

1 FLORA, PLANT COMMUNITIES, AND SOILS OF A SIGNIFICANT NATURAL AREA IN
2 THE MIDDLE ATLANTIC COASTAL PLAIN (CRAVEN COUNTY, NORTH CAROLINA)

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6 ABSTRACT

7 Cool Springs Environmental Education Center (CSEEC), owned by Weyerhaeuser Company,
8 includes a 591 ha State Significant Natural Area. It is located in Craven County, North Carolina,
9 in the floristically rich Atlantic Coastal Plain. A vascular flora inventory documented the
10 occurrences of 567 species and sub-specific taxa and 303 genera in 118 plant families, including
11 populations of the Atlantic Coastal Plain endemics Pondspice (*Litsea aestivalis*) and LeBlond's
12 Coastal Goldenrod (*Solidago villosicarpa*). We identified twenty plant community types,
13 including the uncommon Longleaf Pine (*Pinus palustris*) Woodland, Bald Cypress–Tupelo Gum
14 (*Taxodium distichum* – *Nyssa aquatica*) Swamp, a number of small depression wetland
15 communities, and the novel Sand Laurel Oak-Loblolly Pine (*Quercus hemisphaerica* – *Pinus*
16 *taeda*) Woodland. Soils ranged from excessively drained sands to very poorly drained organics.
17 The order of the soil mapping units according to the number of plant taxa they supported per unit
18 area was TaB > PO > Ln > Mu > DO, MM > Se > KuB. CSEEC plant species richness was one
19 of the highest of 12 floras compared. There was not a significant relationship between soil
20 heterogeneity and species richness for these floras. Perhaps, landscape management is more
21 important than soil heterogeneity for supporting the relatively high CSEEC species richness.

22

INTRODUCTION

The Coastal Plain Physiographic Region (Fenneman 1938, Stucky 1965) or Coastal Plain Floristic Province (Takhtajan 1986) of North America is floristically rich and supports many endemic plant taxa, making it an important target for conservation (Walker 1993, Sorrie and Weakley 2001, 2006, LeBlond 2001, Sorrie and Weakley in prep.). Although floristic inventories are integral to conserving and monitoring the health of natural communities and plant populations (Palmer et al. 1995), there have been few inventories completed for portions of the North Carolina Coastal Plain and Outer Banks (Blair 1967, Bruton 1968, Au 1969, Dickerson 1978, Corda 1982, Sieren and Warr 1992, Stalter and Lamont 1999, Krings 2002, 2007, Kelly 2006, Shelingoski et al. 2005, Sorrie et al 2006, Morris 2007).

Cool Springs Environmental Education Center (CSEEC) is a 688 ha area owned by Weyerhaeuser Company and is located in Craven County, North Carolina, in the Carolina Coastal Plain. An apparently rich flora, diverse assemblage of plant community and soil types, proximity to other large conservation areas, and the lack of devastating anthropogenic disturbance led to 591 ha of CSEEC being designated a State Significant Natural Area between 1991 and 2000 (Schafale 1991, LeBlond 1998). Prior to this study, documentation of the plant species and plant communities at CSEEC came from North Carolina Heritage surveys (Schafale 2000a, 2000b, 1991, Schafale and Moore 1991, McDonald et al. 1981). The goals of this study were to 1) document the CSEEC flora with voucher specimens, 2) verify the soil mapping units, 3) describe the plant community - soil associations, and 4) compare the species richness of CSEEC with that of other floras.

STUDY AREA

CSEEC is located between 35° 10' 00" and 35° 11' 48" N and 77° 03' 46" and 77° 06' 00" W, in the Neuse River Basin at the convergence of the Neuse River and Swift Creek approximately 10 km upstream on the Neuse from the town of New Bern. This location is on the

1 Askin 7.5 minute topographic map (United States Department of Interior Geological Survey
2 1983).

3 CSEEC experiences a humid – subtropical climate (Peel et al. 2007). The 240-day growing
4 season is moist and warm (Goodwin 1989, North Carolina Climate Retrieval and Observations
5 Network Of the Southeast Database 2003-2007, Figure 1). During this study, weather was within
6 the normal range of variation, except for a drought during August – October, 2007, when
7 precipitation totaled only 8.7 cm (Figure 1).

8 CSEEC lies within the Middle Atlantic Coastal Plain Mid – Atlantic Floodplains and
9 Terraces Level III and IV Ecoregions (Griffith et al. 2002), which are characterized by broad
10 inter-stream divides with relatively little topographic relief. The surface deposits are
11 unconsolidated sands, gravels, clays, and marls underlain by rocks that contain limestone
12 (Fenneman 1938, Stucky 1965, Walker and Coleman 1987). Soils range from very poorly
13 drained in swamps to excessively well-drained in uplands (Daniels et al. 1999).

14 Regional land cover changes have been caused by the timber, naval stores, and free range
15 livestock industries and by fire suppression dating back to the early eighteenth century (Frost
16 1993, 1995). At CSEEC there is a slash pine (*Pinus elliotii*) plantation and evidence of previous
17 habitation. Much of the well-drained sandy uplands at CSEEC have been managed for Longleaf
18 Pine (*Pinus palustris*) Woodland restoration. CSEEC was placed under two conservation
19 easements in December, 2001, to help secure management appropriate for natural ecosystems
20 well into the future.

21 METHODS

22 We collected plants from September, 2005, until July, 2007, identified them utilizing the
23 taxonomic concepts and nomenclature of Weakley (2007), and deposited voucher specimens in
24 NCSC. Our species rarity designations followed those of Franklin and Finnegan (2006). We
25 compared features of our sample soil profiles with those of Goodwin (1989). We used edaphic,
26 topographic, and vegetation features to identify plant community types (Schafale and Weakley

1 1990, Schafale in prep., NatureServe 2007). Our community nomenclature follows Schafale and
2 Weakley (1990) and we assigned each community its National Vegetation Classification
3 association number (CEGL code) (NatureServe 2007). We described anthropogenic communities
4 independent of other classification systems.

5 Species-area analysis was used to compare the species richness of CSEEC with that of eleven
6 other Atlantic Coastal Plain and Coastal Fringe sites that ranged in size from 47 to 215,278 ha
7 (Table 1). For this analysis, we used linear regression to relate log site area (independent
8 variable) to log number of species (dependent variable). Plant nomenclatural differences among
9 the studies were corrected prior to the analysis.

10 Since soil features can relate strongly to species diversity and richness (Harner and Harper
11 1976, Nichols et al. 1998) and since soil series are strongly associated with plant community
12 types in the North Carolina Coastal Plain (Schafale and Weakley 1990), we evaluated the
13 potential relationship between soil drainage heterogeneity and species richness for the twelve
14 floristic sites. Accordingly, we determined the index of soil drainage heterogeneity for each site
15 from the areas occupied by different soil drainage classes at the site. We determined these areas
16 with the soil mapping tool of the Web Soil Survey (Soil Survey Staff, Natural Resources
17 Conservation Service, United States Department of Agriculture b) and assigned each mapping
18 unit to its drainage class (Soil Survey Staff, Natural Resources Conservation Service, United
19 States Department of Agriculture a). The heterogeneity index for each site was determined as the
20 negative sum of $p_i \log p_i$ where p_i is the proportion of the total site area occupied by drainage
21 class i (Shannon and Weaver 1949). We removed the effect of total site area on soil
22 heterogeneity by regressing the heterogeneity indices onto logs of the site areas and determining
23 residuals for these indices (Nichols et al. 1998). We then evaluated the relationship between soil
24 drainage heterogeneity and species richness by regressing the soil index residuals (independent
25 variable) onto species richness residuals (dependent variable) from the species-area analysis.

26

RESULTS AND DISCUSSION

1 *Soil Mapping Units*

2 Soil orders represented at CSEEC included Histosols, Inceptisols, Spodosols, and Entisols
3 (Figure 2). The two predominant soil mapping units were Dorovan muck (DO) and Tarboro sand
4 (TaB). Soil series descriptions were adapted from the Soil Survey of Craven County, North
5 Carolina (Goodwin 1989).

6 Histosols

7 Dorovan muck (DO) (dysic, thermic Typic Haplosaprist) — This very poorly drained soil
8 floods frequently for very long durations and maintains a water table at or near the surface most
9 of the year. It has a very thick O horizon, typically approximately 80 in. (2 m). It occupied 284
10 ha at CSEEC mostly at elevations below 3 m (Figure 3).

11 Ponzer muck (PO) (loamy, mixed, dysic, thermic, Terric Medisaprist) — This very poorly
12 drained soil rarely floods and maintains a high water table 0.5 ft. (15 cm) below to 1.0 ft. (31 cm)
13 above the surface year-round. Its surface is almost level with an O horizon 40 in. (1 m) thick. It
14 is typically found in pocosins or on stream terraces in depressions and on broad flats. It occupied
15 10 ha at CSEEC.

16 Inceptisol

17
18 Masontown mucky fine sandy loam (MM) (coarse-loamy, siliceous, nonacid, thermic
19 Cumulic Humaquept) — This very poorly drained soil floods frequently for long durations and
20 maintains a high water table 0.5 ft (15 cm) below to 1.0 ft (31 cm) above the surface November
21 through April. It ranges from medially acidic to mildly alkaline with a surface layer of black
22 mucky fine sandy loam and fine sandy loam 60 in. (1.5 m) thick. It occupied 6 ha at CSEEC,
23 along the Neuse River at an elevation higher than that occupied by Dorovan muck (Figure 2).

24 Spodosols

25
26 Murville mucky loamy sand (Mu) (sandy, siliceous, thermic Typic Haplaquod) — This very
27 poorly drained soil maintains a high water table 1.0 ft below (31 cm) to 1.0 ft (31 cm) above the
28 surface year-round. It occurs on broad flats and in depressions (Figure 3). Typically the surface

1 layer is black mucky loamy sand 10 in. (25.4 cm) thick with a well developed spodic horizon
2 beneath the A horizon. It occupied 104 ha at CSEEC.

3 Leon sand (Ln) (sandy, siliceous, thermic Aeric Haplaquod) — This poorly drained soil has
4 a water table that fluctuates from 1.0 ft (31 cm) below to even with the surface November through
5 April. It has a well developed spodic horizon that can potentially impede drainage. This series
6 occurred at CSEEC only as poorly drained inclusions within the Tarboro and Kureb mapping
7 units; therefore, it was not mapped (Figure 2). It occupied 7 ha at CSEEC.

8 Entisols

9 Seabrook loamy sand (Se) (mixed, thermic Aquic Udipsamment) — This moderately well
10 drained soil has a high water table 4.0 ft (120 cm) to 2.0 ft (60 cm) below the surface December
11 through March. It constitutes a slightly convex narrow strip on the eastern edge of the Neuse
12 River in the ecotone between Tarboro sand (TaB) or Masontown mucky fine loamy sand (MM)
13 and Dorovan muck (DO) (Figure 2). It occupied 21 ha at CSEEC.

14 Tarboro sand (TaB) (mixed, thermic Typic Udipsamment) — This upland soil (Figure 3) is
15 somewhat excessively drained with a high water table 4.0 ft (120 cm) to 2.0 ft (60 cm) below the
16 surface December through March. It was the most common upland soil at CSEEC where it
17 occupied 182 ha (Figure 2) and constituted the majority of the Leon map unit presented by
18 Goodwin (1989).

19 Kureb sand (KuB) (thermic, uncoated Spodic Quartzipsamment) — This is an excessively
20 drained, coarse, deep sand with a very weak spodic horizon and a high water table consistently
21 greater than six feet (180 cm) below the surface. This series was dominant in the eastern upland
22 portion of CSEEC (Figure 2). It occupied 56 ha at CSEEC.

23

24 *Plant Communities*

25

1 Twenty plant community types were identified at CSEEC. Community concepts for non-
 2 anthropogenic communities follow Classification of the Natural Communities of North Carolina
 3 (Third Approximation) (Schafale and Weakley 1990).

4 1) *Xeric Sandhill Scrub (CEGL003586)*

5 This community type was restricted to the highest elevations (6–8 m above sea level) of the
 6 sandy rim on the western edge of the Pond Pine Woodland (Fig 4). The open canopy consisted
 7 exclusively of *Pinus palustris*. The understory was dominated by *Quercus laevis* with occasional
 8 *Diospyros virginiana*, *Quercus margaretta*, and *Sassafras albidum*. The sparse shrub layer
 9 consisted mainly of *Vaccinium tenellum*. This community also supported a scattered mosaic of
 10 herbaceous xerophiles such as *Cladonia* sp., *Cnidoscopus stimulosus*, *Euphorbia ipecacuanhae*,
 11 *Opuntia humifusa* var. *humifusa*, and *Stipulicida setacea* var. *setacea*. The predominant soil type
 12 was Kureb sand (KuB).

13 2) *Pine / Scrub Oak Sandhill (CEGL003591)*

14 This natural community was predominant at 3–6 m above sea level in the eastern portion of
 15 the property (Fig 4). It consisted of an open canopy of *Pinus palustris* with an understory of
 16 *Quercus hemisphaerica*, *Q. incana*, *Q. laevis*, *Q. margaretta*, and *Q. virginiana*, all with low
 17 stature maintained by frequent fire. Other important understory species included *Castanea*
 18 *pumila*, *Diospyros virginiana*, *Rhus copallinum* var. *copallinum*, and *Sassafras albidum*. The
 19 dense low-shrub layer included *Gaylussacia dumosa*, *G. frondosa*, *Morella pumila*, *Vaccinium*
 20 *stamineum*, and *V. tenellum*. The herbaceous layer consisted of *Agalinis setacea*, *Amorpha*
 21 *herbacea* var. *herbacea*, *Andropogon ternarius*, *Andropogon virginicus* var. *virginicus*, *Aristida*
 22 *purpurascens*, *A. stricta*, *Chrysopsis gossypina*, *Cnidoscopus stimulosus*, *Pityopsis graminifolia*,
 23 *Schizachyrium scoparium* var. *scoparium*, *Solidago odora* var. *odora*, *Stipulicida setacea* var.
 24 *setacea*, *Vitis rotundifolia* var. *rotundifolia*, and, in more mesic areas, *Gelsemium sempervirens*.
 25 The North Carolina endangered *Solidago villosicarpa* occurred on the fire suppressed edge of this

1 community. The predominant soil type for this community was Tarboro sand (TaB), a finer sand
2 than Kureb, which allowed for a slightly more mesic and diverse flora.

3 *3) Loblolly and Longleaf Pine Plantations*

4 This anthropogenic community was planted by Weyerhaeuser Company and has been
5 managed for timber production. *Pinus taeda* was dominant on the upland eastern side of the
6 powerline right-of-way. A small area on the western side was planted with *Pinus palustris* (Fig
7 4). The open to moderately dense understory consisted of species typical of either Xeric Sandhill
8 Scrub or Pine / Scrub Oak Sandhill, depending on the soil series. *Diospyros virginiana*, *Quercus*
9 *hemisphaerica*, *Q. laevis*, and *Q. stellata*, dominated the moderately dense understory. The low
10 shrub layer included *Gaylussacia frondosa*, *Vaccinium stamineu*, and *V. tenellum*. *Cuthbertia*
11 *graminea*, *Lupinus perennis* ssp. *perennis*, and *Stipulicida setace* were common herbs. These
12 communities occurred on furrowed Kureb sand (KuB) and Tarboro sand (TaB).

13 *4) Slash Pine Plantation*

14 This anthropogenic community was planted prior to purchase of the land by Weyerhaeuser
15 Company. It occupied a small tract near Swift Creek (Fig 4). The open canopy was dominated by
16 *Pinus elliottii* (20 – 40 cm dbh). The moderately dense understory included *Callicarpa*
17 *americana*, *Carya* spp., *Prunus serotina*, *Quercus falcata*, *Q. marilandica*, *Q. nigra*, *Q. stellata*,
18 *Sassafras albidum*, and *Vaccinium arboreum*. The herbaceous stratum was dense to sparse and
19 included ruderal and dry site species. The dominant vines were *Smilax bona-nox*, *S. rotundifolia*,
20 *Vitis labrusca*, and *V. rotundifolia*. *Cypripedium acaule* was present only in this community
21 within the study area. The predominant soil series was Tarboro sand (TaB).

22 5 and 6) Dry Oak Hickory Forest (CEGL007246) and Dry-Mesic Oak Hickory Forest 23 (CEGL007862 and CEGL007226)

24 Both community types occurred on Tarboro sand (TaB) islands 1.5 – 6 m above sea level
25 scattered throughout the site (Figure 4). Goodwin (1989) incorrectly mapped some of these
26 Tarboro islands as Seabrook loamy sand (Se). Seabrook loamy sand was actually restricted to the

1 convex ecotone between Dorovan (DO) and the drier soils adjacent to the Neuse River levee (Fig.
 2 4) and supported dense vegetation including *Arundinaria tecta*, *Baccharis halimifolia*, *Pinus*
 3 *taeda*, and *Smilax rotundifolia*.

4 These natural community types may have developed in response to fire suppression caused
 5 by either anthropogenic or natural fire breaks such as the swamps and rivers which partially
 6 surrounded these communities. Gradual microtopographic / hydrologic gradients between the Dry-
 7 Mesic Oak Hickory Forest at lower elevations and the Dry Oak Hickory Forest at higher
 8 elevations resulted in wide ecotones supporting species typical of both community types.

9 The Dry Oak Hickory Forest was characterized by a closed canopy of mature dry-site oaks
 10 including *Quercus alba*, *Q. coccinia*, *Q. falcata*, *Q. stellata*, and *Q. velutina* and mature dry-site
 11 hickories including *Carya alba*, *C. glabra*, and *C. pallida*. Mature *Pinus echinata*, *P. palustris*,
 12 and *P. taeda* also were common in the canopy. The understory included *Cornus florida*, *Nyssa*
 13 *sylvatica*, *Oxydendrum arboreum*, *Quercus marilandica* var. *marilandica*, *Sassafras albidum*, and
 14 *Vaccinium arboreum*. Common tall shrubs included *Callicarpa americana*, *Castanea pumila*,
 15 and *Hamamelis virginiana* var. *virginia*. Short shrubs included *Gaylussacia dumosa*, *G.*
 16 *frondosa*, *Morella pumila*, *Vaccinium stamineum*, *V. tenellum*, and, in lower areas, *Arundinaria*
 17 *tecta*. Epiphytic species included *Pleopeltis polypodioides* ssp. *michauxiana* and *Tillandsia*
 18 *usneoides*.

19 All Dry-Mesic Oak Hickory Forest stands at CSEEC occurred near swamps and formed
 20 ecotones between upland and lowland communities (Fig 4). *Pinus taeda* and *Quercus nigra*
 21 dominated the canopy. Dry-site oaks and *Pinus echinata* were common in the canopy. The sparse
 22 understory consisted of *Asimina parviflora*, *Hamamelis virginiana*, *Ilex opaca*, *Juniperus*
 23 *virginiana* var. *virginiana*, *Liquidambar styraciflua*, *Morella cerifera*, *Nyssa sylvatica*,
 24 *Oxydendrum arboreum*, *Prunus serotina*, *Symplocos tinctoria*, and *Vaccinium fuscatum*. Dense,
 25 scattered colonies of *Gaylussacia frondosa* occurred in higher areas and dense patches of
 26 *Arundinaria tecta* in lower areas. Vines were prevalent and included *Bignonia capreolata*,

1 *Gelsemium sempervirens*, *Smilax bona-nox*, *Smilax glauca*, *S. rotundifolia*, and *Vitis rotundifolia*.
 2 Epiphytic species included *Pleopeltis polypodioides* ssp. *michauxiana* and *Tillandsia usneoides*.
 3 7) Swamp Island Evergreen Forest (Schafale, in prep.) (approximates C EGL007022)

4 This community type was originally described at CSEEC in 1991 (LeBlond and Schafale
 5 1991, LeBlond 2006). It occurred at 1.5–3 m above sea level away from the river channel and
 6 graded into Non-Riverine Swamp Forest nearer the river (Fig 4). The soil was previously
 7 mapped as Leon sand (Ln) (Goodwin 1989) but we found that it was actually Tarboro sand
 8 (TaB).

9 The uneven-aged canopy was dominated by mature *Pinus taeda*, *Quercus hemisphaerica* (55
 10 – 60 cm dbh), and *Q. nigra*. The understory consisted of *Acer rubrum*, *Symplocos tinctoria*,
 11 *Hamamelis virginiana*, *Ilex opaca*, *Liquidambar styraciflua*, *Oxydendrum arboreum*, and *Nyssa*
 12 *sylvatica*. The patchy, low shrub layer was dominated by *Gaylussacia frondosa*, *Vaccinium*
 13 *stamineum* and *V. tenellum*. There were very few herbs. A small population of *Solidago*
 14 *villosicarpa* occurred in this community adjacent to the powerline right-of-way.

15 8) Tidal Cypress - Gum Swamp (CEGL004696, CEGL007431, CEGL007432)

16 This community occurred on Dorovan muck (DO) with a small portion on Masontown mucky
 17 fine sandy loam (MM) and covered more of the CSEEC area than did any other single community
 18 type (Fig 4). The closed canopy was dominated by *Nyssa aquatica* and *Taxodium distichum*.
 19 *Carya aquatica*, *Nyssa biflora*, and *Quercus michauxi* were less important canopy species. The
 20 low density understory and shrub stratum was dominated by *Acer rubrum*, *Eubotrys racemosa*,
 21 *Fraxinus caroliniana*, *F. pennsylvanica*, *Itea virginica*, *Morella cerifera*, and *Rosa palustris*. The
 22 herb layer was dense and diverse in the spring and summer when the water table was low.
 23 Characteristic herbs included *Boehmeria cylindrica*, *Carex* spp., *Cicuta maculata* var. *maculata*
 24 *Onoclea sensibilis* var. *sensibilis*, *Osmunda cinnamomea* var. *cinnamomea*, *O. regalis* var.
 25 *spectabilis*, *Peltandra virginica*, *Persicaria arifolia*, *Pontederia cordata* var. *cordata*,
 26 *Rhynchospora miliacea*, *Sagittaria lancifolia* var. *media*, *S. latifolia*, *Saururus cernuus*, and

1 *Woodwardia areolata*. Vines included *Berchemia scandens*, *Decumaria Barbara*, and *Smilax*
2 *walteri*.

3 9) Non-Riverine Swamp Forest (CEGL007558)

4 This natural community type occurred on Dorovan muck (DO), Ponzer muck (PO), and
5 Murville mucky loamy sand (Mu) in somewhat drier habitats than the Tidal Cypress-Gum
6 Swamp, although these communities were connected (Fig 4). This community was also common
7 in areas of poorly - very poorly drained mucks that protruded into the Pine Oak Sandhill Scrub
8 community.

9 The closed canopy was dominated by *Acer rubrum* var. *trilobum* (to 60+ cm dbh), *Gordonia*
10 *lasianthus*, *Liquidambar styraciflua*, *Nyssa biflora*, *Pinus taeda* (to 50+ cm dbh), *Prunus serotina*
11 and *Taxodium distichum* (to 90+ cm dbh). A few small uneven aged stands of *Chamaecyparis*
12 *thyoides* (to 60 cm dbh) occurred in this community type. The fairly open understory consisted of
13 acid-loving wetland species including *Cyrilla racemiflora*, *Eubotrys racemosa*, *Magnolia*
14 *virginiana*, *Persea palustris*, and *Vaccinium fuscatum*. The sparse – dense shrub layer was
15 dominated by species characteristic of pocosins such as *Clethra alnifolia*, *Ilex coriacea*, and
16 *Lyonia lucida*. Aside from scattered patches of *Osmunda cinnamomea* var. *cinnamomea*,
17 *Sphagnum* spp., and *Woodwardia virginica*, the herbaceous flora was sparse, possibly a result of
18 diminished light availability. The ecotone between this community and upland communities
19 consisted of a dense layer of the understory species typical of the community with a significant
20 increase in the abundance of *Arundinaria tecta* and *Clethra alnifolia*.

21 10) Pond Pine Woodland (CEGL003671)

22 This natural community type occurred on Dorovan muck (DO) in a Carolina Bay situated on
23 the upland terrace away from the river (Fig 4). The open canopy consisted of *Gordonia*
24 *lasianthus* and mature *Pinus serotina* and the sub-canopy of *Acer rubrum* var. *trilobum* with
25 occasional *Nyssa biflora*. The dense understory of acid-loving Coastal Plain shrubs included *Ilex*
26 *coriacea*, *I. laevigata*, *Lyonia lucida*, *Persea palustris*, *Rhododendron viscosum*, and *Vaccinium*

1 *formosum*. *Smilax laurifolia* was the dominant vine. The herb layer was absent in the interior
2 where the shrub understory was so dense that no light penetrated to ground level. *Vaccinium*
3 *crassifolium*, *Woodwardia areolata*, and, in drier areas, *Pteridium aquilinum* var.
4 *pseudocaudatum* occurred around the periphery. Scattered pockets of *Gordonia lasianthus* and
5 *Itea virginica* resprouts, *Rhynchospora fascicularis* var. *distans*, *Sphagnum* spp., and *Utricularia*
6 *subulata* were abundant in the powerline right-of-way that ran through the center of this
7 community type (Fig 4).

8 A fire break had been installed in the ecotone between the Pond Pine Woodland and the
9 upslope Xeric Sandhill Scrub along the western edge of the Carolina Bay (Fig 4). Unfortunately,
10 this fire break had been plowed in the ecotone which, if unplowed but kept open by fire, would be
11 excellent habitat for unique plant species including pitcher plants, sundews (Brewer 1998), fly
12 traps (Luken 2005), native orchids, and endangered species including roughleaf loosestrife
13 (Roberts and Oosting 1958, Franklin et al. 2006). None of these unique species occurred at
14 CSEEC. Strong consideration must be given to placing fire breaks further down slope to avoid
15 destroying this critical ecotone habitat while simultaneously facilitating its management with
16 prescribed burns.

17 11) Semi-Permanent Impoundment (CEGL004442)

18 This anthropogenic community was present in a portion of the Tidal Cypress-Gum Swamp
19 Forest that had been impounded by a road and adjacent to Swift Creek in a floodplain swamp that
20 had been impounded by a century-old sawmill debris pile and a beaver dam (Fig 4). The two
21 stands were over 100 years old and were inundated throughout the study. The open canopy
22 consisted of *Nyssa aquatica* and *Taxodium distichum*. *Acer rubrum* var. *trilobum* and *Fraxinus*
23 *pennsylvanica* were occasional in the understory. In the Swift Creek impoundment there were
24 few living trees and many standing dead trees, indicating a recent change in the hydrologic
25 regime. *Decodon verticillatus*, *Hydrocotyle ranunculoides*, *Sparganium americanum*, *Typha*
26 *latifolia*, *T. angustifolia*, and *Utricularia subulata* and a dense assemblage of floating aquatics

1 including *Azolla caroliniana*, *Lemna valdiviana*, *Spirodela polyrhiza*, *Wolffia columbiana*, and
 2 *Wolffiella gladiata* were abundant in the emergent and floating aquatic strata, which received
 3 much sunlight. This community occurred on Dorovan muck (DO) and Murville mucky loamy
 4 sand (Mu).

5 12) Small Depression Pond (approximates C EGL003907, C EGL003844, C EGL007420)

6 Eleven of these small ponds occurred within the Xeric Sandhill Scrub and Pine / Scrub Oak
 7 Sandhill community types (Fig 4). They remained inundated from 0.5 ft (15cm) to 3 ft (90 cm)
 8 above the soil surface most of the year. They are thought to have been formed either from relict
 9 dune swales or from the dissolution of underlying limestone (McDonald et al. 1981). The
 10 community compositions varied depending on hydrologic regimes. The center and deepest
 11 portions of these depression wetlands were dominated by sparse stands of *Acer rubrum* var.
 12 *trilobum*, *Nyssa biflora*, *Quercus nigra*, and *Taxodium ascendens* or, in more open or disturbed
 13 sites, *Pinus taeda* and *Scirpus cyperinus*. Herbs, including *Carex glaucescens*, *C. striata*, *Lemna*
 14 *valdiviana*, *Pontederia cordata*, *Utricularia subulata*, and *Woodwardia virginica*, occasionally
 15 dominated in the center of depressions. Vines included *Smilax glauca*, *S. laurifolia*, *S.*
 16 *rotundifolia*, and *S. walteri*. The shrub layer was most prominent around the border and was
 17 dominated by mixtures of *Cyrilla racemiflora*, *Eubotrys racemosa*, *Gordonia lasianthus*, *Lyonia*
 18 *ligustrina* var. *foliosiflora*, *L. mariana*, *Magnolia virginiana*, *Morella cerifera*, *Persea palustris*,
 19 *Vaccinium formosum*, *V. fuscatum*, and *Zenobia pulverulenta*. This dense shrub border frequently
 20 graded upland into a shrub mixture comprised of *Clethra alnifolia*, *Ilex glabra*, and *Lyonia*
 21 *mariana* or a marsh dominated by *Eupatorium capillifolium*, *Juncus effusus* ssp. *solutus*, *Scirpus*
 22 *cyperinus*, and *Sphagnum* spp. The predominant soil series was Murville mucky loamy sand
 23 (Mu). Most depressions were immediately surrounded by relatively narrow zones of Leon sand
 24 (Ln) which graded into more well drained sands in the surrounding uplands, Tarboro sand (TaB)
 25 in most cases.

26 13) Vernal Pool Herbs

1 These natural communities occurred in small depressions scattered throughout the *Pinus*
 2 *palustris*-dominated upland on Tarboro and Kureb sands. They were inundated only
 3 occasionally, but long enough to support a flora that differed from that of the surrounding
 4 landscape. These pools were too small to support shrubs or trees and were dominated by
 5 *Andropogon glomeratus*, *A. virginicus* var. *virginicus*, *Juncus* spp., *Pteridium aquilinum* var.
 6 *pseudocaudatum*, and *Xyris caroliniana*. The soils associated with this community type were wet
 7 versions of the surrounding substrates and occasionally had a spodic horizon, probably a result of
 8 repeated inundation and drainage.

9 *14) Powerline Right-of-Way Upland Anthropogenic Community*

10 This community had been maintained by regular mowing and clearing of the Xeric Sandhill
 11 Scrub, Pine / Scrub Oak Sandhill, and Loblolly and Longleaf Pine Plantation communities. It
 12 consisted of a mixture of xeric and mesic species, several of which are ruderal. *Cuthbertia*
 13 *graminea*, *Quercus laevis*, *Stipulicida setacea*, *Vaccinium stamineum*, and *V. tenellum* were
 14 common. *Aletris farinosa*, *Carphephorus paniculatus*, and *Lachnocaulon anceps* occurred here
 15 and nowhere else in the study area. The rare species *Solidago villosicarpa* was abundant in this
 16 community type. These communities occurred on Kureb (KuB), Tarboro (TaB), and Leon (Ln)
 17 sands

18 *15) Powerline Right-of-Way Depression Anthropogenic Community*

19 This community had been maintained by mowing. It occurred in four Non-Riverine Swamp
 20 Forest depressions that were crossed by the powerline right-of-way. The open interiors of these
 21 depressions consisted primarily of herbs such as *Andropogon capillipes* var. 1, *A. glaucopsis*,
 22 *Carex glaucescens*, *C. striata*, *Drosera intermedia*, *Dulichium arundinaceum* var. *arundinaceum*,
 23 *Eleocharis olivacea* var. *olivacea*, *Iris verna*, *I. virginica*, *Lachnanthes caroliniana*, *Ludwigia*
 24 *palustris*, *L. pilosa*, *Myriophyllum pinnatum*, *Osmunda cinnamomea*, *O. regalis*, *Persicaria*
 25 *hydropiperoides*, *Pontederia cordata*, *Proserpinaca palustris* var. *creba*, *P. palustris* var.
 26 *palustris*, *P. pectinata*, *Rhexia alifanus*, *R. mariana* var. *mariana*, *R. nashii*, *Scirpus cyperinus*,

1 *Woodwardia virginica*, *W. areolata*, *Utricularia radiata*, *Xyris curtissii*, *X. difformis*, *X.*
 2 *fimbriata*, and *X. jupicai*. Shrub species that occurred on the periphery of the depression wetland
 3 communities also occurred along the periphery of the right-of-way. The predominant soils were
 4 Ponzer muck (PO) and Murville mucky loamy sand (Mu).

5 *16) Powerline Right-of-Way Sand Ridge and Muck Ecotone Anthropogenic Community*

6 The ecotone situated along the powerline right-of-way where it passed from the Pond Pine
 7 Woodland on Dorovan muck (DO) into upland pine on Kureb sand (KuB) supported a wetland –
 8 mesic shrub stratum including *Chamaedaphne calyculata*, *Ilex coriacea*, *I. glabra*, and *Itea*
 9 *virginica* and herbs including *Pyxidantha barbulata* var. *barbulata*, *Spiranthes cernua*,
 10 *Tofieldia glabra*, and *Vaccinium crassifolium*. This narrow community would have been more
 11 extensive; however, it was being maintained as a fire break. As previously mentioned, fire break
 12 installation disturbs the ecotone habitat that would otherwise be the preferred habitat for rare and
 13 other unique plant species (Roberts and Oosting 1958, Franklin et al. 2006).

14 *17) Powerline Right-of-Way Tidal Freshwater Marsh*

15 Right-of-way maintenance in the southwest part of CSEEC maintained a freshwater marsh
 16 adjacent to the Neuse River in an area that would have been Tidal Cypress-Gum Swamp if
 17 undisturbed (Fig 4). The dominant species were *Cicuta maculata* var. *maculata*, *Hydrocotyle*
 18 *verticillata*, *Ludwigia palustris*, *Murdannia keisak*, *Persicaria sagittata*, *Physostegia leptophylla*,
 19 *Pluchea camphorata*, *Pluchea foetida* var. *foetida*, *Rumex verticillatus*, *Typha angustifolia*, and *T.*
 20 *latifolia*. A few high islands supported woody species, primarily *Morella cerifera*.

21 *18) Old Field*

22 This anthropogenic community type occurred on the dry levee adjacent to the Slash Pine
 23 plantation and in a more mesic location surrounded by Non-Riverine Swamp Forest and Swamp
 24 Island Evergreen Forest (Fig 4). These fields were maintained by mowing as wild game food
 25 plots and supported a weedy, primarily herbaceous flora. The predominant soil series was
 26 Tarboro sand (TaB) with inclusions of Leon sand (Ln) in wet depressions.

1 19) *Floating Aquatic and Woody Pond Border*

2 Two impoundment ponds were situated adjacent to Swift Creek in the northwest corner of
 3 CSEEC. *Eleocharis acicularis*, *Hydrocotyle verticillata*, and *Nuphar lutea* were the only aquatic
 4 species. These aquatics also occurred in the adjacent Tidal Cypress-Gum Swamp. The flora of
 5 the pond periphery was more diverse and included *Acer rubrum*, *Arundinaria tecta*, *Carex* spp.,
 6 *Carya glabra*, *Centella erecta*, *Hibiscus moscheutos* var. *moscheutos*, *Juncus* spp., *Liquidambar*
 7 *styraciflua*, *Morella cerifera*, *Osmunda regalis* var. *spectabilis*, *Persicaria hydropiperoides*,
 8 *Pinus taeda*, *Ptilimnium capillaceum*, *Quercus nigra*, *Rhynchospora* spp., *Rosa palustris*, *Salix*
 9 *nigra*, *Spiranthes vernalis*, *Taxodium ascendens*, and *Woodwardia areolata*. Vines included
 10 *Ampelopsis arboreum*, *Ipomoea pandurata*, *Smilax rotundifolia*, *S. walteri*, *Toxicodendron*
 11 *radicans*, *Vitis labrusca*, and *Wisteria frutescens*. It is presumed that the dominant soil series
 12 within these ponds was Tarboro sand (TaB) because this soil type surrounded the ponds.

13 20) *Borrow Pits and Border*

14 These communities became established in areas of Dorovan muck (DO) that had been
 15 dredged during construction of roads across the Tidal Cypress-Gum Swamp. A floating aquatic
 16 community was established in the large pits because they were permanently ponded. This
 17 community included *Azolla caroliniana*, *Lemna valdiviana*, *Spirodela polyrhiza*, *Wolffia*
 18 *columbiana*, and *Wolffiella gladiata*. *Alnus serrulata*, *Monarda punctata* var. *punctata*, and *Salix*
 19 *caroliniana* were dominant in the pit borders.

20 *Floristic Inventory*

21 The floristic inventory documented the occurrences of 567 species and sub-specific taxa
 22 representing 303 genera included in 118 plant families (Table 2). Of these taxa, only 47 (7%)
 23 were exotic while 127 (23%) were endemic to the Atlantic and Gulf Coastal Plain (Weakley
 24 2007, Sorrie and Weakley in prep.). The plant families represented by the largest number of taxa
 25 were Poaceae (73 taxa), Asteraceae (71), Cyperaceae (55), Fabaceae (25), Ericaceae (24),
 26 Fagaceae (17), and Juncaceae (14). The soil mapping units arranged according to the number of

1 plant taxa they supported is TaB > DO > Mu > PO > Ln > KuB, Se, MM. When area occupied
2 by each mapping unit is considered, the order becomes TaB > PO > Ln > Mu > DO, MM > Se >
3 KuB.

4 *Solidago villosicarpa* LeBlond (LeBlond's Coastal Goldenrod) (Asteraceae) is a rare (Table
5 3) Middle Atlantic Coastal Plain/Cape Fear Arch endemic found only in North Carolina (LeBlond
6 2000). The three sub-populations at CSEEC expand the documented range of this species 24 km
7 inland (LeBlond et al. 2006). The CSEEC population includes a total of approximately 10,000
8 individuals, making it the second largest of the six populations known globally.

9 *Litsea aestivalis* L. (Pondspice) (Lauraceae) is a rare (Table 3) dioecious wetland shrub that is
10 restricted to margins of small depression wetlands and ponds within well drained upland
11 landscapes in the Atlantic Coastal Plain. It is known from eleven counties in North Carolina
12 (LeBlond and Schafale 2000, Franklin and Finnegan 2006). A total of six individuals occurred at
13 CSEEC in two Small Depression Pond communities. All individuals were male.

14 The floristic richness of CSEEC was equaled or exceeded only by that of Nags Head Woods
15 and Cliffs of the Neuse State Park, respectively (Table 4). Although soil drainage heterogeneity
16 at CSEEC was relatively high among the 12 floras, it was exceeded by that for Shackleford Banks
17 and Goose Creek St. Park, sites with relatively low species richness, in addition to that for Cliffs
18 of the Neuse (Table 4). Over all of the 12 floras, there was not a significant relationship between
19 site species richness and soil drainage heterogeneity ($p = 0.481$). Other explanations for species
20 richness trends must be sought.

21 Weyerhaeuser Company has employed several landscape management practices and
22 regulated human use of CSEEC for at least a decade. Perhaps, these practices have been more
23 important than soil heterogeneity for supporting the relatively high CSEEC species richness.
24 Prescribed fire has suppressed woody species in the Longleaf Pine Woodland understory, thereby
25 providing habitat for a diversity of herbs. Maintenance of old fields has provided habitat for
26 ruderal species. Powerline right-of-way maintenance has created long species-rich ecotones. For

1 example, thirty-three plant taxa were documented at CSEEC only from ecotones. Even greater
2 ecotone species richness would be supported by moving the fire line currently located in the Pond
3 Pine Woodland / DO – Xeric Sandhill Scrub / KuB ecotone down slope just a few meters. Doing
4 so would allow the prescribed burning of the ecotone necessary to facilitate its colonization by
5 rare and otherwise unique plant species.

6 In summary, the occurrences of two rare plant species, a species-rich flora, ten natural plant
7 community types, and a diverse assemblage of wet and dry soils are objective factors justifying
8 the recognition of CSEEC as a State Significant Natural Area. The CSEEC landscape should
9 continue to be managed to suppress woody species in potential Longleaf Pine Woodland,
10 maintain old fields, and to prescribe-burn ecotones between plant community types and soil
11 mapping units.

12

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1 ANNOTATED LIST OF PLANT SPECIES

2 Nomenclature and the circumscription of plant families follow Weakley (2007). The
 3 species list is arranged alphabetically by genus and species within alphabetically arranged
 4 families. These are further organized into Pteridophyta, Magnoliophyta, Gymnosperms,
 5 Angiosperms, Monocotyledons, and Dicotyledons. Each entry includes the scientific name,
 6 author(s), a common name (Weakley 2007, United States Department of Agriculture Natural
 7 Resources Conservation Service), soil association(s), relative abundance in the study area, and
 8 Elam collection number. All vouchers were deposited at NCSC. Non-native taxa are denoted
 9 with an asterisk (*). Southeastern endemic taxa follow Sorrie and Weakley (in prep.) and are
 10 underlined. The soil series abbreviations which are described in the results section are as follows:
 11 Dorovan muck (DO), Kureb sand (KuB), Leon sand (Ln), Masontown mucky fine sandy loam
 12 (MM), Murville mucky loamy sand (Mu), Ponzer muck (PO), Seabrook loamy sand (Se), and
 13 Tarboro sand (TaB). A back-slash (/) between soil series abbreviations indicates the ecotone
 14 between soil types. The abundances of each species in the study area fall into four categories rare
 15 (R; one or very few occurrences), occasional (O; sporadic occurrence), common (C; dominants in
 16 plant communit(ies), and frequent (F; widespread throughout study area regardless of
 17 community).

18
 19
 20

19 **PTERIDOPHYTES**

- | | | | |
|----|---|----|--|
| 21 | ASPLENIACEAE | 37 | DENNSTAEDTIACEAE |
| 22 | <i>Asplenium platyneuron</i> (L.) Britton, Sterns, & | 38 | <i>Pteridium aquilinum</i> (L.) Kuhn var. <i>pseudocaudatum</i> |
| 23 | Poqgenb, Ebony Spleenwort — Ln, Se, TaB, humus; | 39 | (Clute) Heller, Southern Bracken Fern — KuB, Ln, |
| 24 | O; 139, 1037. | 40 | TaB; C; 59, 215. |
| 25 | | 41 | |
| 26 | AZOLLACEAE | 42 | ONOCLEACEAE |
| 27 | <i>Azolla caroliniana</i> Willd., Eastern Mosquito Fern — | 43 | <i>Onoclea sensibilis</i> L. var. <i>sensibilis</i> , Sensitive Fern — |
| 28 | DO, Mu; C; <i>No Collection</i> . | 44 | DO, Ln, MM, Mu, PO; C; 134, 135, 455, 1054, 1090. |
| 29 | | 45 | |
| 30 | BLECHNACEAE | 46 | OPHIOGLOSSACEAE |
| 31 | <i>Woodwardia areolata</i> (L.) T. Moore, Netted Chain | 47 | <i>Botrypus virginianus</i> (L.) Holub, Rattlesnake Fern — |
| 32 | Fern — DO, Ln, MM, Mu, PO, Se; C; 266, 876, 991, | 48 | DO/TaB; R; 1067. |
| 33 | 1066. | 49 | |
| 34 | | 50 | OSMUNDACEAE |
| 35 | <i>Woodwardia virginica</i> (L.) Sm., Virginia Chain Fern | 51 | <i>Osmunda cinnamomea</i> L. var. <i>cinnamomea</i> , |
| 36 | — DO, Ln, MM, Mu, PO; C; 301, 342, 519, 697. | 52 | Cinnamon Fern — DO, Ln, MM, Mu, PO; C; 225. |

- 1 *Osmunda regalis* L. var. *spectabilis* (Willd.) A. Gray,
2 Royal Fern — DO, MM, Mu, PO; C; 133, 282, 1405.
3
- 4 POLYPODIACEAE
5 *Pleopeltis polypodioides* (L.) E.G. Andrews &
6 Windham ssp. *michauxiana* (Weath.) E.B. Andrews
7 & Windham, Resurrection Fern — epiphytic; F; 136,
8 365.
9
- 10 THELYPTERIDACEAE
11 *Thelypteris palustris* Schott var. *pubescens* (G.
12 Lawson) Fernald, Marsh Fern — DO, MM, Se; O;
13 543.
14
- 15 **GYMNOSPERMS**
16
- 17 CUPRESSACEAE
18 *Chamaecyparis thyoides* (L.) Britton, Sterns, &
19 Poqgenb., Atlantic White Cedar — DO, Mu, PO; O;
20 1467, 1468.
21
- 22 *Juniperus virginiana* L. var. *virginiana*, Eastern Red
23 Cedar — Se, TaB; F; 176, 1235, 1236.
24
- 25 *Taxodium ascendens* Bronqn., Pond-cypress — Mu;
26 O; 1593.
27
- 28 *Taxodium distichum* (L.) Rich., Bald-cypress — DO,
29 MM, Mu, PO; C; 315, 1602.
30
- 31 PINACEAE
32 *Pinus echinata* Mill., Shortleaf Pine — TaB; O; 63.
33
- 34 *Pinus elliottii* Engelm., Slash Pine — TaB (planted);
35 C; No collection.
36 *Pinus palustris* Mill., Longleaf Pine — KuB, Ln,
37 TaB; C; 30.
38
- 39 *Pinus serotina* Michx., Pond Pine — DO, Mu, PO; C;
40 No collection.
41
- 42 *Pinus taeda* L., Loblolly Pine — Ln, Mu, PO, Se,
43 TaB; F; 31, 1259, 1260.
44
- 45 **ANGIOSPERMS**
46
- 47 **MONOCOTYLEDONS**
48
- 49 AGAVACEAE
50 *Yucca filamentosa* L., Curlyleaf Yucca — TaB
51 (possibly planted); O; 552.
52
- 53 ALISMATACEAE
54 *Sagittaria lancifolia* L. var. *media* Micheli, Bull-
55 tongue Arrowhead — DO; C; 283, 1013, 1244, 1245,
56 1246.
57
- 58 *Sagittaria latifolia* Willd. var. *latifolia*, Broad-leaved
59 Arrowhead — DO, MM; O; 1016.
60
- 61 ARACEAE
62 *Arisaema triphyllum* (L.) Schott ssp. *pusillum* (Peck)
63 Hutt., Small Jack-in-the-pulpit — DO, Mu, PO; O;
64 849, 1458, 1459.
65
- 66 *Lemna valdiviana* Phil., Duckweed — DO, MM, Mu,
67 PO, aquatic; F; No collection.
68
- 69 *Peltandra virginica* (L.) Schott, Green Arrow-arum —
70 DO, MM, Mu; C; 281, 290.
71
- 72 *Spirodela polyrhiza* (L.) Schleid., Greater Duckweed
73 — DO, MM, Mu, PO, aquatic; F; No collection.
74
- 75 *Wolffia columbiana* Karst., Watermeal — DO, MM,
76 Mu, aquatic; C; No collection.
77
- 78 *Wolffiella gladiata* (Hegelm.) Hegelm., Mud-midgets
79 — DO, MM, Mu, aquatic; No collection.
80
- 81 BROMELIACEAE
82 *Tillandsia usneoides* (L.) L., Spanish-moss —
83 epiphytic; F; 986.
84
- 85 COMMELINACEAE
86 * *Commelina communis* L. var. *ludens* (Miquel) C.B.
87 Clarke, Bright-blue Dayflower — Mu/TaB; R; 891.
88
- 89 *Commelina erecta* L. var. *angustifolia* (Michx.)
90 Fernald, Sand Dayflower — TaB; C; 547, 1596.
91
- 92 *Commelina virginica* L., Virginia Dayflower —
93 DO/TaB, Mu/TaB; C; 670, 866, 1039.
94
- 95 *Cuthbertia graminea* Small, Roseling — KuB; C;
96 201, 887.
97
- 98 * *Murdannia keisak* (Hassk.) Hand.-Mazz.,
99 Murdannia — DO, MM, PO/TaB; C; 765, 1021, 1022.
100
- 101 CYPERACEAE
102 *Bulbostylis ciliatifolia* (Ell.) Fernald, Savanna
103 Hairsedge — Ln, TaB; O; 909.
104
- 105 *Bulbostylis coarctata* (Ell.) Fernald, Elliott's
106 Hairsedge — KuB, TaB; O; 1032, 1033.
107
- 108 *Carex alata* Torr., Broadwing Sedge — DO, Mu, PO;
109 C; 1347, 1435.
110
- 111 *Carex albolutescens* Schwein, Greenwhite Sedge. —
112 DO, Ln, Mu, PO; C; 1345, 1346, 1348, 1361, 1409.
113
- 114 *Carex allegheniensis* Mackenzie, White Edge Sedge.
115 — DO, MM; O; 1287, 1303, 1387, 1390.
116
- 117 *Carex amphibola* Steud., Eastern Narrowleaf Sedge
118 — DO, Mu; O; 298, 1289.
119

- 1 *Carex bromoides* Willd. subsp. *bromoides*, Brome
2 Sedge — DO; C; 328, 329, 1294, 1298, 1389, 1431,
3 1433, 1437.
4
5 *Carex comosa* Boott, Bottlebrush Sedge — DO; C;
6 465, 466, 1436, 1437.
7
8 *Carex crinita* Lam. var. *brevicrinis* Fernald, Fringed
9 Sedge — DO, Mu; O; 669.
10
11 *Carex crinita* Lam. var. *crinita*, Fringed Sedge —
12 DO, Mu; C; 698, 699.
13
14 *Carex debilis* Michx., White Edge Sedge — DO, Mu;
15 O; 1297.
16
17 *Carex elliotii* Schwein. & Torr., Elliott's Sedge —
18 PO; C (NC Watch List); 230, 1342, 1343, 1344, 1381,
19 1382.
20
21 *Carex fissa* Mack. var. *aristata* F.J. Herm., Hammock
22 Sedge — Mu; O; 1489.
23
24 *Carex frankii* Kunth, Frank's Sedge — DO; O; 1446,
25 1447.
26
27 *Carex gigantea* Rudge, Giant Sedge — DO; C; 1420,
28 1421.
29
30 *Carex glaucescens* Elliott, Blue Sedge — Mu, PO; C;
31 793, 794.
32
33 *Carex granularis* Muhl. ex Willd., Limestone
34 Meadow Sedge — DO; R (NC Watch List), 1388.
35
36 *Carex howei* Mack., Howe's Sedge — DO; O; 1293.
37
38 *Carex hyalinolepis* Steud., Shoreline Sedge — DO; C
39 (NC Watch List); 1296, 1424, 1425, 1427.
40
41 *Carex intumescens* Rudge var. *intumescens*, Greater
42 Bladder Sedge — DO, Mu; C; 998, 999.
43
44 *Carex lonchocarpa* Willd., Southern Long Sedge —
45 DO, MM, Mu; C; 671, 1292, 1301, 1414, 1415.
46
47 *Carex lupulina* Muhl. ex Willd., Hop Sedge — DO,
48 Mu; C; 668, 807, 1000, 1381, 1382, 1383, 1590.
49
50 *Carex lurida* Wahlenb., Shallow Sedge — DO, Mu,
51 PO; C; 1360.
52
53 *Carex mitchelliana* M.A. Curtis, Mitchell's Sedge —
54 DO; O; 1604.
55
56 *Carex seorsa* Howe, Weak Stellate Sedge — DO,
57 MM, Mu; C; 1384, 1385, 1413, 1434.
58
59 *Carex stipata* Muhl. ex Willd. var. *stipata*, Owlfruit
60 Sedge — DO, MM, Mu, PO; C; 278, 294.
61
62 *Carex stipata* Muhl. ex Willd. var. *maxima* Chapm.,
63 Stalkgrain Sedge — DO; C; 1426, 1432.
64
65 *Carex striata* Michx. var. *brevis* L.H. Bailey, Walter's
66 Sedge — Mu, PO; C; 700, 1315, 1316, 1317, 1330.
67
68 *Carex styloflexa* Buckley, Bent Sedge — DO, MM;
69 O; 1302, 1428, 1429.
70
71 *Carex tribuloides* Wahlenb. var. *sangamonensis*
72 Clokey, Blunt Broom Sedge — DO; Mu; PO; O; 766,
73 1290.
74
75 *Carex venusta* Dewey, Darkgreen Sedge — DO; O;
76 1386.
77
78 *Cyperus grayi* Torr., Gray's Sedge — TaB; O; 931,
79 932, 1119.
80
81 *Cyperus pseudovegetus* Steud., Marsh Flatsedge —
82 Mu; O; 840.
83
84 *Cyperus retrorsus* Chapm., Pine Barren Flatsedge —
85 Ln, TaB; O; 772, 848.
86
87 *Dulichium arundinaceum* (L.) Britton var.
88 *arundinaceum*, Threeway Sedge — DO, MM, Mu,
89 PO; C; 652, 666, 1181.
90
91 *Eleocharis acicularis* (L.) Roem. & Schul., Needle
92 Spikerush — DO; O; 1573, 1574, 1603.
93
94 *Eleocharis obtusa* (Willd.) Schult., Blunt Spikerush
95 — Mu, PO; C; 437, 1190.
96
97 *Eleocharis tortilis* (Link) Schult., Twisted Spikerush
98 — Ln, Mu, PO; C; 1212.
99
100 *Fuirena breviseta* (Coville) Coville in Harper, Short-
101 bristled Umbrella-sedge — Ln; O; 786, 787.
102
103 *Lipocarpa maculata* (Michx.) Torr., American
104 *Lipocarpa* — DO, Mu; R; 908.
105
106 *Rhynchospora caduca* Elliott, Angle-stem Beaksedge
107 — DO/TaB, Se; O; 1577.
108
109 *Rhynchospora cephalantha* A. Gray var.
110 *cephalantha*, Common Bunched Beaksedge — Ln,
111 Mu, PO; C; 1170, 1600.
112
113 *Rhynchospora chalarocephala* Fernald & Gale,
114 Loose-head Beaksedge — DO/KuB; O; 75, 716, 1180.
115
116 *Rhynchospora corniculata* (Lam.) A. Gray var.
117 *corniculata*, Short-bristle Horned Beaksedge — DO,
118 Mu, PO; C; 754, 1001, 1060.
119
120 *Rhynchospora fascicularis* (Michx.) Vahl. var.
121 *distans* (Michx.) Chapm., Fascicled Beaksedge —

- 1 DO, DO/KuB, PO, PO/TaB; C; 1134, 1135, 1136,
2 1192, 1193, 1194, 1196.
- 3
- 4 *Rhynchospora fascicularis* Vahl. var. *fascicularis*,
5 Fascicled Beaksedge — KuB/PO, Ln; O; 647, 1160.
- 6
- 7 *Rhynchospora globularis* (Chapm.) Small var.
8 *globularis*, Globe Beaksedge — Ln, TaB; R; 730.
- 9
- 10 *Rhynchospora gravi* Kunth, Gray's Beaksedge —
11 KuB, TaB; O; 1336, 1337.
- 12
- 13 *Rhynchospora inexpansa* (Michx.) Vahl, Nodding
14 Beaksedge — KuB/Mu, Ln, TaB/PO; C; 590, 591,
15 648, 747, 1161, 1335.
- 16
- 17 *Rhynchospora microcephala* (Britton) Britton ex
18 Small, Small-headed Beaksedge — DO/KuB; O; 75,
19 716, 1180, 1195.
- 20
- 21 *Rhynchospora miliacea* (Lam.) A. Gray, Millet
22 Beaksedge — DO; C; 1059, 1069, 1429, 1430.
- 23
- 24 *Scirpus cyperinus* (L.) Kunth, Woolgrass Bulrush —
25 DO, Mu, PO; C; 698, 771.
- 26
- 27 *Scleria ciliata* Michx. var. *glabra* (Chapm.) Fairey,
28 Smooth Nutrush — Ln, TaB; O; 1340, 1341.
- 29
- 30 *Scleria triglomerata* Michx., Tall Nutrush — Ln,
31 TaB; O; 726.
- 32
- 33 DIOSCOREACEAE
- 34 *Dioscorea villosa* L., Wild Yam — DO/TaB, Se; O;
35 605, 902.
- 36
- 37 ERIOCAULACEAE
- 38 *Lachnocaulon anceps* (Walt.) Morong, Common
39 Bogbuttons — Ln; O; 1324, 1325, 1326.
- 40
- 41 HAEMODORACEAE
- 42 *Lachnanthes caroliniana* (Lam.) Dandy, Redroot —
43 Mu, PO; C; 656.
- 44
- 45 HYDROCHARITACEAE
- 46 *Limnobium spongia* (Bosc) L.C. Rich. Ex Steud.,
47 American Frog's-bit — DO, Mu, aquatic; C; 411, 610,
48 803.
- 49
- 50 HYPOXIDACEAE
- 51 *Hypoxis hirsuta* (L.) Coville, Common Stargrass —
52 DO, DO/TaB, Mu/TaB; C; 311, 828, 1026.
- 53
- 54 IRIDACEAE
- 55 *Iris verna* L. var. *verna*, Coastal Plain Dwarf Iris —
56 Mu/KuB, PO/TaB; O; 1280.
- 57
- 58 *Iris virginica* L. var. *virginica*, Southern Blue Flag —
59 DO, Mu, PO; F; 274, 307, 324, 337, 1403, 1404.
- 60
- 61 *Sisyrinchium angustifolium* Mill. Narrow-leaf Blue-
62 eyed-grass — TaB; F; 449, 453.
- 63
- 64 *Sisyrinchium mucronatum* Michx., Needle-tip Blue-
65 eyed-grass — TaB; F; 309, 963.
- 66
- 67 *Sisyrinchium nashii* E.P. Bicknell, Nash's Blue-eyed-
68 grass — Ln, TaB; O; 819, 1083, 1224.
- 69
- 70 **? Sisyrinchium rosulatum* E.P. Bicknell, Lawn Blue-
71 eyed-grass — TaB; C; 312.
- 72
- 73 JUNCACEAE
- 74 *Juncus abortivus* Chapm., Annual Rush — KuB/PO;
75 O; 1172, 1173.
- 76
- 77 *Juncus acuminatus* Michx., tapertip rush — DO,
78 DO/TaB, KuB/PO, PO; C; 103, 447, 1168, 1169,
79 1200, 1448, 1449.
- 80
- 81 *Juncus biflorus* Elliott, Bog Rush — DO/TaB, Se,
82 TaB; C; 1578, 1579.
- 83
- 84 *Juncus canadensis* J. Gay ex Laharpe, Canadian Rush
85 — Mu, PO; C; 1166, 1167, 1198, 1199.
- 86
- 87 *Juncus coriaceus* Mack., Leathery Rush — DO, Mu,
88 PO; F; 304, 305, 632, 980, 1452, 1453.
- 89
- 90 *Juncus debilis* A.Gray, Weak Rush — DO, Mu; O;
91 297, 321, 1599.
- 92
- 93 *Juncus dichotomus* Elliott, Forked Rush — Ln, TaB;
94 C; 211, 404, 631, 522, 1333.
- 95
- 96 *Juncus effusus* L. ssp. *solutus* (Fern. & Wieg.)
97 Hämet-Ahti, Soft Rush — DO, Mu, PO; 302, 303,
98 1450, 1451.
- 99
- 100 *Juncus marginatus* Rostk., Grassleaf Rush —
101 DO/TaB; O; 408.
- 102
- 103 *Juncus repens* Michx., Creeping Rush — Ln, Mu,
104 PO; O; 438.
- 105
- 106 *Juncus scirpoides* Lam. var. *compositus* Harper,
107 Needlepod Rush — Ln, TaB; O; 878.
- 108
- 109 *Juncus scirpoides* Lam. var. *scirpoides*, Needlepod
110 Rush — Ln, TaB; C; 626.
- 111
- 112 *Juncus tenuis* Willd., Path Rush — Ln, TaB; C; 332,
113 333.
- 114
- 115 *Juncus validus* Coville var. *validus*, Vigorous Rush.
116 KuB/PO; O; 1197.
- 117
- 118 LILIACEAE
- 119 *Lilium catesbaei* Walter, Pine Lily, Catesby's Lily —
120 KuB/Mu, PO/TaB; R; 884, 900.
- 121

- 1 *Medeola virginiana* L., Indian Cucumber-root — DO,
2 DO/TaB; R; 1046.
- 3
- 4 NARTHECIACEAE
- 5 *Aletris farinosa* L., Northern White Colic-root — Ln;
6 O; 1149, 1371, 1372.
- 7
- 8 ORCHIDACEAE
- 9 *Cypripedium acaule* Aiton, Pink Lady's-slipper —
10 TaB; R; *No Collection*.
- 11
- 12 *Goodyera pubescens* (Willd.) R. Br., Rattlesnake-
13 plantain. DO/TaB; R; 850.
- 14
- 15 *Platanthera clavellata* (Michx.) Luer, Small Green
16 Wood Orchid — DO/TaB, MM/TaB; O; 821, 822,
17 1517.
- 18
- 19 *Spiranthes cernua* (L.) Rich., Nodding Ladies'-tresses
20 — DO/KuB, Mu/KuB, PO/TaB; O; 1162, 1375.
- 21
- 22 *Spiranthes odorata* (Nutt.) Lindl., Fragrant Ladies'-
23 tresses — DO, Mu; C; 128, 129, 130.
- 24
- 25 *Spiranthes vernalis* Engelm. & A. Gray, Spring
26 Ladies'-tresses — DO/TaB, Mu/TaB, TaB; 593, 594,
27 1570, 1571.
- 28
- 29 *Tipularia discolor* (Pursh) Nutt., Crane-fly Orchid —
30 DO/TaB, TaB; O; 845.
- 31
- 32 POACEAE
- 33 *Agrostis hyemalis* (Walter) Britton, Sterns &
34 Poqgenb., Small Bentgrass — Ln, TaB; O; 241, 336.
- 35
- 36 *Andropogon capillipes* Nash var. 1, Wetland White
37 Bluestem — KuB/PO; O; 1185.
- 38
- 39 *Andropogon glaucopsis* Ell. ex Steud., Chalky
40 Bluestem — Ln; O; 104.
- 41
- 42 *Andropogon glomeratus* (Walt.) Britton, Sterns &
43 Poqgenb. var. *glomeratus*, Bushy Bluestem —
44 KuB/PO, Mu/TaB; O; 1184.
- 45
- 46 *Andropogon ternarius* Michx. var. *ternarius*,
47 Splitbeard Bluestem — Ln, TaB; C; 4, 5, 6, 1107,
48 1123, 1124.
- 49
- 50 *Andropogon virginicus* L. var. *virginicus*,
51 Broomsedge — TaB; C; 12, 13, 37, 123.
- 52
- 53 *Aristida purpurascens* Poir., Arrowfeather — TaB;
54 C; 1104, 1105, 1106, 1112.
- 55
- 56 *Aristida stricta* Michx., Carolina Wiregrass — KuB,
57 Ln, TaB; C; 10, 11, 76.
- 58
- 59 *Arundinaria tecta* Walter, Switch Cane — DO, Ln,
60 Mu, MM, Se, TaB; F; 1320.
- 61 *Cenchrus spinifex* Cav., Coastal Sandspur — TaB; R;
62 1081.
- 63
- 64 *Chasmanthium latifolium* (Michx.) H.O. Yates, River
65 Oats — TaB, Se; R; 864, 1063, 1064.
- 66
- 67 *Chasmanthium laxum* (L.) H.O. Yates, Slender
68 Spikegrass — DO/TaB, Mu/TaB, TaB; O; 649, 682,
69 728, 729, 919.
- 70
- 71 *Cinna arundinacea* L., Common Woodreed — DO,
72 MM, Mu; O; 839, 1040.
- 73
- 74 *Danthonia sericea* Nutt., Silky Oat-grass — KuB,
75 TaB; C; 336, 366, 1332.
- 76
- 77 *Dichantheium aciculare* (Desv. ex Poir.) Gould &
78 C.A. Clark, Needle Witch Grass — TaB; O; 19, 20,
79 617, 1100, 1186, 1187.
- 80
- 81 *Dichantheium angustifolium* (Elliott) Gould,
82 Narrow-leaved Witch Grass — TaB; O; 906, 1102,
83 1125.
- 84
- 85 *Dichantheium boreale* (Nash) Freckmann, Northern
86 Witch Grass (NC Watch List) — DO/TaB, TaB; O;
87 956, 967, 1369.
- 88
- 89 *Dichantheium chamaelonche* (Trin.) Freckmann &
90 Lelong ssp. *chamaelonche*, Carpet Witch Grass —
91 KuB/PO, Ln; O; 1338.
- 92
- 93 *Dichantheium commutatum* (Schult.) Gould var.
94 *ashei* (Pears ex Ashe) Mohlenbr., Variable Panic
95 Grass 1101, 1111, 1127, 1141, 1148.
- 96
- 97 *Dichantheium commutatum* (Schult.) Gould var.
98 *commutatum*, Variable Witch Grass — DO/TaB, Se;
99 O; 1068.
- 100
- 101 *Dichantheium laxiflorum* (Lam.) Gould, Open-
102 flower Witch Grass — KuB/PO; TaB; O; 399, 400,
103 401, 1078, 1594.
- 104
- 105 *Dichantheium lucidum* (Ashe) LeBlond, Bog Witch
106 Grass — DO, Mu, PO; C; 714, 1036, 1144.
- 107
- 108 *Dichantheium ovale* (Elliott) Gould & C.A. Clark
109 var. *addisonii* (Nash) Gould & C.A. Clark, Low Stiff
110 Witch Grass — Ln; C; 203, 204, 205, 206, 246, 513,
111 615, 1328, 1329.
- 112
- 113 *Dichantheium ovale* (Elliott) Gould & C.A. Clark
114 var. *ovale*, Oval-flowered Witch Grass (NC Watch
115 List) — DO/KuB, KuB/PO; O; 1142, 1188.
- 116
- 117 *Dichantheium portoricense* (Desv. Ex Ham.) B.F.
118 Hansen & Wunderlin, Puerto Rican Witch Grass —
119 DO/KuB; R; 1140.
- 120

- 1 *Dichantheium scoparium* (Lam.) Gould, Velvet
2 Witch Grass — KuB/PO, Mu/TaB, Ln; C; 755, 795,
3 938, 1211, 1213.
4
5 *Dichantheium strigosum* (Muhl.) Freckmann var.
6 *leucoblepharis* (Trin.) R.W. Freckmann, Dwarf Witch
7 Grass — TaB; C; 223, 740, 1029, 1095, 1096, 1097,
8 1098, 1137, 1143, 1145, 1146, 1147, 1204, 1205,
9 1207.
10
11 *Dichantheium strigosum* (Muhl.) Freckmann var.
12 *strigosum*, Rough-hairy Witch Grass — Ln; R; 1206.
13
14 *Digitaria ciliaris* (Retz.) Köler, Southern Crab Grass
15 — TaB; O; 775.
16
17 * *Digitaria sanguinalis* (L.) Scop., Northern Crab
18 Grass — TaB; O; 922.
19
20 *Digitaria villosa* (Walt.) Pers., Shaggy Crab Grass
21 — TaB; O; 924.
22
23 * *Echinochloa crusgalli* (L.) Palisot de Beauvois var.
24 *crusgalli*, Barnyard-grass — DO/TaB, Se; R; 612.
25
26 *Echinochloa walteri* (Pursh) A. Heller, Coast
27 Cockspur Grass — Mu; O; 922 (*dup*).
28
29 * *Eleusine indica* (L.) Gaertn., Yard Grass — TaB; O;
30 1008, 1203.
31
32 *Elymus virginicus* L. var. *virginicus*, Eastern Wild-
33 rye — DO/TaB, Mu/TaB, Se; F; 563, 630, 672.
34
35 *Eragrostis capillaris* (L.) Nees., Lacegrass — TaB; O;
36 1080.
37
38 *Eragrostis refracta* (Muhl.) Scribn., Coastal
39 Lovegrass — TaB; C; 846, 926, 1122.
40
41 * *Eremochloa ophiuroides* (Munro) Hack., Centipede
42 Grass — TaB; C; 820.
43
44 *Leersia lenticularis* Michx., Cutgrass — DO, MM,
45 Mu; C; 995, 1070.
46
47 * *Lolium perenne* L. var. *aristatum* Willd., Italian
48 Rye-grass. TaB; O; 1363.
49
50 * *Microstegium vimineum* (Trin.) A. Camus,
51 Japanese Stilt-grass — Ln, PO/TaB; O; 1366.
52
53 *Panicum anceps* Michx. var. *anceps*, Beaked Panic
54 Grass — DO/TaB; O; 708, 709, 946.
55
56 *Panicum anceps* Michx. var. *rhizomatum* (Hitchc. &
57 Chase) Fernald, Small Beaked Panic Grass — TaB; O;
58 917.
59
60 *Panicum rigidulum* Bosc ex Nees var. *rigidulum*,
61 Redtop Panic Grass — KuB/PO; O; 1171.
62
63 *Panicum virgatum* L. var. *virgatum*, Switchgrass —
64 DO/TaB; O; 675.
65
66 *Panicum verrucosum* Muhl., Warty Panic Grass —
67 DO/TaB; O; 974.
68
69 * *Paspalum dilatatum* Poir., Dallis Grass — KuB/PO,
70 Mu/TaB; O; 1174, 1175.
71
72 *Paspalum laeve* Michx. var. *circulare* (Nash) Stone,
73 Field Paspalum — KuB/PO, Mu/TaB; O; 1179.
74
75 *Paspalum laeve* Michx. var. *laeve*, Field Paspalum —
76 TaB; O; 759, 1084.
77
78 * *Paspalum notatum* Flügge, Bahia Grass — TaB; O;
79 597 (*dup*), 650.
80
81 *Paspalum plicatulum* Michx., Brownseed Paspalum
82 — TaB; O; 924, 925.
83
84 *Paspalum setaceum* Michx. var. *setaceum*, Thin
85 Paspalum — KuB, TaB; O; 1113, 1114.
86
87 * *Paspalum urvillei* Steud., Vasey Grass — TaB; O;
88 679.
89
90 *Phanopyrum gymnocarpon* (Elliott) Nash, Swamp
91 *Phanopyrum* — DO, MM, Mu; C (NC Watch List);
92 996, 997.
93
94 *Piptochaetium avenaceum* (L.) Parodi, Eastern
95 Needlegrass — TaB; C; 402, 403.
96
97 * *Poa annua* L., Annual Bluegrass — TaB; O; 170.
98
99 *Saccharum alopecuroides* (L.) Nutt., Silver Plume
100 Grass — TaB; O; 958, 959, 1182.
101
102 *Saccharum brevibarbe* (Michx.) Pers. var. *contortum*
103 (Elliott) R.D. Webster, Bent Awn Plume Grass —
104 TaB; R; 77, 78.
105
106 *Saccharum giganteum* (Walt.) Pers., Giant Plume
107 Grass — KuB/PO; O; 1183.
108
109 *Sacciolepis striata* (L.) Nash, American Cupscale —
110 DO, MM, Mu; O; 1048, 1049, 1050.
111
112 * *Schedonorus arundinaceus* (Schreb.) Dumort., Tall
113 Fescue — TaB; O; 448, 1591.
114
115 *Schizachyrium scoparium* (Michx.) Nash var.
116 *scoparium*, Common Little Bluestem — TaB; C.
117
118 *Setaria corrugata* (Elliott) Schult., Coastal
119 Bristlegrass — TaB; O; 918, 1109.
120

- 1 * *Setaria pumila* (Poir.) Roem. & Schult. ssp. *pumila*,
2 Yellow Foxtail — TaB; O; 1115, 1116.
3
4 *Sphenopholis obtusata* (Michx.) Scribn., Prairie
5 Wedgegrass — TaB; O; 264, 265.
6
7 *Sphenopholis pensylvanica* (L.) Hitchc., Swamp-oats
8 — DO, MM, Mu; O; 264, 277, 300.
9
10 * *Sporobolus indicus* (L.) R. Br., Smut Grass — TaB;
11 O; 1005, 1006, 1007.
12
13 *Tridens flavus* (L.) Hitchc., Redtop — TaB; O; 1079.
14
15 *Triplasis americana* Beauverd, Southern Sandgrass —
16 TaB; C; 930.
17
18 *Triplasis purpurea* (Walter) Chapm. var. *purpurea*,
19 Purple Sandgrass — TaB; C; 1121.
20
21 *Tripsacum dactyloides* (L.) L. var. *dactyloides*,
22 Gamma Grass — TaB; O; 678.
23
24 *Vulpia octoflora* (Walter) Rydb. var. *glauca* (Nutt.)
25 Fernald, Northern Six-weeks Fescue — Ln, TaB; O;
26 1353, 1354.
27
28 *Zizaniopsis miliacea* (Michx.) Döll & Asch., Southern
29 Wild-rice — DO, MM, Mu, emersed aquatic; C; 316,
30 597, 675.
31
32 PONTEDERIACEAE
33 *Pontederia cordata* L. var. *cordata*, Pickerelweed —
34 DO, MM, Mu, PO; F; 432, 433.
35
36 SMILACAECEAE
37 *Smilax bona-nox* L., Catbrier — Ln, Mu, Se, TaB; F;
38 174.
39
40 *Smilax glauca* Walter, Whiteleaf Greenbrier — Ln,
41 Mu, Se, TaB; F; 57, 68, 343, 345, 582, 1319.
42
43 *Smilax laurifolia* L., Blaspheme-vine — DO, MM,
44 Mu, Ln; F; 356.
45
46 *Smilax rotundifolia* L., Common Greenbrier — Ln,
47 Mu, Se, TaB; F; 56, 320, 405, 990, 1074, 1229.
48
49 *Smilax smallii* Morong, Jackson-brier — DO, MM,
50 Mu, Se; O; 1230.
51
52 *Smilax walteri* Pursh, Coral Greenbrier — DO, MM,
53 Mu, PO, Se; C; 178, 1057, 1228, 1247.
54
55 TOFIELDIACEAE
56 *Tofieldia glabra* Nutt., Carolina Bog Asphodel —
57 DO/KuB (US Species of Concern); R; 1129.
58
59 TYPHACEAE
60 *Sparganium americanum* Nutt., American Bur-reed
61 — DO; C; 976, 977.
62
63 *Typha angustifolia* L., Narrowleaf Cattail — DO; C;
64 445, 598, 1445.
65
66 *Typha latifolia* L., Common Cattail — DO; C; 458.
67
68 VISCACEAE
69 *Phoradendron serotinum* (Raf.) M.C. Johnst. ssp.
70 *serotinum*, American Mistletoe — epiphytic; F; 353.
71
72 XYRIDACEAE
73 *Xyris caroliniana* Walter, Pineland Yellow-eyed
74 Grass — Ln; C; 644, 712, 877.
75
76 *Xyris curtissii* Malme, Curtiss's Yellow-eyed Grass —
77 PO; R (NC Watch List); 1191, 1221.
78
79 *Xyris difformis* Chapm., Bog Yellow-eyed Grass —
80 Mu, PO; C; 745, 746.
81
82 *Xyris fimbriata* Elliott, Giant Yellow-eyed Grass —
83 Mu, PO; O; 885, 886.
84
85 *Xyris jupicai* L.C. Rich., Richard's Yellow-eyed Grass
86 — Mu, PO; C; 720, 721, 770, 873, 874, 1176, 1177,
87 1178, 1222.
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- 1 *Asimina parviflora* (Michx.) Dunal, Small-flowered
2 Pawpaw — Se, TaB; C; 395, 620, 833, 1214, 1282,
3 1283, 1584.
4
5 APIACEAE
6 *Centella erecta* (L.f.) Fernald, Centella — DO/TaB,
7 Mu/TaB, TaB; C; 673, 812.
8
9 *Cicuta maculata* L. var. *maculata*, Water-hemlock —
10 DO, MM, Mu; C; 658, 659, 835; 1071.
11
12 *Ptilimnium capillaceum* (Michx.) Raf., Atlantic
13 Bishopweed — DO, MM, Mu; C; 555, 556, 586, 653.
14
15 *Sanicula canadensis* L. var. *floridana* H. Wolff,
16 Florida Snakeroot — DO, Se, TaB/DO; O; 564, 565.
17
18 APOCYNACEAE
19 *Asclepias amplexicaulis* J.E. Smith, Clasping
20 Milkweed — KuB, TaB; O; 349.
21
22 *Asclepias humistrata* Walter, Fleshy Milkweed —
23 KuB, TaB; O; 580.
24
25 *Asclepias tuberosa* L. var. *tuberosa*, Common
26 Butterfly-weed — TaB; F; 573, 529, 1043.
27
28 *Asclepias variegata* L., White Milkweed — TaB; O;
29 1043.
30
31 *Trachelospermum difforme* (Walter) A. Gray,
32 Climbing Dogbane — TaB/PO; O; 1364, 1365.
33
34 AQUIFOLIACEAE
35 *Ilex coriacea* (Pursh) Chapm., Sweet Gallberry —
36 DO, Mu, PO; F; 112, 231, 232, 1133, 1217, 1218,
37 1219.
38
39 *Ilex glabra* (L.) A. Gray, Inkberry — Ln, Mu, PO,
40 TaB; F; 102, 218, 361, 1220.
41
42 *Ilex laevigata* (Pursh) A. Gray, Smooth Winterberry
43 — DO; C; 472, 633, 1392.
44
45 *Ilex opaca* Aiton var. *opaca*, American Holly — PO,
46 Se, TaB; F; 53, 1402.
47
48 *Ilex verticillata* (L.) A. Gray, Winterberry — DO; O;
49 463.
50
51 *Ilex vomitoria* Aiton, Yaupon — TaB; R (probably
52 planted); 856.
53
54 ARALIACEAE
55 *Aralia spinosa* L., Devil's-walking-stick — DO/TaB;
56 C; 896, 428.
57
58 *Hydrocotyle prolifera* Kellogg, Whorled Pennywort
59 — DO, MM, Mu; C; 456.
60
61 *Hydrocotyle ranunculoides* L. f., Swamp Water-
62 pennywort — DO; C; 413, 414, 558.
63
64 *Hydrocotyle verticillata* Thunb., Whorled Pennywort
65 — DO, MM, Mu; C; 211, 802, 811, 824, 1411.
66
67 ARISTOLOCHIACEAE
68 *Hexastylis arifolia* (Michx.) Small var. *arifolia*, Little
69 Brown Jugs — DO/TaB; O; 599, 1242, 1243.
70
71 ASTERACEAE
72 *Achillea millefolium* L., Yarrow — Se, TaB; R; 684.
73
74 *Ambrosia artemisiifolia* L., Annual Ragweed — TaB;
75 O; 953, 954.
76
77 *Baccharis halimifolia* L., Groundsel Tree — Ln, Se,
78 TaB; F; 40, 1072.
79
80 *Bidens bipinnata* L., Spanish Needles — DO/TaB,
81 Ln; O; 952.
82
83 *Carphephorus bellidifolius* Torr. & A. Gray, Sandhill
84 Chaffhead — KuB, TaB; C; 80, 81, 143, 1595.
85
86 *Carphephorus paniculatus* (J.F. Gmel.) Herbert,
87 Hairy Chaffseed — Ln; O; 1150, 1151.
88
89 *Chrysopsis gossypina* (Michx.) Elliott, Cottonleaf
90 Golden-aster — KuB, TaB; C; 14, 15, 16, 163.
91
92 *Chrysopsis mariana* (L.) Elliott, Maryland Golden-
93 aster — TaB; C; 943, 1011.
94
95 * *Cichorium intybus* L., Chicory — TaB; R; 773.
96
97 *Cirsium altissimum* (L.) Hill, Tall Thistle — Mu/TaB;
98 R; 894.
99
100 *Cirsium repandum* Michx., Sandhill Thistle — KuB,
101 TaB; C; 506, 573
102 *Conoclinium coelestinum* (L.) DC., Mistflower —
103 Mu, Mu/TaB; O; 944, 945.
104
105 *Conyza canadensis* (L.) Cronquist var. *pusilla* (Nutt.)
106 Cronquist, Southern Horseweed — TaB; O; 920, 921.
107
108 *Coreopsis lanceolata* L., Longstalk Coreopsis — Se,
109 TaB; F; 397, 398.
110
111 * *Crepis pulchra* L., Smallflower Hawksbeard —
112 TaB; O; 249, 250.
113
114 *Croptilon divaricatum* (Nutt.) Raf., Scratch-daisy —
115 KuB, TaB; O; 38, 125, 126, 933, 934.
116
117 *Eclipta prostrata* (L.) L., Yerba-de-tajo — Mu; O;
118 816, 817.
119
120 *Elephantopus carolinianus* Raeusch., Leafy
121 Elephant's-foot — TaB; C; 792.

- 1 *Elephantopus nudatus* A. Gray, Smooth Elephant-
2 foot — TaB; O; 706, 707.
3
4 *Elephantopus tomentosus* L., Devil's Grandmother
5 — TaB; C; 737, 738.
6
7 *Erechtites hieraciifolius* (L.) Raf. ex DC., Fireweed
8 — Ln; TaB; epiphytic on rooftops and in tree crooks;
9 F; 731.
10
11 *Erigeron philadelphicus* L. var. *philadelphicus*,
12 Philadelphia-daisy — Se, TaB; O; 382.
13
14 *Erigeron quercifolius* Lam., Oak-leaved Fleabane —
15 Ln, Se; O; 383, 353, 359.
16
17 *Erigeron strigosus* Muhl. ex Willd. var. *strigosus*,
18 Common Rough Fleabane — Ln, TaB; O; 521, 1356,
19 1357.
20
21 *Erigeron vernus* (L.) Torr. & A. Gray, Whitetop
22 Fleabane — DO; O; 460.
23
24 *Eupatorium album* L. var. *album*, White-bracted
25 Thoroughwort — Mu, PO; O; 796.
26
27 *Eupatorium capillifolium* (Lam.) Small, Common
28 Dog-fennel — Ln, Se, TaB; F; 17, 18.
29
30 *Eupatorium hyssopifolium* L., Hyssopleaf
31 Eupatorium — TaB; O; 149, 911, 1076.
32
33 *Eupatorium pilosum* Walter, Ragged Eupatorium —
34 Ln; O; 140.
35
36 *Eupatorium rotundifolium* L. *sensu lato*, Common
37 Roundleaf Eupatorium — Ln, TaB; O; 724, 1159.
38
39 *Eupatorium serotinum* Michx., Late Eupatorium —
40 KuB/PO, Ln; O; 1165.
41 *Euthamia caroliniana* (L.) Greene ex Porter &
42 Britton — Ln, PO/KuB; C; 939, 1024.
43
44 *Eutrochium dubium* (Willd. ex Poir.) E.E. Lamont,
45 Three-nerved Joe-pye-weed — Mu; R; 893.
46
47 *Eutrochium fistulosum* (Barratt) E.E. Lamont,
48 Hollow-stem Joe-pye-weed — Mu, PO; O; 748
49
50 *Eutrochium purpureum* (L.) E.E. Lamont var.
51 *purpureum*, Purple-node Joe-pye-weed — DO/TaB;
52 O; 965, 966.
53
54 * *Gamochaeta coarctata* (Willd.) Kerguelen., Gray
55 Everlasting — TaB; O; 419.
56
57 *Gamochaeta falcata* (Lam.) Cabrera, Narrowleaf
58 Purple Everlasting — TaB; O; 260.
59
60 * *Gamochaeta pensylvanica* (Willd.) Cabrera,
61 Pennsylvanica Everlasting — TaB; O; 262.
62 *Helenium autumnale* L., Common Sneezeweed. —
63 TaB, roots of wetland trees; C; 831.
64
65 * *Hieracium caespitosum* Dumort., Yellow King-
66 devil — TaB; O; 736.
67
68 *Hieracium gronovii* L., Beaked Hawkweed — TaB;
69 O; 1108.
70
71 *Hieracium scabrum* Michx., Rough Hawkweed —
72 TaB; O; 1075.
73
74 *Hieracium marianum* Willd., Maryland Hawkweed
75 — TaB; O; 947.
76
77 *Krigia virginica* (L.) Willd., Virginia Dwarf-dandelion
78 — TaB; O; 256, 257, 258.
79
80 *Lactuca floridana* (L.) Gaertn., Woodland Lettuce —
81 Se, TaB; R; 1055.
82
83 *Liatis pilosa* (Aiton) Willd., Blazing Star — KuB,
84 TaB; C; 1156, 1157.
85
86 *Mikania scandens* (L.) Willd., Climbing Hempweed
87 — DO, MM, Mu; C; 665, 672.
88
89 *Packera anonyma* (Wood) W.A. Weber & Á. Löve,
90 Small's Ragwort — Ln, TaB; O; 334, 335, 578.
91
92 *Packera glabella* (Poir.) C. Jeffrey, Smooth Ragwort
93 — DO, MM, Mu; C; 272.
94
95 *Pityopsis graminifolia* (Michx.) Nutt. var.
96 *graminifolia*, Narrowleaf Silkgrass — KuB, TaB; C;
97 1,2.
98
99 *Pityopsis graminifolia* (Michx.) Nutt. var. *latifolia*
100 Fernald, Narrowleaf Silkgrass — KuB, TaB; C; 45,
101 146.
102
103 *Pluchea camphorata* (L.) DC., Camphorweed — DO;
104 C; 790, 960.
105
106 *Pluchea foetida* (L.) DC. var. *foetida*, Stinking
107 Fleabane — DO; C; 761.
108
109 *Pseudognaphalium obtusifolium* (L.) Hilliard & B.L.
110 Burt, Fragrant Rabbit Tobacco — TaB; O; 528, 898.
111
112 *Pyrrhopappus carolinianus* DC., False-dandelion —
113 TaB; O; 250.
114
115 *Sericocarpus tortifolius* (Michx.) Nees., Twisted-leaf
116 White-topped Aster — Ln, TaB; C; 758, 936, 1009.
117
118 *Silphium compositum* Michx. var. *compositum*,
119 Kidneyleaf Rosinweed — TaB; C; 689.
120
121 *Solidago arguta* Aiton, Atlantic Goldenrod — Ln,
122 TaB; C; 785, 1085, 1126.

- 1 *Solidago caesia* L. var. *caesia*, Axillary Goldenrod —
2 Se, TaB; O; 148.
- 3
- 4 *Solidago fistulosa* P. Mill., Hairy Pineywoods
5 Goldenrod — Ln, TaB; C; 42, 940, 941, 1019, 1092.
- 6
- 7 *Solidago odora* Aiton var. *odora*, Licorice Goldenrod
8 — Ln, TaB; C; 34.
- 9
- 10 *Solidago rugosa* P. Mill., Wrinkleleaf Goldenrod —
11 TaB; O; 847, 1091.
- 12
- 13 *Solidago villosicarpa* LeBlond, LeBlonds Coastal
14 Goldenrod — Ln, TaB; C; 1044, 1045, 1128.
- 15
- 16 * *Sonchus asper* (L.) Hill, Spinyleaf Sow-thistle —
17 TaB; O; 251.
- 18
- 19 *Symphotrichum dumosum* (L.) G.L. Nesom, Rice
20 Button Aster — DO/TaB, KuB/PO, Se; C; 144, 1053,
21 1152, 1153, 1154.
- 22
- 23 *Symphotrichum lanceolatum* (Willd.) G.L. Nesom
24 var. *latifolium*, White Panicle Aster — DO/TaB, Se;
25 1065.
- 26
- 27 *Symphotrichum lateriflorum* (L.) Á. Löve & D.
28 Löve var. *lateriflorum*, Calico Aster — TaB; O; 1043.
- 29
- 30 *Symphotrichum pilosum* (Willd.) G.L. Nesom var.
31 *pilosum*, Hairy White Oldfield Aster — KuB/TaB, Ln,
32 TaB; 1164, 1225.
- 33
- 34 *Symphotrichum puniceum* (L.) Á. Löve & D. Löve
35 var. *puniceum* — TaB; O; 1089.
- 36
- 37 *Symphotrichum racemosum* (Elliott) G.L. Nesom
38 var. *racemosum*, Small White Aster
39 — DO/TaB, KuB/PO, Se; C; 1088.
- 40
- 41 * *Taraxacum officinale* G.H. Weber ex F.H. Wigg.,
42 Common Dandelion — Se, TaB; O; 174.
- 43
- 44 BALSAMINACEAE
- 45 *Impatiens capensis* Meerb., Jewelweed, Spotted
46 Touch-me-not — DO, MM, Mu; O; 904.
- 47
- 48 BETULACEAE
- 49 *Alnus serrulata* (Aiton) Willd., Tag Alder —
50 DO/TaB, Mu/TaB, Se; C; 538, 1233, 1234.
- 51
- 52 *Carpinus caroliniana* Walter var. *caroliniana*,
53 Ironwood — DO/TaB, Se; C; 535, 579, 1586.
- 54
- 55 *Ostrya virginiana* (P. Mill.) K. Koch, American Hop-
56 hornbeam — DO/TaB, PO/TaB, Se; O; 1465.
- 57
- 58 BIGNONIACEAE
- 59 *Bignonia capreolata* L., Cross-vine — DO, DO/TaB,
60 Mu, Mu/TaB, Se; C; 823.
- 61
- 62 *Catalpa bignonioides* Walter, Catalpa — TaB
63 (probably planted); R; 1396.
- 64
- 65 *Campsis radicans* (L.) Seem. ex Bureau, Trumpet-
66 creeper — DO, DO/TaB, Mu, Mu/TaB, Se; O; 509.
- 67
- 68 BRASSICACEAE
- 69 *Cardamine parviflora* L. var. *arenicola* (Britton) O.E.
70 Schulz, Sand Bittercress — TaB; O; 169.
- 71
- 72 *Lepidium virginicum* L. var. *virginicum*, Poor Man's
73 Pepper — TaB; O; 269, 546, 1408.
- 74
- 75 CACTACEAE
- 76 *Opuntia humifusa* (Raf.) Raf. var. *humifusa*, Eastern
77 Prickly-pear — KuB; C; 32, 33, 220, 1438.
- 78
- 79 CAMPANULACEAE
- 80 *Lobelia cardinalis* L., Cardinal Flower — DO, Mu; O;
81 797, 830.
- 82
- 83 *Lobelia nuttallii* J.A. Schultes, Nuttall's Lobelia —
84 Ln; C; 646, 779, 901.
- 85
- 86 *Triodanis perfoliata* (L.) Nieuwl. Venus' Looking
87 Glass — TaB; C; 253, 254, 255.
- 88
- 89 CAPRIFOLIACEAE
- 90 * *Lonicera japonica* Thunb., Japanese Honeysuckle
91 — Se, TaB; O; 607.
- 92
- 93 *Lonicera sempervirens* L. var. *sempervirens*, Coral
94 Honeysuckle — Mu/TaB; O; 422.
- 95
- 96 CARYOPHYLLACEAE
- 97 * *Cerastium fontanum* Baumb. ssp. *vulgare* (Hartm.)
98 Greuter & Burdet, Common Mouse-ear — Se, TaB;
99 O; 562.
- 100
- 101 *Stipulicida setacea* Michx. var. *setacea*, Wire-plant —
102 KuB; C; 196, 197, 198.
- 103
- 104 CELASTRACEAE
- 105 *Euonymus americanus* L., Heart's-a-bustin'-(with-
106 love) — Mu/TaB; R; 423, 424.
- 107
- 108 * *Euonymus fortunei* (Turcz.) Hand.-Mazz. var.
109 *radicans* (Siebold ex Miq.) Rehd., Wintercreeper —
110 DO; R; 1051, 1052.
- 111
- 112 CISTACEAE
- 113 *Crocanthemum canadense* (L.) Britton, Canada
114 Frostweed — KuB, Ln, TaB; C; 349, 508, 722, 910,
115 1117, 1118, 1373.
- 116
- 117 CLETHRACEAE
- 118 *Clethra alnifolia* L., Coastal White-alder — DO/KuB,
119 DO/TaB, Mu/TaB, PO/TaB; C; 504, 702, 722, 1058.
- 120
- 121 CONVOLVULACEAE

- 1 *Calystegia sepium* (L.) R. Br. — TaB; O; 416, 417.
2
- 3 *Cuscuta campestris* Yunck., Field Dodder — parasitic
4 on *Persicaria arifolia* in Mu; O; 992, 993.
5
- 6 *Cuscuta compacta* Juss. ex Choisy var. *compacta*,
7 Compact Dodder — parasitic on shrubs in PO; O; 788.
8
- 9 *Ipomoea pandurata* (L.) G. Mey., Manroot — TaB;
10 O; 585.
11
- 12 *Stylisma humistrata* (Walter) Chapm., Southern
13 Dawnflower — KuB, TaB; C; 572.
14
- 15 CORNACEAE
16 *Cornus florida* L., Flowering Dogwood — DO/TaB,
17 Se, TaB; 536, 951, 1274, 1275.
18
- 19 *Cornus stricta* Lam., Southern Swamp Dogwood —
20 DO, MM, Mu; C; 377, 378, 600.
21
- 22 *Nyssa aquatica* L., Tupelo Gum — DO, MM, Mu; C;
23 462, 863; 1610.
24
- 25 *Nyssa biflora* Walter, Swamp Black Gum — DO, Mu,
26 MM, PO; C; 718, 879, 1318, 1611.
27
- 28 *Nyssa sylvatica* Marshall, Black Gum — TaB; O; 271,
29 370, 470.
30
- 31 CYRILLACEAE
32 *Cyrilla racemiflora* L., Ti-ti — DO, Mu, Ln, PO; C;
33 100, 638, 1601.
34
- 35 DIAPENSIACEAE
36 *Pyxidantha barbulata* Michx., Common Pyxie-
37 moss — DO/KuB, Ln; O; 185, 186.
38
- 39 DROSERACEAE
40 *Drosera intermedia* Hayne, Spoonleaf Sundew —
41 Mu, PO; O; 429, 430, 431.
42
- 43 EBENACEAE
44 *Diospyros virginiana* L., American Persimmon —
45 TaB; C; 94, 491, 1407.
46
- 47 ERICACEAE
48 *Chamaedaphne calyculata* (L.) Moench, Leatherleaf,
49 Cassandra — DO/KuB, Mu, PO; 187, 188, 189, 1132,
50 1311, 1312.
51
- 52 *Chimaphila maculata* (L.) Pursh, Pipsissewa — TaB;
53 O; 69, 527.
54
- 55 *Eubotrys racemosa* (L.) Nutt., Coastal Fetterbush —
56 DO, MM, Mu, PO; C; 347, 1284, 1285, 1299, 1300,
57 1308, 1309, 1310, 1457.
58
- 59 *Gaultheria procumbens* L., Wintergreen — Ln, TaB;
60 R; 98.
61
- 62 *Gaylussacia dumosa* (Andr.) Torr. & A. Gray var.
63 *dumosa*, Dwarf Huckleberry — KuB, Ln, TaB; O;
64 362, 363, 1334.
65
- 66 *Gaylussacia frondosa* (L.) Torr. & A. Gray ex Torr.,
67 Dangleberry — Ln, TaB; 36, 52, 83, 359, 502, 503,
68 616, 636.
69
- 70 *Kalmia carolina* Small, Southern Sheepkill — Ln,
71 Mu/TaB, TaB; C; 101.
72
- 73 *Leucothoe axillaris* (Lam.) D. Don, Coastal
74 Doghobble — DO/TaB, Mu/TaB; C; 1047.
75
- 76 *Lyonia ligustrina* (L.) DC. var. *foliosiflora* (Michx.)
77 Fernald, Southern Maleberry — DO, Mu, PO; O; 340,
78 346, 507.
79
- 80 *Lyonia lucida* (Lam.) K. Koch, Shining Fetterbush —
81 DO, Mu, Ln, PO; C; 113, 227.
82
- 83 *Lyonia mariana* (L.) D. Don, Staggerbush — Ln; O;
84 119, 150, 151, 152, 212.
85
- 86 *Monotropa uniflora* L., Indian Pipes — TaB; R; 127,
87 1155.
88
- 89 *Oxydendrum arboreum* (L.) DC., Sourwood — TaB;
90 C; 394, 494, 701, 1466.
91
- 92 *Rhododendron viscosum* (L.) Torr., Swamp Azalea
93 — DO, Mu, PO; C; 375, 376, 499.
94
- 95 *Vaccinium arboreum* Marshall, Farkleberry — TaB;
96 C; 47, 48, 367, 512.
97
- 98 *Vaccinium caesariense* Mackenzie, New Jersey
99 Highbush Blueberry — Mu; R; 348, 357, 358.
100
- 101 *Vaccinium crassifolium* Andrews, Creeping
102 Blueberry — DO/TaB, Ln; C; 118, 717.
103
- 104 *Vaccinium elliotii* Chapm., Mayberry — DO/TaB; R;
105 1460, 1461.
106
- 107 *Vaccinium formosum* Andrews, Swamp Highbush
108 Blueberry — DO, MM, Mu, PO; O; 120, 1265, 1401.
109
- 110 *Vaccinium fuscatum* Aiton, Hairy Highbush
111 Blueberry — DO, MM, Mu, Ln, PO, Se, TaB; F; 171,
112 172, 173, 180, 181, 389, 471, 501, 524, 624, 635.
113
- 114 *Vaccinium stamineum* L. var. *1*, Dwarf Deerberry —
115 KuB, TaB; C; 778.
116
- 117 *Vaccinium stamineum* L. aff. var. *2* (= *Polycodium*
118 *candidans* sensu Small) Appalachian Deerberry —
119 KuB; C; 217, 242, 243, 517, 1331.
120
- 121 *Vaccinium tenellum* Aiton, Southern Blueberry —
122 KuB, TaB; C; 35, 49, 50, 82, 213, 214, 360, 518, 637.
123

- 1 *Zenobia pulverulenta* (W. Bartram ex Willd.) Pollard,
2 Honey-cups — Ln, Mu; C; 339, 351, 352.
3
- 4 EUPHORBIACEAE
5 *Chamaesyce nutans* (Lag. y Segura) Small, Eyebane
6 — TaB; O; 949.
7
- 8 *Cnidocolus stimulosus* (Michx.) Engelm. & A. Gray,
9 Spurge-nettle — KuB, TaB; C; 216, 238, 239.
10
- 11 *Euphorbia ipecacuanhae* L., Carolina Ipecac — KuB,
12 TaB; C; 207, 208, 209, 210.
13
- 14 *Tragia urens* L., Southeastern Noseburn — TaB; O;
15 705.
16
- 17 FABACEAE
18 * *Albizia julibrissin* Durazz., Mimosa — TaB; R; 950.
19
- 20 *Amorpha herbacea* Walter var. *herbacea*, Dwarf
21 Indigo-bush — Ln, TaB; 90, 492, 493.
22
- 23 *Apios americana* Medik., Common Groundnut —
24 TaB; O; 733.
25
- 26 *Centrosema virginianum* (L.) Benth., Spurred
27 Butterfly Pea — TaB; C; 687, 691.
28
- 29 *Chamaecrista nictitans* (L.) Moench var. *nictitans*,
30 Common Sensitive-plant — TaB; O; 843.
31
- 32 *Clitoria mariana* L. var. *mariana*, Butterfly Pea —
33 TaB; C; 1439, 1440.
34
- 35 *Crotalaria rotundifolia* Walter ex J.F. Gmel. var.
36 *vulgaris* Wind., Low Rattlebox — TaB; C; 380, 381,
37 443, 444.
38
- 39 *Desmodium obtusum* (Muhl. ex Willd.) D.C. — TaB;
40 O; 1027.
41
- 42 *Desmodium strictum* (Pursh) DC., Pineland Tick-
43 trefoil — TaB; O; 899, 955, 1010.
44
- 45 *Desmodium viridiflorum* (L.) DC. — TaB; O; 981.
46
- 47 *Galactia regularis* (L.) Britton, Sterns & Poqgenb.,
48 Eastern Milkpea — TaB; C; 574, 575, 642, 741, 810.
49
- 50 *Indigofera caroliniana* Mill., Carolina Indigo — Se,
51 TaB; 550, 704.
52
- 53 * *Kummerowia striata* (Thunb.) Schindl., Japanese-
54 clover — TaB; O.
55
- 56 * *Lespedeza cuneata* (Dumont-Cours.) G. Don,
57 Chinese Lespedeza — TaB; C; 1522.
58
- 59 *Lespedeza hirta* (L.) Hornem var. *curtissii* (Clewell)
60 Isely, Silvery Lespedeza — TaB; 568, 1030.
61
- 62 *Lespedeza repens* (L.) Barton, Smooth Trailing
63 Lespedeza — TaB; O; 872, 961.
64
- 65 *Lupinus perennis* L. ssp. *perennis*, Northern Sundial
66 Lupine — TaB; C; 235, 236, 237.
67
- 68 * *Melilotus officinalis* (L.) Pall., Yellow Sweetclover
69 — TaB, O, 505.
70
- 71 * *Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.)
72 Maesen & S. M. Almeida, Kudzu. — TaB; R; 1086.
73
- 74 *Stylosanthes biflora* (L.) Britton, Sterns & Poqgenb.,
75 Pencil-flower — TaB; O; 1597.
76
- 77 *Tephrosia spicata* (Walter) Torr. & A. Gray — TaB;
78 C; 450, 570, 571, 858.
79
- 80 * *Trifolium campestre* Schreb., Hop Clover — TaB;
81 O; 318.
82
- 83 * *Trifolium pratense* L., Red Clover — TaB; O; *No*
84 *collection*.
85
- 86 * *Trifolium repens* L., White Clover — TaB; F; 317.
87
- 88 * *Vicia sativa* L. ssp. *nigra* (L.) Ehrh., Narrowleaf
89 Vetch — TaB; O; 267.
90
- 91 *Wisteria frutescens* (L.) Poir., American Swamp
92 Wisteria — DO; O; 379, 467.
93
- 94 *Zornia bracteata* Walter ex J.F. Gmel. — TaB; O;
95 739, 852, 1014.
96
- 97 FAGACEAE
98 *Castanea pumila* (L.) Mill., Common Chinquapin —
99 TaB; C; 154, 155, 373, 489, 694.
100
- 101 *Fagus grandifolia* Ehrh. var. *caroliniana* (Loud.)
102 Fernald & Rehd., American Beech — DO/TaB; R;
103 1463, 1464.
104
- 105 *Quercus alba* L., White Oak — Se, TaB; 618.
106
- 107 *Quercus falcata* Michx., Southern Red Oak — TaB;
108 C; 516, 537, 638, 725, 743.
109
- 110 *Quercus hemisphaerica* Bartr. ex Willd., Sand Laurel
111 Oak — TaB; C; 478.
112
- 113 *Quercus incana* Bartr., Bluejack Oak — TaB; C; 87,
114 490.
115
- 116 *Quercus laevis* Walter, Turkey Oak — KuB, TaB; C;
117 28, 91, 479.
118
- 119 *Quercus laurifolia* Michx., Laurel Oak — DO/TaB,
120 Mu/TaB, PO/TaB; O; 65, 158, 372, 542, 968, 1138.
121
- 122 *Quercus lyrata* Walter, Overcup Oak — DO, MM,
123 Mu; C; 295, 834, 994.

- 1 *Quercus margaretta* Ashe ex Small, Sand Post Oak
2 — TaB; C; 86, 497, 498.
3
4 *Quercus marilandica* Münchh. var. *marilandica*,
5 Blackjack Oak — TaB; C; 581, 634, 935, 1042, 1581.
6
7 *Quercus michauxii* Nutt., Swamp Chestnut Oak —
8 DO, MM, Mu; C; 280, 757, 975.
9
10 *Quercus nigra* L., Water Oak — DO/TaB, PO,
11 PO/TaB, TaB; F; 23, 64, 107, 477, 1395.
12
13 *Quercus phellos* L., Willow Oak — DO/TaB, Se; O;
14 883.
15
16 *Quercus stellata* Wangenh, Post Oak — TaB; C; 410,
17 525, 553.
18
19 *Quercus velutina* Lam., Black Oak — TaB; C; 371.
20
21 *Quercus virginiana* Mill., Live Oak — TaB (planted
22 and naturalized); O; 851, 867, 1087.
23
24 GELSEMIACEAE
25 *Gelsemium sempervirens* J. St.-Hil., Carolina
26 Jessamine — DO, Ln, Mu, TaB; F; 182, 183, 1241.
27
28 GENTIANACEAE
29 *Gentiana villosa* L., Striped Gentian — TaB; R; 960.
30
31 *Sabatia calycina* (Lam.) A. Heller, Coastal Rose-pink
32 — DO/TaB, Mu/TaB, Se; C; 603, 657, 1569.
33
34 GERANIACEAE
35 *Geranium carolinianum* L. var. *carolinianum*,
36 Carolina Crane's-bill — TaB; O; 266.
37
38 HALORAGACEAE
39 * *Myriophyllum aquaticum* (Vell.) Verdc., Parrot-
40 feather — DO; O; 326, 1231.
41
42 *Myriophyllum pinnatum* (Walter) Britton, Sterns &
43 Poqgenb., Alternate-leaved Water-milfoil — Mu, PO;
44 R; 744.
45
46 *Proserpinaca palustris* L. var. *crebra* Fernald. &
47 Gris., Common Mermaid-weed — DO, Mu, PO; O;
48 749.
49
50 *Proserpinaca palustris* L. var. *palustris*, Coastal
51 Mermaid-weed — DO, Mu, PO; C; 969.
52
53 *Proserpinaca pectinata* Lam., Feathery Mermaid-
54 weed — DO, Mu, PO; C; 753, 875.
55
56 HAMAMELIDACEAE
57 *Hamamelis virginiana* L. var. *virginiana*, Witch-
58 hazel — DO/TaB, Se, TaB; C; 374, 533, 1226, 1585.
59
60 HYDRANGEACEAE
61 *Decumaria barbara* L., Climbing Hydrangea — DO,
62 MM; C; 468, 1215, 1416, 1462.
63
64 HYPERICACEAE
65 *Hypericum crux-andreae* (L.) Crantz, St. Peter's-wort
66 — DO/TaB, KuB/ PO, Mu/TaB, PO/TaB, TaB; C;
67 141, 167, 727, 780, 829, 1103, 1158.
68
69 *Hypericum galioides* Lam. — Ln; O; 784.
70
71 *Hypericum gentianoides* (L.) Britton, Sterns &
72 Poqgenb., Pineweed — Ln, TaB; C; 142, 783, 923.
73
74 *Hypericum hypericoides* (L.) Crantz, St. Andrew's
75 Cross — TaB; O; 1120.
76
77 *Hypericum mutilum* L. var. *mutilum*, Common
78 Dwarf St.-John's-wort — Mu; O; 814.
79
80 *Hypericum tenuifolium* Pursh, Sandhill St.-John's-
81 wort — KuB; O; 695, 696.
82
83 *Triadenum virginicum* (L.) Raf., Marsh St.-John's-
84 wort — Mu, PO; O; 888.
85
86 *Triadenum walteri* (J.F. Gmel.) Gleason, Marsh St.-
87 John's-wort — DO, Mu; C; 798, 799.
88
89 ITEACEAE
90 *Itea virginica* L., Virginia-willow — DO, DO/KuB,
91 Mu; C; 273, 286, 287, 1322, 1323.
92
93 JUGLANDACEAE
94 *Carya alba* (L.) Nutt. ex Elliott, Mockernut Hickory
95 — TaB; C; 515, 842, 983, 985, 1368.
96
97 *Carya aquatica* (Michx f.) Nutt., Water Hickory —
98 DO, MM, Mu; 1393.
99
100 *Carya glabra* (Mill.) Sweet var. *glabra*, Pignut
101 Hickory — TaB; C; 982, 1394, 1398.
102
103 *Carya ovalis* (Wangeng) Sarg., Red Hickory — Se,
104 TaB; C; 409, 545.
105
106 *Carya pallida* (Ashe) Engl. & Graebn., Sand Hickory
107 — TaB; C; 841, 984.
108
109 *Juglans nigra* L., Black Walnut — TaB; O; 681, 703,
110 854.
111
112 LAMIACEAE
113 *Callicarpa americana* L., Beautyberry — TaB; C; 75,
114 406, 561, 693.
115
116 *Lycopus americanus* Muhl. ex W. Barton, American
117 Bugleweed — DO; O; 1038.
118
119 *Monarda punctata* L. var. *punctata*, Eastern Horse-
120 mint — Se, TaB; O; 808, 809.
121

- 1 *Physostegia leptophylla* Small, Swamp Obedient-
2 plant — DO, MM, Mu; C; 461, 592.
3
4 * *Prunella vulgaris* L. var. *vulgaris*, Eurasian Self-
5 heal — Mu/TaB; R; 895.
6
7 *Scutellaria integrifolia* L., Skullcap — DO/TaB; O;
8 440, 441, 442, 474, 1377, 1378.
9
10 *Scutellaria lateriflora* L., Mad Dog Skullcap. — Mu;
11 O; 800, 801.
12
13 *Trichostema dichotomum* L., Common Blue Curls —
14 TaB; O; 912, 1015.
15
16 LAURACEAE
17 *Litsea aestivalis* (L.) Fernald, Pondspice (US Species
18 of Concern, NC Rare) — Ln, Mu; O; 131, 132, 137,
19 138, 179, 190, 193, 194.
20
21 *Persea palustris* (Raf.) Sarg., Swamp Bay — DO, Ln,
22 Mu; C; 89, 184, 476, 1041.
23
24 *Sassafras albidum* (Nutt.) Nees, Sassafras — TaB; C;
25 44, 368, 487.
26
27 LENTIBULARIACEAE
28 *Utricularia inflata* Walter, Swollen Bladderwort,
29 Inflated Bladderwort — floating aquatic, Mu, PO;
30 1163.
31
32 *Utricularia radiata* Small, Small Swollen Bladderwort
33 — floating aquatic, Mu, PO; 1093, 1094.
34
35 *Utricularia subulata* L., Zigzag Bladderwort — DO,
36 Mu, PO; C; 221, 1131, 1321.
37
38 LINACEAE
39 *Linum striatum* Walter, Yellow Flax — Mu/TaB,
40 PO/KuB; O; 439, 651.
41
42 LINDERNIACEAE
43 *Micranthemum umbrosum* (J.F. Gmel.) Blake, Shade
44 Mudflower — DO; O; 567, 825.
45
46 LOGANACEAE
47 *Mitreola petiolata* (J.F. Gmel.) Torr. & A. Gray,
48 Caribbean Miterwort — Mu, PO; O; 750.
49
50 LYTHRACEAE
51 * *Cuphea carthagenensis* (Jacq.) Macbr., Colombian
52 Waxweed — DO, Mu, PO; O; 752, 972, 973, 1020.
53
54 *Decodon verticillatus* (L.) Elliott, Water-willow —
55 DO; C; 805.
56
57 MAGNOLIACEAE
58 *Liriodendron tulipifera* L. var. *I.*, Coastal Plain Tulip-
59 Poplar — DO/TaB, Mu/TaB; O; 882.
60
61 *Magnolia virginiana* L. var. *virginiana*, Sweet Bay
62 — DO, Ln, Mu, PO; C; 51, 354, 355.
63
64 MALVACEAE
65 *Hibiscus laevis* Allioni, Smooth Rose-mallow — DO,
66 DO/TaB, Mu/TaB; O; 676.
67
68 *Hibiscus moscheutos* L. ssp. *moscheutos*, Eastern
69 Rose-mallow — DO, DO/TaB, Mu/TaB; O; 584, 677.
70
71 *Kosteletzkya virginica* (L.) Presl ex A. Gray var.
72 *virginica*, Southern Seashore-mallow — DO, Mu; O;
73 905.
74
75 MELASTOMATACEAE
76 *Rhexia alifanus* Walter, Smooth Meadow-beauty —
77 Ln, TaB; C; 639, 641, 643.
78
79 *Rhexia mariana* L. var. *mariana*, Maryland Meadow-
80 beauty — Ln, KuB/PO, Mu/TaB; C; 577, 588, 629.
81
82 *Rhexia nashii* Small, Hairy Meadow-beauty — Ln,
83 KuB/PO, Mu/TaB; C; 122, 162, 164, 166, 625, 640.
84
85 MORACEAE
86 *Morus rubra* L., Red Mulberry — DO/TaB, Se; O;
87 865.
88
89 MYRICACEAE
90 *Morella caroliniensis* (Mill.) Small, Pocosin Bayberry
91 — Ln; R; 865.
92
93 *Morella cerifera* (L.) Small, Common Wax-myrtle —
94 DO, Ln, MM, MM/TaB, Se, TaB; F; 21, 29, 67, 157,
95 1237, 1238, 1239.
96
97 *Morella pumila* (Michx.) Small, Dwarf Wax-myrtle
98 — Ln, TaB; C; 486, 1031, 1209, 1210, 1261, 1262.
99
100 NYMPHAEACEAE
101 *Nuphar advena* (Aiton) R. Br. ex Aiton f., Broadleaf
102 Pondlily — aquatic; R; 418.
103
104 OLEACEAE
105 *Fraxinus caroliniana* Mill., Carolina Ash — DO,
106 MM, Mu; C; 310, 836, 1607.
107
108 *Fraxinus pennsylvanica* Marshall, Green Ash — DO,
109 MM, Mu; C; 1391, 1606.
110
111 * *Ligustrum sinense* Lour., Chinese Privet —
112 DO/TaB, Se; R; 330.
113
114 ONAGRACEAE
115 *Ludwigia alternifolia* L., Alternate-leaf Seedbox —
116 DO, Mu, PO; O; 781, 791.
117
118 *Ludwigia decurrens* Walter, Wingstem Water-
119 primrose — DO, Mu, Se; O; 892, 1012.
120

- 1 *Ludwigia linearis* Walter var. *linearis*, Eastern
2 Narrowleaf Seedbox — Mu, PO; O; 790.
- 3
- 4 *Ludwigia palustris* (L.) Elliott, Common Water-
5 purslane. DO, Mu, MM, PO; C; 764.
- 6
- 7 *Ludwigia pilosa* Walter, Hairy Seedbox — Mu, PO;
8 O; 767, 861.
- 9
- 10 *Oenothera biennis* L., Common Evening-primrose —
11 TaB; O; 774, 948.
- 12
- 13 *Oenothera laciniata* Hill, Cutleaf Evening-primrose
14 — TaB; O; 247, 248.
- 15
- 16 ORABANCHACEAE
- 17 *Agalinis fasciculata* (Elliott) Raf., Beach False
18 Foxglove — Ln, TaB; O; 1017, 1018.
- 19
- 20 *Agalinis setacea* (J.F. Gmel.) Raf., Threadleaf False
21 Foxglove — TaB; C; 928, 929, 1004.
- 22
- 23 *Aureolaria pectinata* (Nutt.) Pennell, Southern Oak-
24 leach — TaB; O; 942.
- 25
- 26 *Aureolaria virginica* (L.) Pennell, Virginia Oak-leach
27 — TaB; C; 475.
- 28
- 29 OXALIDACEAE
- 30 *Oxalis florida* Salisbury var. *florida* sensu RAB (= *O.*
31 *dillenii* Jacq.), Slender Yellow Woodsorrel — TaB;
32 O; 937.
- 33
- 34 PASSIFLORACEAE
- 35 *Passiflora lutea* L. var. *lutea*, Yellow Passionflower
36 — DO/TaB, Se; R; 604, 862.
- 37
- 38 PHYTOLACCACEAE
- 39 *Phytolacca americana* L., Common Pokeweed —
40 TaB; O; 613.
- 41
- 42 PLATANACEAE
- 43 *Platanus occidentalis* L. var. *occidentalis*, Sycamore
44 — riverbanks, DO, MM, TaB; R; 1608.
- 45
- 46 PLANTAGINACEAE
- 47 *Gratiola virginiana* L., Roundfruit Hedgehyssop —
48 DO, Mu, PO; 325, 768.
- 49
- 50 *Nuttallanthus canadensis* (L.) D.A. Sutton, Common
51 Toadflax — TaB; C; 199, 200, 244, 245.
- 52
- 53 * *Nuttallanthus texanus* (Scheele) D.A. Sutton, Texas
54 Toadflax — TaB; C; 1276, 1277, 1278, 1351, 1352.
- 55
- 56 *Penstemon australis* Small, Southern Beardtongue —
57 TaB; C; 614, 1379, 1380.
- 58
- 59 *Penstemon laevigatus* Aiton, Eastern Beardtongue —
60 DO/TaB; O; 415.
- 61 * *Plantago aristata* Michx., Buckhorn Plantain —
62 TaB; O; 602.
- 63
- 64 * *Plantago lanceolata* L., English Plantain — TaB; O;
65 601.
- 66
- 67 * *Plantago major* L., Common Plantain — TaB; O;
68 859.
- 69
- 70 *Plantago virginica* L., Virginia Plantain — TaB; O;
71 314.
- 72
- 73 *Sophronanthe pilosa* (Michx.) Small — DO/TaB,
74 KuB/PO, Mu/TaB, Ln; O; 587, 654, 782.
- 75
- 76 POLYGALACEAE
- 77 *Polygala brevifolia* Nutt., Little-leaf Milkwort —
78 DO/KuB; R; 888.
- 79
- 80 *Polygala lutea* L., Orange Milkwort — DO/KuB,
81 KuB/PO, Ln, Mu/TaB; C; 124, 222.
- 82
- 83 POLYGONACEAE
- 84 *Persicaria arifolia* (L.) Haraldson, Halberd-leaf
85 Tearthumb — DO, Mu; C; 662.
- 86
- 87 *Persicaria hydropiperoides* (Michx.) Small,
88 Waterpepper — DO, MM, Mu, PO; F; 435, 628, 979,
89 1061, 1062.
- 90
- 91 * *Persicaria longiseta* (Bruijn) Kitag., Longbristle
92 Smartweed — TaB; R; 1023.
- 93
- 94 *Persicaria punctata* (Elliott) Small, Dotted
95 Smartweed — DO, Mu, PO; O; 663, 756, 880, 1002.
- 96
- 97 *Persicaria sagittata* (L.) H. Gross ex Nakai, Arrowleaf
98 Tearthumb — DO, Mu; C; 763.
- 99
- 100 *Persicaria setacea* (Baldwin) Small, Swamp
101 Smartweed — DO/TaB; O; 734.
- 102
- 103 * *Rumex conglomeratus* Murr., Clustered Dock —
104 TaB; O; 292.
- 105
- 106 *Rumex hastatulus* Baldwin, Wild Dock — Ln, TaB;
107 C; 202, 331.
- 108
- 109 *Rumex verticillatus* L., Swamp Dock — DO, Mu; C;
110 457, 446.
- 111
- 112 RANUNCULACEAE
- 113 *Clematis crispa* L. Marsh Clematis — TaB; O; 268.
- 114
- 115 *Clematis viorna* L., Northern Leatherflower — TaB;
116 O; 596.
- 117
- 118 RHAMNACEAE
- 119 *Berchemia scandens* (Hill) K. Koch, Supplejack —
120 DO, Mu, PO; C; 388, 606, 903.

- 1 ROSACEAE
2 *Amelanchier stolonifera* Wiegand, Dwarf
3 Serviceberry — Ln; O; 482, 483, 500, 1268, 1269,
4 1270 .
5
6 *Aronia arbutifolia* (L.) Pers., Red Chokeberry — Ln,
7 Mu; C; 99, 195, 350, 425, 495, 1271, 1272.
8
9 *Crataegus aprica* Beadle, Sunny Hawthorn — TaB;
10 R; 868.
11
12 *Crataegus uniflora* Münchh., Oneflower Hawthorn —
13 TaB; C; 58, 156, 369.
14
15 *Crataegus viridis* L., Green Hawthorn — DO; O;
16 1613.
17
18 *Potentilla simplex* Michx., Old-field Five-fingers —
19 Se, TaB; O; 420.
20
21 *Prunus serotina* Ehrh. var. *serotina*, Black Cherry —
22 TaB; O; 711, 915, 1266, 1267.
23
24 * *Rosa multiflora* Thunb. ex Murray, Multiflora Rose
25 — DO/TaB; O; *No collection*.
26
27 *Rosa palustris* Marshall, Swamp Rose — DO, MM,
28 Mu; C; 511, 544, 549, 557, 1257.
29
30 *Rosa* sp. — DO (escaped cultivar); R; 323.
31
32 *Rubus argutus* Link, Southern Blackberry —
33 DO/TaB, TaB; 1443, 1444.
34
35 *Rubus cuneifolius* Pursh, Sand Blackberry — TaB; C;
36 270, 481.
37
38 *Rubus flagellaris* Willd., Northern Dewberry — Se;
39 O; 327.
40
41 *Rubus trivialis* Michx., Coastal Plain Dewberry —
42 TaB; O; 1306.
43
44 RUBIACEAE
45 *Cephalanthus occidentalis* L., Buttonbush — DO; O;
46 541, 680.
47
48 *Diodia teres* Walter, Poorjoe — TaB; O; 776.
49
50 *Diodia virginiana* L., Poorjoe — TaB; O; 548.
51
52 *Galium hispidulum* Michx., Coastal Bedstraw — Se,
53 TaB; O; 686.
54
55 *Galium obtusum* Bigel. var. *obtusum*, Bluntleaf
56 Bedstraw — DO, Mu; O; 308.
57
58 *Galium orizabense* Hemsl. ssp. *laevicaule* (Weath. &
59 S.F. Blake) Dempster — DO, Se; O; 608, 609.
60
- 61 *Galium pilosum* Aiton var. *puncticulosum* (Michx.)
62 Torr. & A. Gray — TaB; O; 530, 853.
63
64 *Galium tinctorium* (L.) Scop. var. *tinctorium*,
65 Southern Three-lobed Bedstraw — DO; C; 45, 1410.
66
67 *Galium tinctorium* (L.) Scop. var. *floridanum*
68 Wiegand, Florida Three-lobed Bedstraw — DO; C;
69 559.
70
71 *Mitchella repens* L., Partidge-berry — TaB; C; 55,
72 396.
73
74 * *Richardia brasiliensis* Gomes, Tropical Mexican
75 Clover — TaB; O; 683, 692.
76
77 SALICACEAE
78 *Populus heterophylla* L., Swamp Cottonwood — DO,
79 Mu; O; 869.
80
81 *Salix caroliniana* Michx., Carolina Willow —
82 DO/TaB, Mu, Ln, PO, Se; O; 769, 818, 870.
83
84 *Salix nigra* Marshall, Black Willow — DO/TaB; R;
85 391.
86
87 SAMOLACEAE
88 *Samolus floribundus* Humboldt, Bonpland, & Kunth,
89 Water-pimpernel — DO, Mu, Se; O; 313, 384, 386,
90 1417, 1418, 1419.
91
92 SAPINDACEAE
93 *Acer drummondii* Hook. & Arn. ex Nutt., Swamp Red
94 Maple — DO, MM, Mu, PO; O; 804.
95
96 *Acer rubrum* L. var. *rubrum*, Eastern Red Maple —
97 DO, Mu, PO; C; 1251, 1252, 1256.
98
99 *Acer rubrum* L. var. *trilobum* Torr. & A. Gray ex K.
100 Koch, Carolina Red Maple — Ln, Mu; C; 480, 989.
101
102 SAURURACEAE
103 *Saururus cernuus* L., Lizard's-tail — DO, MM, Mu;
104 C; 426, 427, 664.
105
106 SOLANACEAE
107 *Solanum carolinense* L. var. *carolinense*, Horse-
108 nettle — TaB; O; 252, 551.
109
110 SYMPLOCACEAE
111 *Symplocos tinctoria* (L.) L'Hér. , Sweetleaf —
112 DO/KuB, Ln, TaB; C; 484, 583, 719, 1273.
113
114 TETRAGONACEAE
115 *Polypremum procumbens* L., Juniperleaf — TaB; C;
116 690, 1201, 1202, 1441, 1442.
117
118 THEACEAE
119 *Gordonia lasianthus* (L.) Ellis, Loblolly Bay — DO,
120 Mu; C; 159, 889, 890.

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2 ULMACEAE
3 *Ulmus americana* L. var. *americana*, American Elm
4 — DO, MM, Mu; C; 1253, 1254, 1255.
5
6 *Ulmus rubra* Muhl., Slippery Elm — Mu, Se, TaB;
7 O; 153, 291, 392, 978.
8
9 URTICACEAE
10 *Boehmeria cylindrica* (L.) Sw., False-nettle — DO,
11 MM, Mu, PO; C; 661, 832.
12
13 VALERIANACEAE
14 *Valerianella radiata* (L.) Dufr., Beaked Cornsalad —
15 Se, TaB; O; 387.
16
17 VERBENACEAE
18 * *Verbena bonariensis* L., Purpletop Vervain — Mu,
19 PO; O; 751.
20
21 VIOLACEAE
22 *Viola affinis* Le Conte, Thinleaf Violet — DO/TaB;
23 R.
24
25 *Viola esculenta* Elliott, Blue Violet — DO, Se; O;
26 1056, 1232, 1295.
27 VITACEAE
28 *Ampelopsis arborea* (L.) Koehne, Peppervine — Se,
29 TaB; O; 964, 1575.
30
31 *Parthenocissus quinquefolia* (L.) Planch., Virginia-
32 creeper — DO/TaB, Se; O; 74.
33
34 *Vitis cinerea* (Engelm. in A. Gray) Engelm. ex
35 Millardet var. *baileyana* (Munson) Comeaux, Possum
36 Grape
37 — TaB; C; 1576.
38
39 *Vitis labrusca* L., Fox Grape — TaB; C; 534.
40
41 *Vitis rotundifolia* Michx. var. *rotundifolia*,
42 Muscadine — Se, TaB; C; 41, 60, 510, 619, 927.
43

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Table 1. Floras used in the species richness comparison.

Study Site ¹	County (NC)	Area (ha)	Species No.
Bear Island	Onslow	362	128
Beaufort County, NC		215,278	951
Boiling Spring Lakes Preserve	Brunswick	24,000	403
Cape Lookout Natl. Seashore and Bogue Banks	Carteret	12,626	521
Cliffs of the Neuse State Park	Wayne	211	535
Cool Springs Environmental Education Center	Craven	688	567
Ft. Bragg	Cumberland, Hoke	73,790	1205
Goose Creek State Park	Beaufort	525	239
Huggins Island	Onslow	60	192
Nags Head Woods Ecological	Dare	567	555

Preserve

Shackleford Banks	Carteret	923	270
Wells Savannah	Pender	47	209

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2 ¹Bear Island (Dickerson 1978); Beaufort Co., NC (Blair 1967); Boiling Spring Lakes
3 (Morris 2007); Cape Lookout National Seashore and Bogue Banks (Stalter and Lamont
4 1999); Cliffs of the Neuse State Park (Bruton 1968); Cool Springs (Elam2008); Ft. Bragg
5 (Sorrie et al. 2006); Goose Creek State Park (Corda 1982); Huggins Island (Kelly 2006);
6 Nags Head Woods (Kring 2007); Shackleford Banks (Au 1969); Wells Savannah
7 (Shelingoski et al. 2005).

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Table 2. Summary of Cool Springs Flora.

	Species and Sub-specific taxa	Genera	Families	Endemics	Exotics
Pteridophytes	11	9	9	0	0
Gymnosperms	9	4	2	4	0
“Monocots”	190	78	35	47	15
“Dicots”	356	212	83	76	30
Totals	567	303	118	127	47

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Table 3. Rare plant species at CSEEC.

Species	NC Status	Federal Status	NC Rank	Global Rank
<i>Litsea aestivalis</i> L.	SR-T ¹	FSC	S2S3	G3
<i>Solidago villosicarpa</i> LeBlond	E	FSC	S1	G1

28 ¹ E, Endangered; FSC, Federal Species of Concern; S1, 1-5 populations; S2,
 29 6-20 populations; S3, 21-100 populations; G1, 1-5 populations, G3, 21-100
 30 populations; SR, Significantly Rare; T, Threatened

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Table 4. Species richness and soil heterogeneity residuals from regressions with log area (ha).

Site	Species Richness Residual ¹	Soil Heterogeneity Residual ²
Bear Island	-0.378	-0.139
Beaufort County	-0.056	-0.060
Boiling Spring Lakes Preserve	-0.043	-0.060
Cape Lookout National Seashore and Bogue Banks	-0.074	0.064
Cliffs of the Neuse State Park	0.289	0.125
Cool Springs Environmental Education Center	0.213	0.082
Ft. Bragg	0.139	-0.092
Goose Creek State Park	-0.139	0.147
Huggins Island	-0.048	0.004
Nags Head Woods Ecological Preserve	0.220	0.046
Shackleford Banks	-0.134	0.156
Wells Savannah	0.010	-0.273

1 ¹Regression statistics; $p < 0.01$; $r^2 = 0.59$; Log Species = $1.977 +$
2 0.198 Log Area (ha).

3 ²Regression statistics; $p = 0.04$; $r^2 = 0.36$; Soil Heterogeneity Index
4 = $0.131 + 0.085$ Log Area (ha).

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Figure Captions

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Figure 1. Thirty-year (1971 – 2000) normal growing season precipitation and temperature for the New Bern weather station. Measurements on arrows at the base of the Aug., Sept., and Oct. bars indicate rainfall totals during 2007.

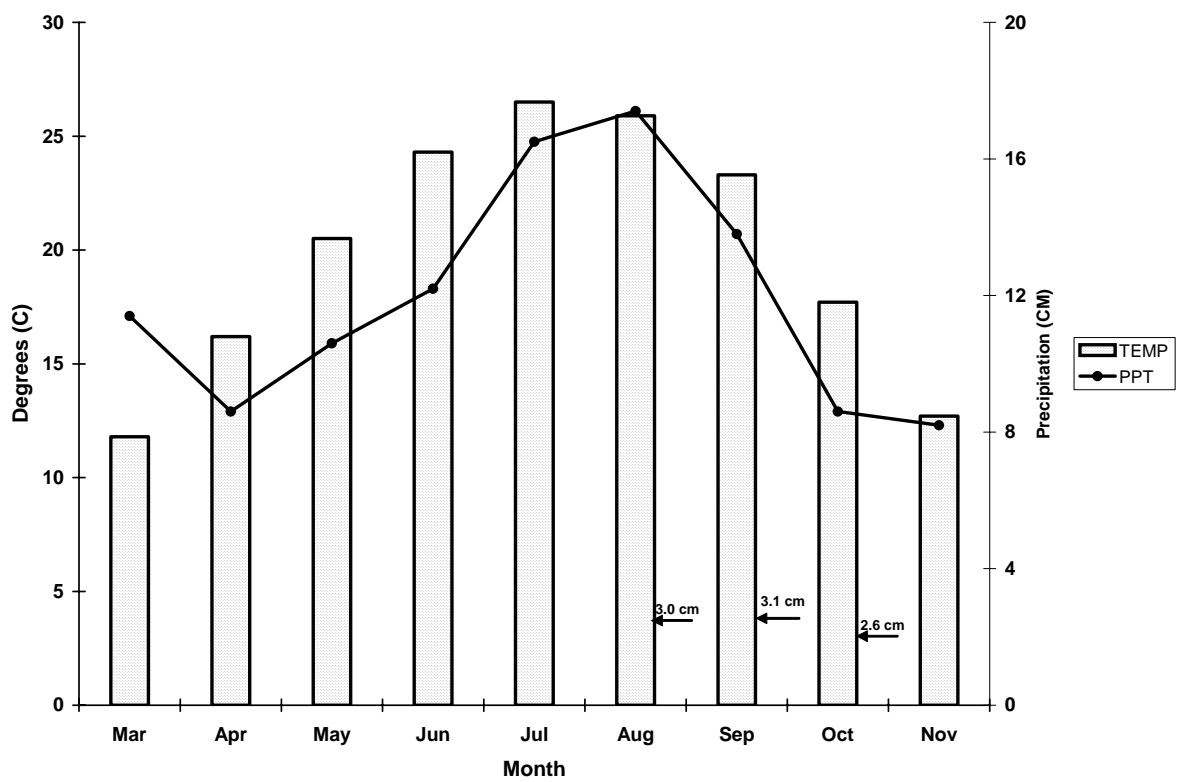
Figure 2. Soil series at CSEEC. DO, Dorovan muck; KuB, Kureb sand; MM, Masontown mucky fine sandy loam; Mu, Murville mucky loamy sand; PO, Ponzer muck; Se, Seabrook loamy sand; TaB, Tarboro sand. Leon sand is not mapped because it occurred only as small inclusions scattered throughout KuB and TaB. Adapted from Godwin (1989).

Figure 3. Topographic relationships of soil series and plant communities.

Figure 4. Plant communities. Impoundment ponds, borrow pit, and vernal pool communities not mapped.

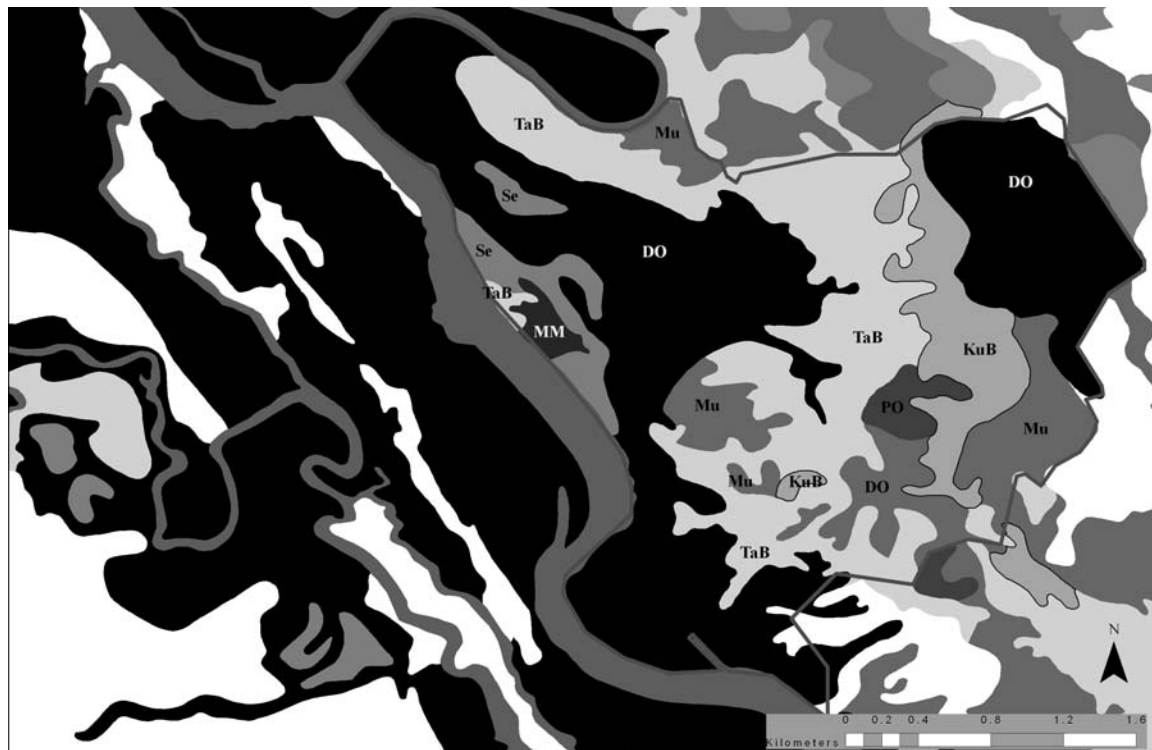
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Figure 1



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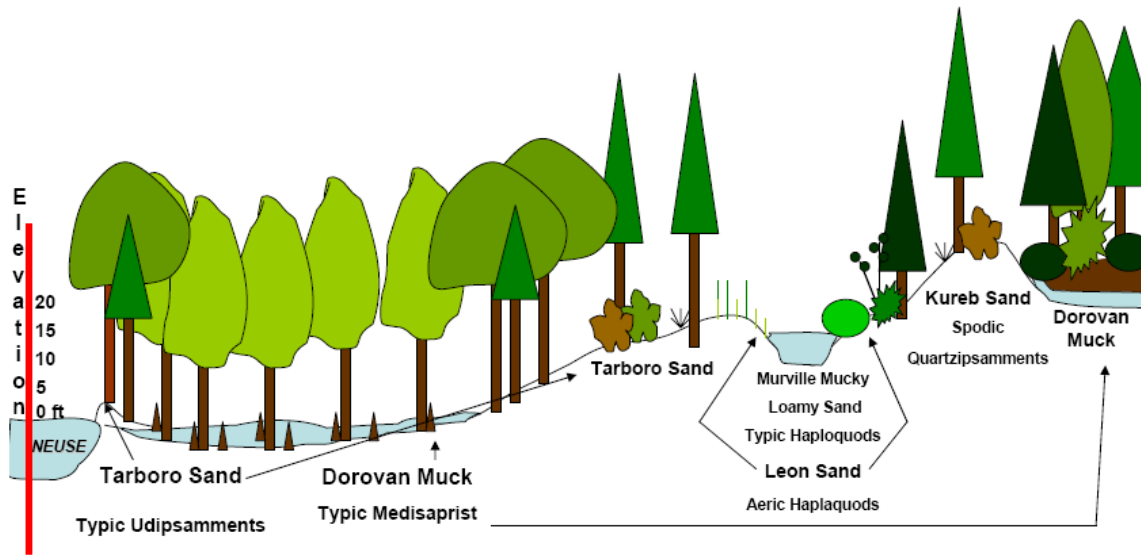
Figure 2.



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Figure 3.



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Figure 4.

