

## VASCULAR FLORA OF LONG POND SLOUGH, MONTGOMERY COUNTY, TENNESSEE

EDWARD W. CHESTER AND FRANK E. DODSON

*Department of Biology, Austin Peay State University, Clarksville, TN 37044, and  
Assistant Vice President for Academic Affairs, Jackson State Community College, Jackson, TN 38301*

**ABSTRACT**—Long Pond Slough is a 12-ha wetland on the flood plain of the lower Cumberland River, Montgomery Co., Tennessee. The site appears to be an old river-meander channel and is a designated State wetland partly owned and managed by the Tennessee Wildlife Resources Agency. Although completely surrounded by agricultural fields, the slough supports habitat types ranging from permanent standing water with submerged, nonrooted-floating and rooted-floating taxa to emergent marsh, shrub-tree swamp, and bottomland hardwood forest. The diverse vascular flora, studied by one or both of us for >30 years and presented here in an annotated list, includes 251 species (240 native) with six species that are listed as threatened or of special concern in Tennessee.

Long Pond Slough is a state-owned (in part) wetland on the flood plain of the lower Cumberland River (Barkley Reservoir) in Montgomery Co., northwestern Middle Tennessee. The site, known since settlement in the late 1700s as "Long Pond," appears to be an old river-meander channel that contains permanent water. Such slow-flowing, shallow swamps-marshes historically have been referred to as sloughs in the southeastern United States (Mitsch and Gosselink, 1986), and the recent addition of "Slough" to the name is appropriate.

Long Pond Slough is significant because: most lower Cumberland River wetlands of this type have been inundated by United States Army Corps of Engineers high dams or drained and now used for agricultural production; and the site supports a number of hydrophytic communities in a small area, and several rare plant species occur there. These features were pointed out by Quarterman and Powell (1978), who evaluated Long Pond Slough for potential designation as a National Natural Landmark, and by Scott et al. (1980), who recommended designation as a Tennessee Natural Area. As a result of these recommendations, Long Pond Slough is now a designated Tennessee wetland. More than one-half of the site is owned and managed by the Tennessee Wildlife Resources Agency as part of a program to acquire targeted wetlands across the state (Tennessee Environmental Policy Office, 1996). The remainder of the site is owned and controlled by area farmers who also own the surrounding agricultural fields.

The purpose of this study was to document the vascular flora of Long Pond Slough and to qualitatively describe the major wetland communities. A description of the area is included, along with information on soils and climate taken from published reports. The included data will add to the recent and growing literature on the flora of Tennessee wetlands, e.g., those of Guthrie (1989) and Henson (1990a, 1990b, 1990c, 1990d) from western Tennessee, Webb and Bates (1989) from along the Tennessee River system, Ellis and Chester (1989) from the eastern and northern Highland Rim, Jones (1989) from the Cumberland Plateau, and Van Horn (1986) from the Ridge and Valley.

## STUDY AREA

Long Pond Slough lies ca. 10 km west of Clarksville, Tennessee, centered at 87°26'00" W longitude and 36°30'10" N latitude on the New Providence United States Geological Survey quadrangle 1957, and the Palmyra United States Geological Survey quadrangle 1958. It is within the Western Highland Rim Subsection, Highland Rim Section, of the Interior Low Plateau Physiographic Province (Fenneman, 1938).

The site is on an alluvial terrace and includes ca. 12 ha with an elongated pond of 6 ha. The permanent water is surrounded by a narrow band of woodlands where conditions range from emergent marsh to swamp and bottomland hardwood forest (Fig. 1). At midpoint of the pond, the eastern edge is ca. 500 m west of the Cumberland River while the western edge is ca. 150 m east of footslopes of adjacent uplands. Cultivated fields (corn, soybeans, and tobacco) or pastures completely surround the wetland, and it is rarely visited except by hunters (of deer, small game, and waterfowl). The elevation is 114 m above sea level or 4.6 m above normal summer pool elevation of Barkley Reservoir. Water levels of the slough are maintained by run-off from adjacent lands and by occasional flooding from the river; yearly and sometimes multi-yearly river overflow (backwater) occurred before construction of Barkley Dam in 1966. Underground springs also may be significant because the water level drops only slightly in dry years. Long Pond Slough drains from the south end where beaver dams also affect water levels.

The substrate is Quaternary (Pleistocene and Recent) alluvium consisting of unconsolidated silt, sand, clay, and gravel  $\leq 15$  m in thickness (Marsh, 1969; Marsh and Marcher, 1975). This substrate lies within a bedrock valley developed in the St. Louis and Warsaw Limestones of middle Mississippian age (Quarterman and Powell, 1978).

Soils of three series occur in the area (Lampley et al., 1975). Newark silt loam (Newark Series) on the west side of Long Pond Slough is a poorly drained soil of first bottoms. It mostly occurs in narrow bands with slopes of 0-2%, has slight to medium acidity, and has a high natural fertility. However, ponding is common, the water table is high, and it

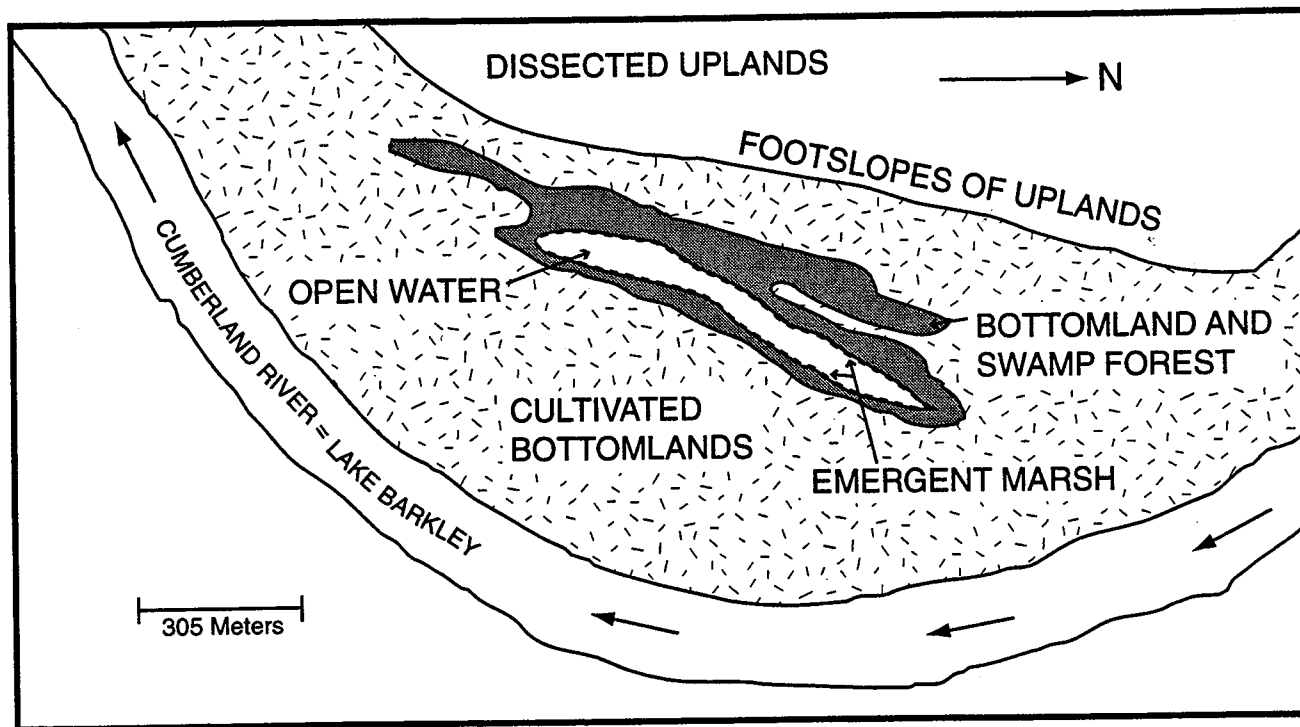


Fig. 1. Map of Long Pond Slough, Montgomery Co., Tennessee, redrawn from aerial photograph in Lampley et al. (1975).

is not well suited to row crops. Lindside silt loam (Lindside Series) occupies the east side. This nearly level soil (slopes  $<2\%$ ) has medium to neutral acidity and high natural fertility and occurs on first bottoms. It is moderately well drained and suitable for row crops. Soils of the Arrington Series surround the area just outside of the study zones. This is the deep, occasionally flooded but well drained and highly productive soil of floodplains. Slopes are  $<2\%$ , and almost all Arrington soils are in tith.

The climate of the area is warm-temperate and characteristic of a humid-mesothermal type (Thorntwaite, 1948). The growing season often exceeds 200 days and extends from mid-April to mid-late October. Soils normally freeze to a depth of several centimeters each winter but rarely remain frozen for more than a few days. It is not uncommon for the standing water of Long Pond Slough to freeze completely, with partial or complete thawing usually within 5 days. Yearly rainfall averages 120-125 cm; late winter-spring are typically the wettest seasons, and autumn the driest. An average winter has several small snowfalls totaling 25-35 cm, but no measurable snowfall occurs some winters (Chester et al., 1995).

Long Pond Slough lies within the diverse Western Mesophytic Forest Region of Braun (1950); this transition region is characterized by a wide variety of forest types and the co-dominance of several species. All area forests are second-growth and dominated by several species of four major genera: *Acer*; *Carya*; *Quercus*; *Ulmus* (Chester et al., 1995).

## METHODS

The vascular flora of Long Pond Slough and the surrounding area was studied by Dodson (1973) and incorporated, with other materials, into a thesis. In addition, the area has been regularly visited (minimally

five times each growing season) for floristic studies since 1967 by E. W. Chester. After much of the area became public property, the flora was reevaluated (1990-present) with special attention given to community composition based on wetland categories of Carter and Burbank (1978) and the presence-status of listed elements. An annotated list was prepared, based on collections from wetland areas only. Surrounding areas, including agricultural fields and transitional areas dominated by weedy and often by introduced taxa, were not included. Vouchers for all cited specimens are in the herbarium of Austin Peay State University (APSC) with many duplicates at The University of Tennessee-Knoxville (TENN). Nomenclature follows Wofford and Kral (1993) except for common names, which were taken from Gleason and Cronquist (1991) and Fernald (1950).

## RESULTS AND DISCUSSION

**Flora**--A total of 251 species from 178 genera and 89 families comprises the known vascular flora of Long Pond Slough. The distribution of taxa among the major plant groups is shown in Table 1. Large families (based on number of species) are the Asteraceae (24), Poaceae (23), and Cyperaceae (19). Large genera are *Carex* (12), *Quercus* (8), and *Panicum* (5). Trees and shrubs account for 55 species. Large woody genera are *Quercus* (eight), *Acer* (four), and *Carya* (three). There are 14 woody vine taxa with only *Smilax* (three) and *Vitis* (two) represented by more than one species. Eleven taxa (4.4%) are not native. A compilation of species with their common names is given in Appendix 1.

**Rare Elements**--Based on the most recent listing of Tennessee rare plants (Tennessee Department of Environment and Conservation, 1996), six species occur within the Long Pond Slough wetlands that are either

TABLE 1. Summary of the vascular flora of Long Pond Slough, Montgomery Co., Tennessee.

| Group         | Families | Genera | Species |            |       |
|---------------|----------|--------|---------|------------|-------|
|               |          |        | Native  | Introduced | Total |
| Pteridophytes | 3        | 4      | 4       |            | 4     |
| Gymnosperms   | 1        | 1      | 1       |            | 1     |
| Angiosperms   |          |        |         |            |       |
| Monocots      | 14       | 41     | 67      | 4          | 71    |
| Dicots        | 71       | 132    | 168     | 7          | 175   |
| Total         | 89       | 178    | 240     | 11         | 251   |

threatened or of special concern in Tennessee. Lake cress (*Armoracia lacustris*, of special concern), and yellow water-crowfoot (*Ranunculus flabellaris*, threatened) are rare, mostly submerged aquatics. Featherfoil (*Hottonia inflata*, of special concern), a floating-emergent species, may be abundant in some years and noticeably absent for several successive years. Arrowhead (*Sagittaria brevirostra*, threatened) is infrequent in marshes. Blue scorpionweed (*Phacelia ranunculacea*, of special concern) is frequent, and purple fringeless orchid (*Platanthera peramoena*, threatened) is rare in bottomland forests.

**Plant Communities**--Based on the classification system of Carter and Burbank (1978), several wetland community types occur at Long Pond Slough. These broadly-defined types are delineated to facilitate annotation of the checklist and to show community-habitat diversity of the area. Community types where taxa most likely occur are given in the checklist.

**Vegetated Open Water**--This community is characterized by an herbaceous flora of three types: rooted species with floating leaves; free-floating species; submerged types. At Long Pond Slough, this community occurs as a strip of water 1.0-1.5 m deep extending the length of the slough. A dense stand of rooted (usually) *Nuphar luteum* ssp. *macrophyllum* dominates; submerged species include *Armoracia lacustris*, *Ceratophyllum demersum*, *Elodea canadensis*, *Potamogeton diversifolius*, and *Ranunculus flabellaris*. Nonattached floating species are *Azolla caroliniana*, *Lemna perpusilla*, *Spirodela polyrhiza*, and *Wolffia brasiliensis*.

**Emergent Marsh**--These are nonforested wetlands dominated by perennial, herbaceous emergents. This community occurs as a transition between the vegetated open water and either the swamp or bottomland forest community. Standing water, <1 m deep, is usually present, but peripheral drying may occur in late summer, resulting in a narrow mudflat. Any of the open water species and sometimes such woody taxa as *Cephalanthus occidentalis*, *Cornus amomum*, and *Salix nigra* may occur. Dominants include *Alisma subcordatum*, *Carex* spp., *Cyperus* spp., *Eleocharis obtusa*, *Glyceria striata*, *Hibiscus* spp., *Juncus effusus*, *Jussiaea* spp., *Polygonum* spp., *Rumex* spp., *Sagittaria* spp., and *Saururus cernuus*.

A stump or log community as described by Guthrie (1989) for Reelfoot Lake could be separated. Several herbaceous species regularly colonize the numerous floating-partially submerged logs, beaver-created stumps, and buttonbush hummocks. Most often seen are *Bidens discoidea*, *Lycopus americanus*, *Scutellaria lateriflora*, and *Triadenum walteri*.

**Swamp**--These semipermanently or permanently flooded lands are dominated by shrub and tree species that are aquatic or at least water-tolerant. The community occurs intermittently along the shorelines and includes a mixed shrub and tree component. Because standing water is present for at least part of the growing season, herbaceous species from the emergent marsh community are not uncommon. *Cephalanthus occidentalis* is the dominating shrub. Other common woody plants are *Acer saccharinum*, *Cornus amomum*, *Fraxinus pennsylvanica*, *Liquidambar styraciflua*, *Platanus occidentalis*, *Populus deltoides*, *Salix nigra*, and extensive clumps of *Rosa palustris*. Common woody vines are *Ampelopsis cordata*, *Parthenocissus quinquefolia*, *Smilax* spp., *Toxicodendron radicans*, and *Vitis* spp. Over the past 10 years, an apparently extensive beaver (*Castor canadensis*) population has wrought considerable damage to this community.

**Bottomland Forest**--This community occupies a narrow strip surrounding areas of permanent inundation. Flooding at depths ranging from a few centimeters to  $\geq 1$  m and for periods of 1-3 days is commonplace in winter and spring. The soil is usually exposed in summer and fall although it may be saturated. Standing water is frequently present in depressions during the growing season. The very existence of the forest attests to the wetness of soil because it would have been long since cleared if not too wet for spring cultivation. Species of *Acer*, *Carya*, *Celtis*, *Quercus*, *Fraxinus*, and *Ulmus* dominate, with a dense undergrowth of *Arundinaria gigantea* and *Smilax* spp.

## SUMMARY

The growing awareness and importance of wetlands as significant landtypes supporting biological diversity make the preservation and study of areas like Long Pond Slough imperative. Unfortunately, few such natural wetlands exist today in the floodplain of the lower Cumberland River due to inundation or conversion for dry-land farming. This small remnant points out how floristically diverse these once-extensive wetlands were. More than 250 species and six listed elements in an area of this size, completely surrounded by agricultural fields, is truly remarkable. Fortunately, Tennessee citizens now own a large part of this wetland, and management by the Tennessee Wildlife Resources Agency, which is basically a hands-off policy, will protect and maintain the area. The lack of yearly (or multi-yearly) extensive flooding from river backwater, now often missing for periods of 1-5 years, is to be determined. The included material thus provides a database, collected over a period >30 years, for monitoring the vascular flora of this site.

## ACKNOWLEDGMENTS

Appreciation is extended to the Martin and Armistead families for granting us unrestricted access to Long Pond Slough through their property. D. Johnson, Austin Peay State University Media Services, kindly prepared the figure.

## LITERATURE CITED

- BRAUN, E. L. 1950. Deciduous forests of Eastern North America. The Blakiston Company, Philadelphia.
- CARTER, V., AND J. H. BURBANK. 1978. Wetland classification system for the Tennessee Valley region. Tennessee Valley Authority, Tech. Note, B24:1-36.
- CHESTER, E. W., R. J. JENSEN, AND J. SCHIBIG. 1995. Forest communities of Montgomery and Stewart counties, northwestern middle Tennessee. *J. Tennessee Acad. Sci.*, 70:82-91.
- DODSON, F. E. 1973. A vegetational study of Long Pond Slough, Montgomery County, Tennessee. MS thesis, Austin Peay State Univ., Clarksville, Tennessee.
- ELLIS, W. H., AND E. W. CHESTER. 1989. Upland swamps of the Highland Rim of Tennessee. *J. Tennessee Acad. Sci.*, 64:97-101.
- FENNEMAN, N. M. 1938. Physiography of eastern United States. McGraw-Hill Book Company, New York.
- FERNALD, M. L. 1950. Gray's manual of botany. Eighth ed. Van Nostrand Reinhold Company, New York.
- GLEASON, H. A., AND A. CRONQUIST. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. Second ed. The New York Botanical Garden, Bronx, New York.
- GUTHRIE, M. 1989. A floristic and vegetation overview of Reelfoot Lake. *J. Tennessee Acad. Sci.*, 64:113-116.
- HENSON, J. W. 1990a. Aquatic and certain wetland vascular vegetation of Reelfoot Lake, 1920s-1980s. I. Floristic survey. *J. Tennessee Acad. Sci.*, 65:63-68.
- . 1990b. Aquatic and certain wetland vascular vegetation of Reelfoot Lake, 1920s-1980s. II. Persistent marshes and marsh-swamp transitions. *J. Tennessee Acad. Sci.*, 65:69-74.
- . 1990c. Aquatic and certain wetland vascular vegetation of Reelfoot Lake, 1920s-1980s. III. Submerged macrophytes. *J. Tennessee Acad. Sci.*, 65:108-111.
- . 1990d. Aquatic and certain wetland vascular vegetation of Reelfoot Lake, 1920s-1980s. IV. Seasonally emergent macrophytes. *J. Tennessee Acad. Sci.*, 65:112-116.
- JONES, R. J. 1989. A floristic study of wetlands on the Cumberland Plateau of Tennessee. *J. Tennessee Acad. Sci.*, 64:131-134.
- LAMPLEY, E. T., J. B. COTHRAN, L. E. DAVIS, R. B. HINTON, O. L. NORTH, AND P. T. STEELE. 1975. Soil survey of Montgomery County, Tennessee. US Dept. Agric., Washington.
- MARSH, O. T. 1969. Geologic map of the Palmyra Quadrangle, Tennessee. Tennessee Div. Geol., Nashville.
- MARSH, O. T., AND M. V. MARCHER. 1975. Geologic map of the New Providence Quadrangle, Tennessee. Tennessee Div. Geol., Nashville.
- MITSCH, W. J., AND J. C. GOSSELINK. 1986. Wetlands. Van Nostrand Reinhold Company, New York.
- MURRELL, Z. E., AND B. E. WOFFORD. 1987. Floristics and phytogeography of Big Frog Mountain, Polk County, Tennessee. *Castanea*, 52:262-290.
- QUARTERMAN, E., AND R. L. POWELL. 1978. Potential ecological-geological natural landmarks on the Interior Low Plateaus. US Dept. Interior, Natl. Park Service, Washington.
- SCOTT, A. F., E. W. CHESTER, AND D. H. SNYDER. 1980. A study of selected potential natural areas in the lower Cumberland River Basin of Tennessee. Heritage Program, Tennessee Dept. Conserv., Nashville.
- TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION. 1996. Rare plants of the state of Tennessee. Div. Nat. Heritage, Nashville, Tennessee (Computer-generated list).
- TENNESSEE ENVIRONMENTAL POLICY OFFICE. 1996. Tennessee Wetlands Conservation Strategy. Second edition: Current progress and continuing goals. Tennessee Dept. Environ. Conserv., Nashville.
- THORNTHWAITE, C. W. 1948. An approach toward a rational classification of climate. *Geogr. Rev.*, 38:55-94.
- VAN HORN, G. S. 1986. The flora of Amnicola Marsh in Hamilton County, Tennessee. *J. Tennessee Acad. Sci.*, 61:3-4.
- WEBB, D. H., AND A. L. BATES. 1989. The aquatic vascular flora and plant communities along rivers and reservoirs of the Tennessee River system. *J. Tennessee Acad. Sci.*, 64:197-203.
- WOFFORD, B. E., AND R. KRAL. 1993. Checklist of the vascular plants of Tennessee. *Sida, Bot. Misc.*, 10:1-66.

## APPENDIX 1

In the following checklist, our subjective evaluation of abundance within Long Pond Slough, Montgomery Co., Tennessee, follows the scheme of Murrell and Wofford (1987): abundant = regularly encountered, usually in large numbers, although sometimes seasonal; frequent = regularly encountered but usually not in large numbers; occasional = irregular in occurrence, rarely in large numbers; infrequent = not always present, in small numbers; rare = rarely seen or not present at all some years. Community types, as defined by Carter and Burbank (1978), are designated as: OW = open water; EM = emergent marsh; SW = swamp (shrub and forest); and BH = bottomland hardwood forest. An asterisk indicates a non-native taxon.

## PTERIDOPHYTA: FERNS AND FERN ALLIES

## ASPLENIACEAE, Spleenwort Family

*Asplenium platyneuron* (L.) Britton, Sterns & Poggenb., Ebony Spleenwort (infrequent, BH).

## AZOLLACEAE, Water-Fern Family

*Azolla caroliniana* Willd., Mosquito Fern (abundant, OW, EM, SW).

## OPHIOGLOSSACEAE, Adder's-Tongue Family

*Botrychium virginianum* (L.) Swartz, Rattlesnake Fern (infrequent, BH).

*Ophioglossum pycnostichum* (Fern.) Löve & Löve, Adder's-Tongue (infrequent, BH).

## SPERMATOPHYTA: GYMNOSPERMAE

## CUPRESSACEAE, Cedar Family

*Juniperus virginiana* L., Red Cedar (infrequent, BH).

SPERMATOPHYTA: ANGIOSPERMAE,  
MONOCOTYLEDONEAE

## ALISMATACEAE, Water-Plantain Family

- Alisma subcordatum* Raf., Water-Plantain (frequent, EM).  
*Sagittaria australis* (J.G. Sm.) Small, Southern Arrowhead (occasional, EM).  
*Sagittaria brevirostra* Mack. & Bush, Short-Beaked Arrowhead (infrequent, EM).  
*Sagittaria calycina* Engelm., Arrowhead (occasional, EM).

## AMARYLLIDACEAE, Amaryllis Family

- Hymenocallis occidentalis* (Leconte) Kunth, Spider-Lily (occasional, BH).

## ARACEAE, Arum Family

- Arisaema dracontium* (L.) Schott, Green Dragon (occasional, BH).  
*Arisaema triphyllum* (L.) Schott, Jack-in-the-Pulpit (occasional, BH).

## COMMELINACEAE, Spiderwort Family

- \**Commelina communis* L., Dayflower (occasional, BH).

## CYPERACEAE, Sedge Family

- Carex crus-corvi* Shuttlew. ex Kunze, Crow-Spur Sedge (rare, EM).  
*Carex frankii* Kunth, Frank's Sedge (occasional, BH).  
*Carex granularis* Muhl. ex Willd., Granular Sedge (occasional, BH).  
*Carex grayi* J. Carey, Gray's Sedge (frequent, BH).  
*Carex jamesii* Schwein., James' Sedge (occasional, BH).  
*Carex lupulina* Muhl., Hop-Like Sedge (frequent, EM, BH).  
*Carex lurida* Wahlenb., Sallow Sedge (frequent, EM, BH).  
*Carex retroflexa* Willd., Reflexed Sedge (occasional, BH).  
*Carex rosea* Willd., Rose-Like Sedge (occasional, BH).  
*Carex squarrosa* L., Spreading Sedge (frequent, EM, BH).  
*Carex tribuloides* Wahlenb., Tribulus-Like Sedge (occasional, BH).  
*Carex vulpinoidea* Michx., Fox-Tail Sedge (abundant, EM, BH).  
*Cyperus erythrorhizos* Muhl., Red-Rooted Sedge (occasional, EM, BH).  
*Cyperus esculentus* L., Yellow Nut-Sedge (infrequent, EM).  
*Cyperus ferruginescens* Boeckl., Rusty Sedge (occasional, EM).  
*Cyperus strigosus* L., Strigose Sedge (occasional, EM).  
*Eleocharis erythropoda* Steud., Red-Root Rush (occasional, EM).  
*Eleocharis obtusa* (Willd.) Schultes, Blount Spike-Rush (abundant, EM).  
*Fimbristylis autumnalis* (L.) Roemer & Schultes, Autumnal Fimbristylis (occasional, EM).

## DIOSCOREACEAE, Yam Family

- Dioscorea villosa* L. Wild Yam (occasional, BH).

## IRIDACEAE, Iris Family

- Sisyrinchium angustifolium* Mill., Narrow-Leaf Blue-Eyed Grass (occasional, BH).

## JUNCACEAE, Rush Family

- Juncus effusus* L., Soft Rush (frequent, EM).

- Juncus tenuis* Willd., Path Rush (occasional, BH).

## LEMNACEAE, Duckweed Family

- Lemna perpusilla* Torr., Duckweed (abundant, OW).  
*Spirodela polyrhiza* (L.) Schleid., Greater Duckweed (abundant, OW).  
*Wolffia brasiliensis* Wedd., Water-Meal (abundant, OW).

## LILIACEAE, Lily Family

- Allium canadense* L., Wild Onion (frequent, BH).  
*Erythronium albidum* Nutt., White Dog's-Tooth Violet (infrequent, BH).  
*Erythronium americanum* Ker Gawl., Yellow Adder's-Tongue (occasional, BH).  
*Polygonatum biflorum* (Walter) Elliott, Solomon's Seal (occasional, BH).  
*Smilacina racemosa* (L.) Desf., False Spikenard (frequent, BH).  
*Trillium cuneatum* Raf., Purple Trillium (occasional, BH).  
*Trillium recurvatum* Beck, Recurved Trillium (occasional, BH).  
*Trillium sessile* L., Sessile Trillium (occasional, BH).

## ORCHIDACEAE, Orchid Family

- Platanthera peramoena* (A. Gray) A. Gray, Purple Fringeless Orchid (rare, BH).

## POACEAE, Grass Family

- Agrostis hiemalis* (Walter) Britton, Sterns & Poggenb., Hairgrass (occasional, BH).  
 \**Arthraxon hispidus* (Thunb.) Makino, Joint-Grass (occasional, BH).  
*Arundinaria gigantea* (Walt.) Muhl. [vars. not differentiated], Cane (abundant, BH).  
*Bromus pubescens* Muhl. ex Willd., Woodland Brome Grass (occasional, BH).  
*Chasmanthium latifolium* (Michx.) H. O. Yates, Wild Oats (frequent, BH, SW).  
*Cinna arundinacea* L., Wood Reedgrass (occasional, BH).  
*Diarrhena americana* P. Beauv., Diarrhena (occasional, BH).  
 \**Echinochloa crusgalli* (L.) Beauv., Barnyard Grass (infrequent, SW).  
*Elymus virginicus* L., Virginia Wild Rye, Terrell Grass (infrequent, BH).  
*Eragrostis hypnoides* (Lam.) Britton, Sterns & Poggenb., Creeping Love Grass (rare, SW).  
*Festuca obtusa* Biehler, Woodland Fescue (infrequent, BH).  
*Glyceria striata* (Lam.) Hitchc., Manna-Grass (abundant, EM, SW).  
*Leersia oryzoides* (L.) Sw., Rice Cutgrass (abundant, EM, SW).  
*Leersia virginica* Willd., Virginia Cutgrass (occasional, SW).  
 \**Microstegium vimineum* (Trin.) Cam., Eulalia (occasional, BH, SW).  
*Panicum capillare* L. var. *sylvaticum* Torr., Philadelphia Panic Grass (infrequent, BH).  
*Panicum dichotomiflorum* Michx., Forked-Flowered Panic Grass (infrequent, BH).  
*Panicum microcarpon* Muhl. ex Elliott, Small-Fruited Panic Grass (occasional, BH).  
*Panicum rigidulum* Bosc ex Nees var. *rigidulum*, Agrostoid Panic Grass (occasional, BH).  
*Panicum scoparium* Lam., Broom-Like Panic Grass (occasional, BH).  
*Paspalum repens* Berg., Knotgrass (infrequent, SW).  
*Poa autumnalis* Muhl. ex Elliott, Autumnal Bluegrass (occasional, BH).  
*Sphenopholis obtusata* (Michx.) Scribn., Wedge-Grass (infrequent, BH).

## POTAMOGETONACEAE, Pondweed Family

*Potamogeton diversifolius* Raf., Diverse-Leaved Pondweed (frequent, OW).

## SMILACACEAE, Catbrier Family

*Smilax bona-nox* L., China-Brier (infrequent, BH, SW).  
*Smilax herbacea* L., Carrion-Flower (infrequent, BH, SW).  
*Smilax hispida* Muhl., Bristly Greenbrier (infrequent, BH, SW).  
*Smilax rotundifolia* L., Common Greenbrier (frequent, BH, SW).

## SPERMATOPHYTA: ANGIOSPERMAE, DICOTYLEDONAE

## ACANTHACEAE, Acanthus Family

*Ruellia strepens* L., Smooth Wild Petunia (occasional, BH).

## ACERACEAE, Maple Family

*Acer negundo* L., Box Elder (frequent, BH).  
*Acer rubrum* L., Red Maple (frequent, BH).  
*Acer saccharinum* L., Silver or Water Maple (frequent, BH).  
*Acer saccharum* Marsh., Sugar Maple (occasional, BH).

## AMARANTHACEAE, Amaranth Family

*Iresine rhizomatosa* Standl., Bloodleaf (rare, BH).

## ANACARDIACEAE, Cashew Family

*Toxicodendron radicans* (L.) Kuntze, Poison Ivy (abundant, BH, SW).

## ANNONACEAE, Custard-Apple Family

*Asimina triloba* (L.) Dunal, Pawpaw (abundant, BH).

## APIACEAE, Parsley Family

*Chaerophyllum tainturieri* Hook., Rough Chervil (infrequent, BH).  
*Cicuta maculata* L., Water Hemlock (occasional, EM, SW).  
*Cryptotaenia canadensis* (L.) DC., Honewort (infrequent, BH).  
*Sanicula canadensis* L., Canada Black Snakeroot (occasional, BH).

## AQUIFOLIACEAE, Holly Family

*Ilex decidua* Walter, Deciduous Holly (occasional, BH, SW).

## ARISTOLOCHIACEAE, Birthwort Family

*Asarum canadense* L., Wild Ginger (occasional, BH).

## ASCLEPIADACEAE, Milkweed Family

*Asclepias incarnata* L., Swamp Milkweed (rare, SW, BH).  
*Cynanchum laeve* (Michx.) Pers., Honeyvine (rare, SW, BH).  
*Matelea gonocarpa* (Walter) Shinnars, Climbing Milkweed (rare, BH).

## ASTERACEAE, Composite Family

*Ambrosia trifida* L., Great Ragweed (infrequent, BH, SW).  
*Aster pilosus* Willd., Pilose Aster (infrequent, BH).

*Aster simplex* Willd., Simple Aster (occasional, SW, BH).  
*Bidens cernua* L., Nodding Sticktight (occasional, BH, EM, SW).  
*Bidens discoidea* (Torr. & A. Gray) Britton, Sticktight (frequent, EM, SW).  
*Bidens polylepis* Blake, Scaled Sticktight (frequent, BH, SW).  
*Boltonia diffusa* Elliott, Diffuse Boltonia (rare, BH, SW).  
*\*Eclipta prostrata* (L.) L., Yerba-De-Tago (infrequent, SW).  
*Erigeron annuus* (L.) Pers., Daisy Fleabane (occasional, BH).  
*Erigeron philadelphicus* L., Philadelphia Fleabane (occasional, BH).  
*Eupatorium coelestinum* L., Mist Flower (occasional, BH, SW).  
*Eupatorium perfoliatum* L., Boneset (infrequent, BH).  
*Eupatorium purpureum* L., Sweet Joe Pye Weed (infrequent, BH).  
*Eupatorium rugosum* Houtt., White Snakeroot (frequent, BH, SW).  
*Lactuca floridana* (L.) Gaertn., Blue Lettuce (infrequent, BH).  
*Pluchea camphorata* (L.) DC., Camphor Weed (occasional, BH, SW).  
*Pyrrhopappus carolinianus* (Walt.) DC., False Dandelion (infrequent, BH).  
*Rudbeckia triloba* L., Lobed-Leaved Coneflower (occasional, BH).  
*Senecio glabellus* Poir., Butterweed (abundant, BH, EM, SW).  
*Solidago canadensis* L., Tall Goldenrod (infrequent, BH).  
*Solidago gigantea* Aiton, Large Goldenrod (infrequent, BH).  
*Verbesina alternifolia* (L.) Britton, Wing-Stem (abundant, BH).  
*Verbesina virginica* L., Tickweed or Frostweed (abundant, BH).  
*Vernonia gigantea* (Walter) Trel., Tall Ironweed (abundant, BH).

## BALSAMINACEAE, Touch-Me-Not Family

*Impatiens capensis* Meerb., Spotted Touch-Me-Not (abundant, BH).

## BERBERIDACEAE, Barberry Family

*Podophyllum peltatum* L., Mayapple (frequent, BH).

## BETULACEAE, Birch Family

*Carpinus caroliniana* Walter, Blue Beech (infrequent, BH).  
*Corylus americana* Walter, Hazelnut (occasional, BH).  
*Ostrya virginiana* (Mill.) K. Koch, Hop Hornbeam (rare, BH).

## BIGNONIACEAE, Bignonia Family

*Bignonia capreolata* L., Cross-Vine (frequent, BH).  
*Campsis radicans* (L.) Seem. ex Bureau, Trumpet Creeper (infrequent, BH, SW).

## BORAGINACEAE, Borage Family

*Heliotropium indicum* L., Turnsole (occasional, EM, SW).

## BRASSICACEAE, Mustard Family

*Armoracia lacustris* (A. Gray) Al-Shehbaz & Bates, Lake Cress (rare, OW).  
*Cardamine rhomboidea* (Pers.) DC., Spring Cress (frequent, BH, SW).  
*Dentaria laciniata* Muhl. ex Willd., Lacinate Toothwort (occasional, BH).  
*Iodanthus pinnatifidus* (Michx.) Steud., Purple Rocket (infrequent, BH, SW).  
*Rorippa sessiliflora* (Nutt.) Hitchc., Yellow Cress (occasional, EM, SW).

## CAMPANULACEAE, Bluebell Family

*Lobelia cardinalis* L., Cardinal Flower (infrequent, BH, SW).

## CAPRIFOLIACEAE, Honeysuckle Family

\**Lonicera japonica* Thunb., Japanese Honeysuckle (frequent, BH).  
*Symphoricarpos orbiculatus* Moench, Coralberry (occasional, BH).

## CELASTRACEAE, Staff-Tree Family

*Euonymus atropurpureus* Jacq., Wahoo (rare, BH).

## CERATOPHYLLACEAE, Hornwort Family

*Ceratophyllum demersum* L., Coontail (abundant, OW).

## CLUSIACEAE, St. John's-Wort Family

*Triadenum walteri* (J. G. Gmel.) Gleason, Walter's St. John's-Wort (abundant, EM, SW).

## CONVOLVULACEAE, Morning-Glory Family

*Cuscuta gronovii* Willd., Gronovius' Dodder (infrequent, SW).  
*Ipomoea lacunosa* L., White Morning-Glory (occasional, BH, SW).  
*Ipomoea pandurata* (L.) G. Mey., Wild Potato-Vine (rare, BH).

## CORNACEAE, Dogwood Family

*Cornus amomum* Mill., Swamp Dogwood (abundant, SW).  
*Cornus florida* L., Flowering Dogwood (infrequent, BH).

## CUCURBITACEAE, Gourd Family

*Sicyos angulatus* L., Bur Cucumber (occasional, BH, SW).

## EBENACEAE, Ebony Family

*Diospyros virginiana* L., Common Persimmon (rare, BH)

## FABACEAE, Legume Family

*Apios americana* Medik., American Potato Bean (abundant, SW)  
*Cercis canadensis* L., Redbud (infrequent, BH).  
*Gleditsia triacanthos* L., Honey-Locust (frequent, BH, SW).  
*Robinia pseudoacacia* L., Black Locust (rare, BH).  
*Wisteria frutescens* (L.) Poir., American Wisteria (infrequent, SW).

## FAGACEAE, Beech Family

*Quercus imbricaria* Michx., Shingle Oak (occasional, BH).  
*Quercus lyrata* Walter, Overcup Oak (infrequent, BH, SW).  
*Quercus macrocarpa* Michx., Mossycup or Bur Oak (rare, BH, SW).  
*Quercus michauxii* Nutt., Swamp Chestnut Oak (occasional, BH, SW).  
*Quercus pagoda* Raf., Cherrybark Oak (frequent, BH, SW).  
*Quercus palustris* Muenchh., Pin Oak (frequent, BH, SW).  
*Quercus rubra* L., Northern Red Oak (rare, BH).  
*Quercus shumardii* Buckley, Shumard Red Oak (abundant, BH, SW).

## FUMARIACEAE, Fumitory Family

*Corydalis flavula* (Raf.) DC., Yellow Corydalis (abundant, BH, SW).

## HAMAMELIDACEAE, Witch-Hazel Family

*Liquidambar styraciflua* L., Sweetgum (frequent, BH, SW).

## HYDROPHYLLACEAE, Waterleaf Family

*Nemophila aphylla* (L.) Brummitt, Nemophila (frequent, BH, SW).  
*Phacelia ranunculacea* (Nutt.) Constance, Blue Scorpionweed (frequent, BH, SW).

## JUGLANDACEAE, Walnut Family

*Carya cordiformis* (Wangenh.) K. Koch, Bitternut Hickory (occasional, BH).  
*Carya laciniosa* (F. Michx.) Loudon, Big Shellbark Hickory, Kingnut (occasional, BH)  
*Carya ovata* (Mill.) K. Koch, Shagbark Hickory (frequent, BH, SW).  
*Juglans nigra* L., Black Walnut (rare, BH).

## LAMIACEAE, Mint Family

*Agastache nepetoides* (L.) Kuntze, Giant Hyssop (rare, BH).  
*Blephilia hirsuta* (Pursh) Benth., Wood-Mint (infrequent, BH).  
 \**Glechoma hederacea* L., Ground Ivy (abundant, BH, SW).  
*Lycopus americanus* Muhl., Water Horehound (frequent, BH, EM, SW).  
*Scutellaria lateriflora* L., Mad-Dog Skullcap (frequent, BH, EM, SW).  
*Teucrium canadense* L., American Germander (abundant, BH, SW).

## LAURACEAE, Laurel Family

*Lindera benzoin* (L.) Blume, Spicebush (abundant, BH).  
*Sassafras albidum* (Nutt.) Nees, Sassafras (rare, BH).

## LOGANIACEAE, Logania Family

*Spigelia marilandica* L., Indian Pink (occasional, BH).

## LYTHRACEAE, Loosestrife Family

*Ammannia coccinea* Rothb., Long-Leaved Ammannia (frequent, EM).  
*Rotala ramosior* (L.) Koehne, Tooth-Cup (infrequent, SW).

## MALVACEAE, Mallow Family

*Hibiscus laevis* All., Halberd-Leaved Rose Mallow (occasional, EM, SW).  
*Hibiscus moscheutos* L., Swamp Rose Mallow, Swamp Cotton (occasional, EM, SW).

## MENISPERMACEAE, Moonseed Family

*Cocculus carolinus* (L.) DC., Red-Berried Moonseed (frequent, BH, SW).  
*Menispermum canadense* L., Yellow Parilla, Moonseed (occasional, BH, SW).

## MORACEAE, Mulberry Family

*Morus rubra* L., Red Mulberry (infrequent, BH).

## NYMPHAEACEAE, Water-Lily Family

*Nuphar luteum* (L.) Sibth. & Sm. ssp. *macrophyllum* (Small) Beal,  
Spatter-Dock (abundant, EM, OW).

## NYSSACEAE, Sour-Gum Family

*Nyssa sylvatica* Marshall, Black-Gum (frequent, BH).

## OLEACEAE, Olive Family

*Fraxinus americana* L., American Ash (infrequent, BH).  
*Fraxinus pennsylvanica* Marshall, Green Ash (frequent, BH, SW).

## ONAGRACEAE, Evening Primrose Family

*Ludwigia alternifolia* L., Seedbox (frequent, EM, SW).  
*Ludwigia decurrens* Walt., Decurrent Primrose-Willow (frequent, EM,  
SW).  
*Ludwigia palustris* (L.) Elliott., Marsh Purslane (infrequent, EM).  
*Ludwigia peploides* (Humb., Bonpl. & Kunth) Raven ssp. *glabrescens*  
(Kuntze) Raven, Primrose-Willow (frequent, EM, OW).

## OXALIDACEAE, Wood-Sorrel Family

*Oxalis grandis* Small, Giant Wood Sorrel (occasional, BH).

## PAPAVERACEAE, Poppy Family

*Sanguinaria canadensis* L., Bloodroot (occasional, BH).

## PASSIFLORACEAE, Passion-Flower Family

*Passiflora lutea* L., Small Passion-Flower (rare, BH).

## PHYTOLACCACEAE, Pokeweed Family

*Phytolacca americana* L., Pokeweed (rare, BH).

## PLATANACEAE, Plane-Tree Family

*Platanus occidentalis* L., Sycamore (occasional, BH, SW).

## POLEMONIACEAE, Phlox Family

*Phlox paniculata* L., Fall Phlox (infrequent, BH).  
*Polemonium reptans* L., Jacob's Ladder (occasional, BH).

## POLYGONACEAE, Buckwheat Family

*Polygonum hydropiperoides* Michx., Mild Water Pepper (abundant,  
EM, SW).  
*Polygonum pensylvanicum* (L.) Small, Pinkweed (abundant, EM, SW).  
*Polygonum punctatum* Elliott, Water Smartweed (frequent, BH, SW).  
*Polygonum virginianum* L., Jumpseed (occasional, BH).  
\**Rumex conglomeratus* Murray, Clustered-Flowered Dock (rare, EM,  
SW).  
\**Rumex crispus* L., Curly Dock (rare, SW).  
*Rumex verticillatus* L., Swamp Dock (infrequent, EM, SW).

## PORTULACACEAE, Purslane Family

*Claytonia virginica* L., Spring Beauty (abundant, BH).

## PRIMULACEAE, Primrose Family

*Hottonia inflata* Elliott, Featherfoil (frequent, OW, EM).  
*Lysimachia ciliata* L., Fringed Loosestrife (infrequent, BH, SW).  
\**Lysimachia nummularia* L., Moneywort (abundant, BH, SW).

## RANUNCULACEAE, Crowfoot Family

*Ranunculus carolinianus* DC., Carolina Buttercup (abundant, BH, SW).  
*Ranunculus flabellaris* Raf., Yellow Water Crowfoot (rare, OW).  
*Ranunculus sceleratus* L., Cursed Crowfoot (rare, SW).

## RHAMNACEAE, Buckthorn Family

*Rhamnus caroliniana* Walter, Carolina Buckthorn (rare, BH).

## ROSACEAE, Rose Family

*Crataegus mollis* (Torr. & A. Gray) Scheele, Red Haw (rare, BH).  
*Geum canadense* Jacq., Canada Avens (occasional BH, SW).  
*Prunus serotina* Ehrend., Wild Black Cherry (occasional, BH).  
*Rosa palustris* Marshall, Swamp Rose (abundant, BH, SW).  
*Rosa setigera* Michx., Prairie Rose (infrequent, BH).

## RUBIACEAE, Madder Family

*Cephalanthus occidentalis* L., Buttonbush (abundant, EM, SW).  
*Diodia virginiana* L., Buttonweed (frequent, EN, SW).  
*Galium tinctorium* L., Swamp Bedstraw (infrequent, BH, SW).  
*Galium triflorum* Michx., Sweet-Scented Bedstraw (infrequent, BH).

## RUTACEAE, Rue Family

*Ptelea trifoliata* L., Bladdernut (rare, BH).

## SALICACEAE, Willow Family

*Populus deltoides* Bartram ex Marshall, Cottonweed (frequent, BH,  
SW).  
*Salix nigra* Marshall, Black Willow (abundant, BH, SW).

## SAPINDACEAE, Soapberry Family

\**Cardiospermum halicacabum* L., Balloon Vine (frequent, BH, SW).

## SAPOTACEAE, Sapodilla Family

*Bumelia lycioides* (L.) Pers., Southern Buckthorn (rare, BH).

## SAURURACEAE, Lizard's-Tail Family

*Saururus cernuus* L., Lizard's-Tail (abundant, EM).

## SAXIFRAGACEAE, Saxifrage Family

*Penthorum sedoides* L., Ditch Stonecrop (occasional, EM, SW).

## SCROPHULARIACEAE, Figwort Family

*Leucospora multifida* (Michx.) Nutt., Conobea (occasional, EM).  
*Gratiola neglecta* Torr., Hedge-Hyssop (occasional, EM).  
*Lindernia dubia* (L.) Pennell, False Pimpernel (occasional, EM).  
*Mimulus alatus* Aiton, Winged Monkey Flower (occasional, EM, SW).



*Penstemon calycosus* Small, Large-Calyxed Beard-Tongue (rare, BH).  
*Scrophularia marilandica* L., Carpenter's-Square (rare, BH).

SOLANACEAE, Nightshade Family

*Physalis longifolia* Nutt. var. *subglabrata* Mack. & Bush (rare, BH).

STAPHYLEACEAE, Bladdernut Family

*Staphylea trifolia* L., Bladdernut (rare, BH).

ULMACEAE, Elm Family

*Celtis laevigata* Willd., Sugarberry (abundant, BH).  
*Celtis occidentalis* L., Hackberry (infrequent, BH).  
*Ulmus americana* L., American Elm (occasional, BH).  
*Ulmus rubra* Muhl., Red or Slippery Elm (abundant, BH).

URTICACEAE, Nettle Family

*Boehmeria cylindrica* (L.) Sw., False Nettle, Bog-Hemp (abundant, EM, SW, BH).  
*Pilea pumila* (L.) A. Gray, Clearweed (occasional, BH, SW).

VALERIANACEAE, Valerian Family

*Valerianella radiata* (L.) Dufr., Corn-Salad (rare, BH).

VERBENACEAE, Vervain Family

*Phyla lanceolata* (Michx.) Greene, Fog-Fruit (abundant, EM, SW).  
*Verbena urticifolia* L., White Vervain (rare, BH).

VIOLACEAE, Violet Family

*Viola pubescens* Aiton, Yellow Violet (abundant, BH).  
*Viola sororia* Willd., Meadow Violet (abundant, BH).  
*Viola striata* Aiton, Cream Violet (frequent, BH).

VISCACEAE, Mistletoe Family

*Phoradendron leucarpum* (Raf.) Reveal & M.C. Johnson, Mistletoe (rare, BH).

VITACEAE, Grape Family

*Ampelopsis cordata* Michx., Heart-Leaf Ampelopsis (abundant, BH, SW).  
*Parthenocissus quinquefolia* (L.) Planch., Virginia Creeper (abundant, BH, SW).  
*Vitis riparia* Michx., Riverside Grape (frequent, BH, SW).  
*Vitis vulpina* L., Frost Grape (frequent, BH, SW).