis* Michx. (Hansen 5555, 5574)  
*Leersia oryzoides* (L.) Sw. (Hansen 5705)  
*Leersia virginica* Willd. (Hansen 5583)  
*Lolium perenne* L. ssp. *perenne* † (Hansen 4672)  
*Melica mutica* Walt. (Hansen 4972, 5082, 5380)  
*Muhlenbergia expansa* (Poir.) Trin. (Hansen 4861, 5217)  
*Oplismenus hirtellus* (L.) Beauv. ssp. *setarius* (Lam.)  
 Mez ex Ekman (Hansen 4825, 4841)  
*Panicum dichotomiflorum* Michx. ssp. *dichotomiflorum*  
 (Hansen 5867)  
*Panicum verrucosum* Muhl. (Hansen 4476, 4949, 5774)  
*Panicum virgatum* L. (Hansen 5164, 5274, 5734)  
*Paspalum boscianum* Flueggé (Hansen 5711)  
*Paspalum caespitosum* Flueggé (Hansen 5275)  
*Paspalum floridanum* Michx. (Hansen 5305)  
*Paspalum laeve* Michx. (Hansen 3463, 4088, 5145, 5165)  
*Paspalum notatum* Flueggé † (Hansen 3282, 5281)  
*Paspalum plicatulum* Michx. (Hansen 5491)  
*Paspalum praecox* Walt. (*Pancake s.n.*, 2011)  
*Paspalum setaceum* Michx. var. *cilatifolium* (Michx.)  
 Vasey (Hansen 5080, 5110)  
*Paspalum urvillei* Steud. ‡ (Hansen 4074, 4895, 5017,  
 5587)  
*Phanopyrum gymnocarpon* (Ell.) Nash (Hansen 5651)  
 [= *Panicum gymnocarpon* Ell.]  
*Phyllostachys aurea* Carr. ex A. & C. Rivière ‡ (Hansen  
 5374)  
*Piptochaetium avenaceum* (L.) Parodi (Hansen 5427)  
*Poa annua* L. † (Hansen 5387)  
*Poa autumnalis* Muhl. ex Ell. (Hansen 5045, 5466)  
*Saccharum alopecuroides* (L.) Nutt. (Hansen 3596)  
*Saccharum brevibarbe* (Michx.) Pers. var. *contortum*  
 (Ell.) R. Webster (Hansen 5713)  
*Saccharum giganteum* (Walt.) Pers. (Hansen 4534, 4903)  
*Sacciolepis striata* (L.) Nash (Hansen 4513, 5153, 5168)  
*Schedonorus arundinaceus* (Schreb.) Dumort. † (Hansen  
 5496)  
*Schizachyrium scoparium* (Michx.) Nash var. *scoparium*  
 (Hansen 3568A)  
*Schizachyrium scoparium* (Michx.) Nash var.  
*stoloniferum* (Nash) J. Wipff (Hansen 4473, 5329)  
*Schizachyrium tenerum* Nees (Hansen 5328)  
*Secale cereale* L. † (Hansen 4993, 5509)  
*Setaria corrugata* (Ell.) J.A. Schultes (Hansen 5691)  
*Setaria faberi* Herrm. † (Hansen 5224)  
*Setaria parviflora* (Poir.) Kerguelén (Hansen 4788, 5811)  
*Sorghastrum elliottii* (C. Mohr) Nash (Hansen 4475)  
*Sorghastrum nutans* (L.) Nash (Hansen 3567, 5762)  
*Sorghastrum secundum* (Ell.) Nash (Hansen 3581)  
*Sorghum halepense* (L.) Pers. ‡ (Hansen 5087)  
*Sphenopholis obtusata* (Michx.) Scribn. (Hansen 3742,  
 5240, 5450, 5489)  
*Sporobolus indicus* (L.) R. Br. † (Hansen 4890, 5142,  
 5810)  
*Sporobolus junceus* (Beauv.) Kunth (Hansen 4492, 4932,  
 5843)  
*Steinchisma hians* (Ell.) Nash (Hansen 4710, 5497)  
 [= *Panicum hians* Ell.]  
*Tridens carolinianus* (Steud.) Henr. ✕ (Hansen 5306)  
*Tridens flavus* (L.) A.S. Hitchc. var. *chapmanii* (Small)  
 Shinnery (Hansen 5783A)  
*Tridens flavus* (L.) A.S. Hitchc. var. *flavus* (Hansen 4905,  
 4914, 5317, 5704)  
*Triticum aestivum* L. † (Hansen 3666)  
*Urochloa adspersa* (Trin.) R. Webster † (Hansen 5728,  
 5828)  
*Urochloa platyphylla* (Munro ex Wright) R. Webster †  
 (Hansen 5731)  
*Urochloa ramosa* (L.) Nguyen † (Hansen 4875, 5138)  
*Vulpia octoflora* (Walt.) Rydb. (Hansen 5447)
- POLEMONIACEAE  
*Phlox glaberrima* L. ssp. *glaberrima* (Hansen 3307, 5686)  
*Phlox pilosa* L. ssp. *pilosa* (Hansen 4058, 4716, 4792,  
 5011)
- POLYGALACEAE  
*Asemeia grandiflora* (Walt.) Small (Hansen 5622)  
 [= *Polygala grandiflora* Walt.]  
*Polygala cruciata* L. (Hansen 3449, 5147)  
*Polygala curtissii* Gray (Hansen 5631)  
*Polygala incarnata* L. (Hansen 3395, 4012, 4673)  
*Polygala lutea* L. (Hansen 3345, 3985, 5232)  
*Polygala nana* (Michx.) DC. (Hansen 3560, 3962)  
*Polygala ramosa* Ell. (Hansen 3363)
- POLYGONACEAE  
*Brunnichia ovata* (Walt.) Shinnery (Hansen 4108, 5804)  
*Eriogonum tomentosum* Michx. (Hansen 3545, 5196)  
*Persicaria hydropteroides* (Michx.) Small (Hansen 4089,  
 4775)  
*Persicaria lapathifolia* (L.) S.F. Gray † (Hansen 5850)  
*Persicaria longiseta* (Bruijn) Kitag. † (Hansen 3376,  
 3436, 3593, 4066 [= *Polygonum caespitosum* Blume  
 var. *longisetum* (Bruijn) Danser])  
*Persicaria maculosa* S.F. Gray † (Hansen 5088)  
*Persicaria pennsylvanica* (L.) Gomez (Hansen 5768)  
*Persicaria punctata* (Ell.) Small (Hansen 4514)  
*Persicaria virginica* (L.) Gaertn. (Hansen 5854)  
 [= *Tovara virginiana* (L.) Raf.]  
*Rumex conglomeratus* Murr. † (Hansen 5541)  
*Rumex crispus* L. † (Hansen 5018)  
*Rumex hastatulus* Baldw. (Hansen 3696, 4014, 4712)
- PORTULACACEAE  
*Portulaca oleracea* L. † (Hansen 5819)

POTAMOGETONACEAE

*Potamogeton diversifolius* Raf. (Hansen 5242)  
*Potamogeton pusillus* L. ssp. *pusillus* (Hansen 4532)

PRIMULACEAE

*Lysimachia minima* (L.) U. Manns & A. Anderb. †  
 (Hansen 5492) [= *Anagallis minima* (L.) Krause]

RANUNCULACEAE

*Clematis crispa* L. (Hansen 3419)  
*Clematis reticulata* Walt. (Hansen 3306, 4040, 4041,  
 4117, 4128, 5209, 5513)  
*Ranunculus platensis* Spreng. † (Hansen 5874)

RHAMNACEAE

*Berchemia scandens* (Hill) K. Koch (Hansen 4832)  
*Ceanothus americanus* L. (Hansen 3541, 4038, 5590,  
 5596)  
*Frangula caroliniana* (Walt.) Gray (Hansen 4828)  
 [= *Rhamnus caroliniana* Walt.]

ROSACEAE

*Agrimonia microcarpa* Wallr. (Hansen 4766, 4950, 5666)  
*Amelanchier arborea* (Michx. f.) Fern. (Hansen 5364)  
*Aronia arbutifolia* (L.) Pers. (Hansen 3627, 4022, 4982,  
 5358) [= *Photinia pyrifolia* (Lam.) Robertson &  
 Phipps]  
*Crataegus marshallii* Egglest. (Hansen 5084, Pancake  
 s.n., 1994)  
*Crataegus munda* Beadle [fide Weakley 2012] (Pancake  
 s.n., 2011)  
*Crataegus spathulata* Michx. (Hansen 5089)  
*Crataegus viridis* L. (Hansen 4815)  
*Potentilla indica* (Andrews) Th. Wolf † (Hansen 3729,  
 5315, 5407) [= *Duchesnea indica* (Andrews) Focke]  
*Prunus americana* Marsh. (Hansen 4852)  
*Prunus angustifolia* Marsh. (Hansen 3633)  
*Prunus caroliniana* Ait. (Hansen 4995, 5276, 5759)  
*Prunus mexicana* S. Wats. (Hansen 4047, 4851)  
*Prunus persica* (L.) Batsch † (Hansen 5372)  
*Prunus serotina* Ehrh. (Hansen 3635)  
*Prunus umbellata* Ell. (Hansen 3277, 4713, 5386)  
*Pyrus calleryana* Dcne. † (Hansen 4906)  
*Rosa carolina* L. (Johnson s.n., 1991)  
*Rosa luciae* Franch. & Rchb. ex Crépin † (Hansen 4678,  
 5539) [= *Rosa wichuraiana* Crépin]  
*Rubus argutus* Link (Hansen 3644)  
*Rubus cuneifolius* Pursh (Hansen 3320, 4085, 4697)  
*Rubus flagellaris* Willd. (Hansen 5410, 5538)  
*Rubus trivialis* Michx. (Hansen 4067, 4957, 5285)

RUBIACEAE

*Cephalanthus occidentalis* L. (Hansen 4114)  
*Diodia teres* Walt. (Hansen 3332, 3475, 5161)  
*Diodia virginiana* L. (Hansen 3339, 4057, 4690, 5052)  
*Galium aparine* L. (Hansen 5403)

*Galium circaezans* Michx. (Hansen 5039, 5348)  
*Galium hispidulum* Michx. (Hansen 4060, 4758, 4979,  
 5233)  
*Galium orizabense* Hemsl. ssp. *laevicaule* (Weatherby &  
 S.F. Blake) Dempster (Hansen 5013, 5595)  
*Galium pilosum* Ait. var. *puncticulosum* (Michx.) Torr.  
 & Gray (Hansen 5234, 5632)  
*Houstonia caerulea* L. (Hansen 3629)  
*Houstonia procumbens* (Walt. ex J.F. Gmel.) Standl.  
 (Hansen 3628, 4568, 4909, 5175)  
*Houstonia pusilla* Schoepf (Hansen 3630)  
*Mitchella repens* L. (Hansen 3253, 3699)  
*Mitracarpus hirtus* (L.) DC. † (Hansen 5122, 5228, 5262)  
*Oldenlandia uniflora* L. (Hansen 4516, 4882, 5741)  
*Richardia brasiliensis* Gomes † (Hansen 5115, 5123)  
*Richardia humistrata* (Cham. & Schltld.) Steud. †  
 (Hansen 3317, 4681)  
*Richardia scabra* L. † (Hansen 3373, 4557)

RUTACEAE

*Ptelea trifoliata* L. (Hansen 5697)  
*Zanthoxylum clava-herculis* L. (Hansen 4830)

SALICACEAE

*Salix nigra* Marsh. (Hansen 3745, 5409)

SANTALACEAE

*Phoradendron leucarpum* (Raf.) Reveal & M.C. Johnst.  
 ssp. *leucarpum* (Hansen 5119)

SAPINDACEAE

*Acer floridanum* (Chapm.) Pax (Hansen 3642) [= *Acer*  
*barbatum* Michx.]  
*Acer negundo* L. var. *negundo* (Hansen 5803)  
*Acer rubrum* L. (Hansen 3237)  
*Aesculus pavia* L. var. *pavia* (Hansen 3657)

SAPOTACEAE

*Sideroxylon lanuginosum* Michx. (Hansen 4082, 4814,  
 5345) [= *Bumelia lanuginosa* (Michx.) Pers.]

SARRACENIACEAE

*Sarracenia* × *catesbaei* Ell. (pro sp.) [*flava* × *purpurea*]  
 (Hansen 5022)  
*Sarracenia flava* L. (Hansen 5021, 5500)  
*Sarracenia leucophylla* Raf. ✱ (Hansen 3353)  
*Sarracenia* × *mitchelliana* Nichols. (pro sp.) [*leucophylla*  
 × *purpurea*] (Hansen 5023)  
*Sarracenia* × *moorei* Masters (pro sp.) [*flava* ×  
*leucophylla*] (Hansen 5024)  
*Sarracenia psittacina* Michx. • (Pancake pers. comm)  
 —no voucher collected; reported by Diamond & Woods  
 2011 from Conecuh National Forest.  
*Sarracenia rosea* Naczi, F.W. & R.B. Case (Hansen 5020,  
 Pancake s.n., 2011) [for a brief discussion on  
 nomenclature of this and *S. purpurea* see Weakley  
 2012]



## SAURURACEAE

*Saururus cernuus* L. (Hansen 3659)

## SCHISANDRACEAE

*Illicium floridanum* Ellis (Hansen 3714)

SCROPHULARIACEAE [see also LINDERNIACEAE,  
OROBANCHACEAE, PLANTAGINACEAE]

*Verbascum thapsus* L. † (Hansen 4975)

## SMILACACEAE

*Smilax bona-nox* L. (Hansen 3562)

*Smilax glauca* Walt. (Hansen 3251)

*Smilax lasioneura* Hook. (Hansen 3446)

*Smilax laurifolia* L. (Hansen 5013, 5255)

*Smilax pumila* Walt. (Hansen 3387, 3679, 5293)

*Smilax rotundifolia* L. (Hansen 5063)

*Smilax smallii* Morong (Hansen 3293, 4748)

## SOLANACEAE

*Petunia atkinsiana* D. Don ex Loud. † (Hansen 5464)  
[=*Petunia hybrida* Vilm.]

*Physalis angulata* L. var. *angulata* (Hansen 5311, 5702,  
5818)

*Physalis heterophylla* Nees (Hansen 4029, 5515)

*Physalis pubescens* L. var. *integrifolia* (Dunal) Waterfall  
(Hansen 3418, 5544)

*Physalis pubescens* L. var. *pubescens* (Hansen 4807, 5819)

*Solanum carolinense* L. var. *carolinense* (Hansen 3328,  
3429, 4068)

*Solanum ptychanthum* Dunal (Hansen 3432, 5085, 5309)

[SPARGANIACEAE — see TYPHACEAE]

## STYRACACEAE

*Halesia carolina* L. (Hansen 3640)

*Halesia diptera* Ellis var. *diptera* (Hansen 3288, 3964,  
4033)

*Halesia tetraptera* Ellis (Hansen 5048)

*Styrax americanus* Lam. (*Pancake s.n.*, 1998)

*Styrax grandifolius* Ait. (Hansen 3337, 5076)

## SYMPLOCACEAE

*Symplocos tinctoria* (L.) L'Hér. (Hansen 3242, 3390,  
3686, 4122)

## TETRACHONDRACTACEAE

*Polypremum procumbens* L. (Hansen 3414, 3486, 3521,  
4465, 4744A)

## THEACEAE

*Gordonia lasianthus* (L.) Ellis ✕ ▲ (Hansen 3401)  
— cultivated on center but native to the Gulf and  
Atlantic Coastal Plains.

*Stewartia malacodendron* L. ✕ (Hansen 4670)

[TILLIACEAE — see MALVACEAE]

## TOFIELDIACEAE

*Triantha racemosa* (Walt.) Small (Hansen 3356, 4144,  
4782, 4944) [= *Tofieldia racemosa* (Walt.) B.S.P.]

[TRILLIACEAE — see MELANTHIACEAE]

## TYPHACEAE

*Sparganium americanum* Nutt. (Hansen 4773)

*Typha latifolia* L. (Hansen 5837)

## ULMACEAE [see also CANNABACEAE]

*Planera aquatica* J.F. Gmel. (Hansen 4817)

*Ulmus alata* Michx. (Hansen 4818)

*Ulmus americana* L. (Hansen 4829)

*Ulmus rubra* Muhl. (Hansen 4831, 4985, 5805)

## URTICACEAE

*Boehmeria cylindrica* (L.) Sw. (Hansen 3280, 4774, 5071,  
5710)

*Pilea pumila* (L.) Gray (Hansen 5870)

## VALERIANACEAE

*Valerianella radiata* (L.) Dufur. (Hansen 3723, 5412)

## VERBENACEAE

*Glandularia pulchella* (Sweet) Troncoso (Hansen 3750,  
5801)

*Lantana camara* L. † (Hansen 5777)

*Verbena brasiliensis* Vell. † (Hansen 3276, 4104)

*Verbena carnea* Medik. (Hansen 5594) [= *Stylodon*  
*carneus* (Medik.) Moldenke]

*Verbena halei* Small (Hansen 4711)

## VIOLACEAE

*Viola bicolor* Pursh (Hansen 5402)

*Viola lanceolata* L. var. *vittata* (Greene) Weatherby &  
Grisic. (Hansen 3986, 5482)

*Viola palmata* L. (Hansen 3645)

*Viola primulifolia* L. (Hansen 3257, 3736, 4018, 4579,  
5353, 5411)

*Viola sororia* Willd. var. *sororia* (Hansen 3254, 4968,  
5334, 5357, 5440)

*Viola walteri* House (Hansen 5855)

[VISCACEAE — see SANTALACEAE]

## VITACEAE

*Ampelopsis arborea* (L.) Koehne (Hansen 4562, 4819)

*Parthenocissus quinquefolia* (L.) Planch. (Hansen 4677)

*Vitis aestivalis* Michx. var. *aestivalis* (Hansen 5091,  
*Pancake s.n.*, 2011)

*Vitis cinerea* (Engelm.) Engelm. ex Millard (Hansen  
4719, 4805, 5284, 5469)

*Vitis rotundifolia* Michx. var. *rotundifolia* (Hansen 3270,  
3688)



XYRIDACEAE

*Xyris ambigua* Bey. ex Kunth (*Hansen 3366*)

*Xyris baldwiniana* J.A. Schultes (*Hansen 3358, 4016, 5537, 5616, 5639*)

*Xyris caroliniana* Walt. (*Hansen 3350, 3461, 4859, 5215*)

*Xyris difformis* Chapm. var. *difformis* (*Hansen 5204, 5706*)

*Xyris fimbriata* Ell. (*Hansen 4735, 4860*)

*Xyris laxifolia* Mart. var. *iridifolia* (Chapm.) Kral  
(*Hansen 5254, 5681*)

*Xyris platylepis* Chapm. (*Hansen 5661*)

## Appendix II. Unverified Taxa

Annotated list of 84 taxa previously reported from the Center property or neighboring Conecuh National Forest (Carter *et al* 1999, 2004; Diamond & Woods 2011; D. Brockaway, pers comm.) that could not be verified in the current study. Vouchering these taxa should be a priority of future surveys on Center property. Abbreviations used: b = Brockaway (unpublished forest stand vegetation surveys on the Center); c1= Carter *et al* 1999; c2 = Carter *et al* 2004; d = Diamond & Woods 2011; ✕ = tracked by the Alabama Natural Heritage Program (2013).

### LYCOPHYTA

#### LYCOPODIACEAE

*Pseudolycopodiella caroliniana* (L.) Holub—c2, b (As *Lycopodium carolinianum* L. or *Lycopodiella caroliniana* (L.) Pichi Sermolli, respectively.)

### MONILOPHYTA

#### OPHIOGLOSSACEAE

*Sceptridium dissectum* (Spreng.) Lyon—b (As *Botrychium dissectum* Spreng.)

### CONIFEROPHYTA

#### CUPRESSACEAE

*Juniperus virginiana* L. var. *silicicola* (Small) J. Silba—b

### MAGNOLIOPHYTA

#### ANNONACEAE

*Asimina triloba* (L.) Dunal—b

#### APIACEAE

*Angelica dentata* (Chapm.) Coult. & Rose—c2 (Known from SW Georgia and the Appalachian drainage in Florida only. If confirmed it would be a county and state record.)

#### ARECACEAE

*Serenoa repens* (Bartr.) Small—b, c2

#### ASPARAGACEAE

*Yucca filamentosa* L.—c2

#### ASTERACEAE

*Ambrosia trifida* L.—b

*Antennaria plantaginifolia* (L.) Hook.—c2 (South Alabama is very near the southern range extension of this species.)

*Bradburia pilosa* (Nutt.) Semple—d

*Eupatorium perfoliatum* L.—c2

*Gamochaeta calviceps* (Fern.) Cabrera—d (As *Gamochaeta falcata* (Lam.) Cabrera)

*Symphotrichum undulatum* (L.) Nesom—b

*Trilisa odoratissima* (Walt. ex J.F. Gmel.) Cass.—b (As *Carphephorus paniculatus* (J.F. Gmel.) Herbert)

#### CYPERACEAE

*Rhynchospora colorata* (L.) H. Pfeiffer—c2 (As

*Dichromena colorata* (L.) A.S. Hitchc.)

*Rhynchospora inexpansa* (Michx.) Vahl—d

*Rhynchospora latifolia* (Baldw. ex Ell.) Thomas—d

*Rhynchospora macra* (C.B. Clarke ex Britt.) Small ✕—d

*Rhynchospora microcarpa* Baldw. ex Gray—d

*Rhynchospora perplexa* Britt.—d

*Rhynchospora stenophylla* Chapm. ✕—d.

*Scleria ciliata* Michx.—b, d

*Scleria oligantha* Michx.—d

#### DIAPENSIACEAE

*Galax urceolata* (Poir.) Brummitt—b (If confirmed it would be a county record and the southern most occurrence of this species.)

#### DROSERACEAE

*Drosera brevifolia* Pursh—c1, c2

#### ERICACEAE

*Vaccinium pallidum* Ait.—d (If confirmed it would be a county record.)

#### ERIOCAULACEAE

*Eriocaulon texense* Koern. ✕—c2

#### EUPHORBIACEAE

*Euphorbia prostrata* Ait.—c2 (As *Chamaesyce prostrata* (Ait.) Small)

*Stillingia sylvatica* L.—c2

#### FABACEAE

*Desmodium rotundifolium* DC.—b

*Desmodium strictum* (Pursh) DC.—b, c2

*Galactia elliottii* Nutt.—b (Endemic to peninsular Florida and the Atlantic Coast through GA to extreme southern SC. If confirmed it would be a county and state record and a substantial western extension of its range.)

*Galactia erecta* (Walt.) Vail—d

*Rhynchosia cytisoides* (Bertol.) Wilbur—c2

*Rhynchosia difformis* (Ell.) DC.—d

#### FAGACEAE

*Quercus minima* (Sarg.) Small ✕—b, c2

#### GENTIANACEAE

*Obolaria virginica* L.—b (If confirmed it would be the southern most occurrence in Alabama.)

#### HAEMODORACEAE

*Lophiola aurea* Ker-Gawl.—c2, d

## HYPERICACEAE

*Hypericum fasciculatum* Lam.—c2, d

## IRIDACEAE

*Iris tridentata* Pursh—c2 (If confirmed it would be a county record.)

*Sisyrinchium mucronatum* Michx.—b

*Sisyrinchium xerophyllum* Greene—c2 (Endemic largely to Florida, this would be a state record if confirmed.)

## LAMIACEAE

*Pycnanthemum floridanum* E. Grant & Epling—b.  
(Endemic to central Florida and extreme southern Georgia. If confirmed it would be a state record.)

*Pycnanthemum incanum* (L.) Michx.—b, d

*Pycnanthemum pycnanthemoides* (Leavenworth) Fern.—d

## LAURACEAE

*Persea borbonia* (L.) Spreng.—c2, b, d

## LENTIBULARIACEAE

*Pinguicula lutea* Walt.—c2

*Pinguicula pumila* Michx.—c2

## LINACEAE

*Linum sulcatum* Riddell—d (Both varieties, *harperi* and *sulcatum*, occur in Alabama but only var. *harperi* is tracked by the Alabama Natural Heritage Program 2013)

## MELANTHIACEAE

*Chamaelirium luteum* (L.) Gray—c2

*Stenanthium densum* (Desr.) Zomlefer & Judd—c2, d (As *Zigadenus densus* (Desr.) Fern.)

*Stenanthium leimanthoides* (Gray) Zomlefer & Judd ✕  
—d (As *Zigadenus leimanthoides* Gray)

## NARTHECIACEAE

*Aletris lutea* Small—c2

## ONAGRACEAE

*Ludwigia linifolia* Poir.—d

*Ludwigia spathulata* Torr. & Gray ✕—d

## ORCHIDACEAE

*Calopogon pallidus* Chapm.—d

*Malaxis unifolia* Michx.—c2

*Spiranthes lacera* (Raf.) Raf.—d

## POACEAE

*Andropogon gerardii* Vitman—d

*Aristida spiciformis* Ell. ✕—b

*Coleataenia rigidula* (Bosc ex Nees) LeBlond—d (As *Panicum rigidulum* Bosc ex Nees)

*Gymnopogon ambiguus* (Michx.) B.S.P.—d

*Muhlenbergia schreberi* J.F. Gmel.—b

*Sporobolus curtissii* Small ex Kearney ✕—b

*Triplasis americana* Beauv.—d (Listed as “*Triplasis arboreum*” Beauv.)

## POLYGALACEAE

*Polygala cymosa* Walt.—d

## POLYGONACEAE

*Polygonum pinicola* T.M. Schust. & Reveal—c2 (As

*Polygonella gracilis* Meisn.)

## RHAMNACEAE

*Ceanothus microphyllus* Michx.—d

## ROSACEAE

*Agrimonia incisa* Torr. & Gray ✕—c2

*Crataegus uniflora* Muenchh.—c2

*Malus angustifolia* (Ait.) Michx.—c2

## RUBIACEAE

*Oldenlandia boscii* (DC.) Chapm.—c2 (As *Hedyotis boscii* DC.)

*Stenaria nigricans* (Lam.) Terrell—c2 (As *Hedyotis nigricans* (Lam.) Fosberg)

## SMILACACEAE

*Smilax auriculata* Walt.—d

## SOLANACEAE

*Physalis arenicola* Kearney—c2

*Physalis viscosa* L.—d

## VIOLACEAE

*Viola affinis* Le Conte—c2

*Viola labradorica* Schrank—c2 (As *Viola conspersa* Reichenb.—known in Alabama only as far south as Coosa Co. If confirmed, it would be a county record and the southern most occurrence for AL.)

*Viola septemloba* Le Conte—d

## VITACEAE

*Vitis palmata* Vahl—c2

## XYRIDACEAE

*Xyris drummondii* Malme ✕—d

*Xyris elliottii* Chapm.—c2

*Xyris serotina* Chapm. ✕—c2

*Xyris torta* Sm.—d