

AN INVENTORY OF THE HERBACEOUS PLANTS OF THE TWIN SWAMPS NATURE PRESERVE, POSEY COUNTY, INDIANA

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ABSTRACT. Twin Swamps is a 242 ha nature preserve located in Posey County in the extreme southwestern corner of Indiana. This area, containing one of the few remaining swamp cottonwood, bald cypress, and overcup oak swamps in Indiana, is owned and maintained by the Division of Nature Preserves of the Indiana Department of Natural Resources (IDNR). Twin Swamps was set aside by the state in 1987 to preserve one of Indiana's few remaining bald cypress swamps. This study presents an initial inventory of herbaceous flowering plants found in the preserve. A total of 139 species of plants is listed in this study. The study is also presented on a web site that includes photographs of most species listed. The web site indexes the species by habitat, flowering period, and flower color. The following is the URL: (www.usi.edu/science/biology/TwinSwamps/Wildflowers_of_Twin_Swamps.htm)

Keywords: Twin Swamps Nature Preserve, Indiana, Posey County, flora, bald cypress

Twin Swamps Nature Preserve is a 242 ha wooded area very close to the confluence of the Wabash and Ohio rivers in the extreme southwest corner of Indiana (Figs. 1, 2). A trail leads visitors to two separate swamp areas, one dominated by bald cypress (*Taxodium distichum*) and the other dominated by overcup oak (*Quercus lyrata*).

The Twin Swamps Nature Preserve is owned and maintained by the Indiana Department of Natural Resources. The IDNR set the land aside in 1987 to ensure the survival of bald cypress trees in the state. These trees were once abundant along the river bottoms of southwestern Indiana; but their population has decreased in part due to overgrazing, logging, farming, and the damming of the Ohio River for navigational purposes (Ridgway 1872; Lindsey 1962; Abrell 1997). The remains of another large stand of *Taxodium* can be seen at Hovey Lake, which is about 3.2 km southeast of Twin Swamps Nature Preserve. However, the nearby river dam has raised the level of Hovey lake, permanently inundating the *Taxodium* and threatening their survival.

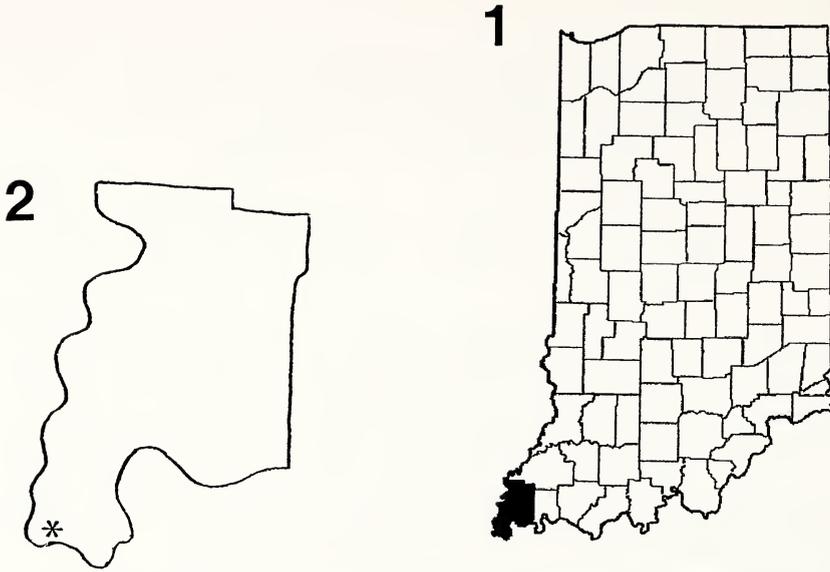
Twin Swamps represents an ecological region known as the Southern Bottomlands of Indiana (Homoya et al. 1985). This region, which hugs the lower Wabash and Ohio rivers, has one of the state's longest growing periods. Temperatures, rainfall and humidity are high

and winters are mild. As a result, Twin Swamps vegetation has a close affinity with the lower Mississippi Valley and Gulf Coast Plain (Homoya et al. 1985; Abrell 1997; Deam 1940). The climatic conditions and the environmental pressures listed above have resulted in many plants located in this area to be considered as endangered or threatened (IDNR 1993).

While several studies have included plants from the southwestern Indiana region and Posey County (Deam 1940; Homoya 1983, 1987; Homoya & Abrell 1986; Homoya & Hedge 1990), no studies have concentrated specifically on the Twin Swamps Nature Preserve. This study consists of an initial inventory of herbaceous plants found in the Twin Swamps Nature Preserve.

METHODS

During the 1997, 1998, and part of the 1999 growing seasons, several forays per week were made into the study area. Collections were preserved following standard protocol (Walters & Keil 1996). Collections are stored in the University of Southern Indiana Herbarium (USIH). Notes on vegetation consisted of estimates of abundance, seasonal presence, and habitat location. For purposes of this study, the following terminology is used to illustrate abundance: sparse – fewer than five



Figures 1, 2.—1. Map of Indiana showing Posey County (darkened). 2. Posey County enlarged, showing the location (*) of the Twin Swamps Nature Preserve.

plants seen at preserve; infrequent—seen occasionally, but not widespread; frequent—widespread and easily noticed, may be locally abundant in certain habitats; abundant—seen in great numbers, though may be restricted to specific habitats.

RESULTS

The attached list of plants includes 139 species identified for this study representing 115 genera and 53 families. Gleason and Cronquist (1991) was used as the primary taxonomic and nomenclatural reference. Several standard reference books were used as taxonomic references and aids for identification (Britton & Brown 1915; Deam 1940; Gleason & Cronquist 1991; Mohlenbrock 1986; Mohlenbrock & Voigt 1959; Venning 1984; and Wharton 1971, 1973).

Habitat Descriptions.—Twin Swamps Nature Preserve is transected by a trail that passes through a variety of habitats. The trail begins in a parking area and passes through an open field that gradually slopes down to a wooded area. The trail passes one end of the overcup oak slough and over 0.8 km of low-lying, poorly-drained flatwoods, primarily of oak (*Quercus* spp.) and hickory (*Carya* spp.) trees. The trail then rises gradually about a meter to a higher area of better-drained soil. The trail then drops sharply to the bald cy-

press swamp. IDNR has provided a boardwalk that extends into the swamp to a raised platform among the cypress trees. A secondary trail continues through the “high, dry woods” to the overcup oak slough, gradually descending approximately a meter. This trail passes the oak slough and loops back to the main trail. Land elevation in this part of Indiana is approximately 107 m above sea level.

For the purposes of this inventory, five habitats have been designated: field; low, wet woods; low, dry woods; high, dry woods; cypress swamp.

The habitats are distinguished by varying degrees of shade and by the amount of soil drainage. Very subtle changes in elevation seem to have a profound effect on how much moisture the soil contains in different areas of the preserve. Some areas tend to dry out quickly, while others often have standing water or mud that dries slowly.

The plant communities tend to be distinctive in each zone. With a few notable exceptions (such as *Oxalis* sp. and *Toxicodendron radicans*), plants in one habitat tend not to be found in the other habitats.

It has been observed that herbaceous plants in the “low, wet woods” tend to grow no more than 1 m high (*Phlox glaberrima*, smooth phlox, is typical); those in the “low,

dry woods” may reach slightly over 1 m (such as *Verbesina helianthoides*, yellow crown-beard); those in the “high, dry woods” may reach 2 m or more (*Phytolacca americana* is dominant and this area has been dubbed the “pokeweed forest”).

This height variation is seasonal. Water levels at the preserve are typically higher in the spring. In the early spring, the only plants in flower at the preserve are found in the high, dry woods and these tend to be no more than 0.3 m tall (e.g., *Thalictrum thalictroides*, rue anemone). Toward the end of summer, when the soil has had a chance to dry out, taller plants may be found in the low, wet woods (such as *Lobelia cardinalis*, cardinal flower, and *Vernonia fasciculata*, ironweed).

Field.—(This habitat is generally open and dry, with some low-lying, wet areas.)

The open area between the parking lot and the woods is dominated by *Andropogon virginicus* (broom sedge), which gives the field a golden tan appearance most of the year. Other notable flowering plants are those which are seen in most fallow fields of southwestern Indiana especially the asters (*Aster* spp.) and goldenrods (*Solidago* spp.) of late summer. Some areas of the field are lower and more poorly-drained than others. These areas have some plants, such as *Asclepias incarnata* (swamp milkweed) and *Lycopus rubellus* (stalked water horehound) that do not seem to appear in other areas of the preserve.

A stand of young sweet gum trees (*Liquidambar styraciflua*) is conspicuous in the middle of the field. At the edge of the parking lot is a large shingle oak tree (*Quercus imbricaria*). At the parking lot and at the entrance to the woods, black locust trees (*Robinia pseudoacacia*) are dominant.

The habitats of Twin Swamps Nature Preserve are relatively free in invasive or exotic species, with the notable exception of the open field area. The open field contains several small populations of *Alliaria petiolata* (garlic mustard) and abundant populations of *Lonicera japonica* (Japanese honeysuckle) at the edge of the low, wet woods.

Low, wet woods.—(This habitat is well-shaded, poorly drained, and is generally muddy with areas of standing water.)

The environment changes dramatically at the entry way to the woods. Open areas give way to deep shade and the trail, which slopes

downward through the field, bottoms out in an area that is usually muddy and often has standing water of approximately 2–10 cm in depth.

Trees are plentiful in this area, despite the water. *Carya ovata* (shagbark hickory), *Ulmus rubra* (slippery elm), and *Quercus* spp. (oaks) are most common. Most of the trees carry *Toxicodendron radicans* (poison ivy) vines, which thrive throughout the woods.

In early spring (through April), very few plants are in flower in the low, wet woods. Only three plants have been recorded: *Viola papilionacea* (common violet), *Ranunculus septentrionalis* (swamp buttercup, which does well even in standing water), and *Cardamine bulbosa* (spring cress).

By mid-May, however, spots of color can be found throughout the low, wet area. The purple, white, and yellow flowers of *Phlox glaberrima* (smooth phlox), *Penstemon alluviorum* (lowland beardstongue), and *Krigia biflora* (false or dwarf dandelion) are conspicuous (though not abundant). These predominant plants tend to be no more than 1–2 m tall.

In June, the plant inventory includes *Hedyotis purpurea* var. *calycosum* (a white flower in the Rubiaceae family, difficult to identify). Wharton (1971) calls it *Houstonia lanceolata* and Deam (1940) does not separate var. *calycosa* from *H. purpurea*. Also notable are *Arisaema dracontium* (green dragon), *Pycnanthemum tenuifolium* (slender mountain mint), *Potentilla simplex* (common cinquefoil), and early specimens of *Impatiens capensis* (spotted jewelweed).

By the end of July, this area supports an abundance of *Laportea canadensis* (wood nettle) and *Boehmeria cylindrica* (false nettle). Also flowering at this time is the poisonous *Cicuta maculata* (water hemlock) and *Hackelia virginiana* (stickseed). More unusual are a few specimens of *Ludwigia alternifolia* (seedbox, with its cube-shaped seedpod, that rattles when shaken).

In August, some taller plants flower. Prominent are *Mimulus alatus* (the southern species of monkey flower; both purple and more uncommonly white-flowered forms), *Lobelia cardinalis* (red cardinal flower), and *Vernonia fasciculata* (ironweed). Also notable are *Desmodium paniculatum* (panicked tick trefoil), *Polygonum hydropiperoides* (mild water pep-

per), and *Euphorbia corollata* (flowering spurge, which was seen in 1997 and 1999, but not in 1998).

Low, dry woods.—(This habitat is well-shaded and often wet but dries out more readily than the low, wet woods habitat.)

As the trail rises out of the moist flood-prone portion of the preserve, it branches in two directions. The main trail continues west toward the cypress swamp. A secondary trail heads southwest to skirt the overcup oak slough. This secondary trail rises slightly into an area of somewhat better-drained soil. Though the slope is nearly imperceptible, the plant community changes significantly.

In the early spring (through April), few species bloom in the low, dry area. The only plants noted in this study are *Thalictrum thalictroides*, *Viola eriocarpa* (smooth yellow violet), and *V. papilionacea*.

Through May, however, a number of new species come into bloom. These plants, which tend to reach 0.5–1.5 m in height, include *Asclepias purpurascens* (purple milkweed), *Phryma leptostachya* (lopseed), *Porteranthus stipulatus* (American ipecac or Indian physic), *Ruellia strepens* (wild petunia), *Smilacina racemosa* (false Solomon's seal), and *Verbesina helianthoides* (yellow crownbeard). Also seen are several species noted in the low, wet woods.

By the end of July, species in this habitat include *Agrimonia rostellata* (woodland agrimony), *Chasmanthium latifolium* (spangle grass), *Helianthus divaricatus* (woodland sunflower), *Lobelia inflata* (Indian tobacco), *Oenothera biennis* (evening primrose), *Polygonum virginianum* (Virginia knotweed), *Silene stellata* (starry campion), and *Verbena urticifolia* (white vervain), to name the most conspicuous.

Through August, the selection of flowering species changes little. Many of the plants found in July continue to bloom. A notable addition is *Hymenocallis caroliniana* (spider lily), a showy species of southern swamplands that may reach its northern limit in Posey County.

High, dry woods.—(This habitat is well-shaded and well-drained without standing water.)

The main trail continues through low-lying woods for about 0.8 km, when it rises noticeably. The rise is not great, only about 1 m,

but it creates an area of much drier soil. The plant community changes significantly. The secondary trail, which passed through the "low, dry woods" as it skirted the overcup oak slough, turns north and eventually also rises into the high, dry woods.

Throughout the growing season, the variety of flowering plants is greatest in this section of the preserve. Plants here tend to grow tall.

Through April, this is the area of the preserve where one is most likely to find plants in flower. The first to bloom are *Claytonia virginica* (spring beauty), *Dentaria laciniata* (cut-leaved toothwort), and *Thalictrum thalictroides*. They will be followed by *Corydalis flavula* (yellow corydalis), *Cynoglossum virginianum* (wild comfrey or hound's-tongue), *Geranium maculatum* (wild geranium), and *Uvularia sessilifolia* (sessile-leaved bellwort). In mid-April, an area between the secondary trail and the cypress swamp supports a large number of *Mertensia virginica* (Virginia bluebells). Along the secondary trail, several specimens of *Lithospermum latifolium* (American gromwell) may be seen. Also notable as they bloom in the spring are the woody *Lindera benzoin* (spicebush) and *Asimina triloba* (pawpaw tree).

Several other species start to flower by mid-June. These include *Arisaema dracontium*, *Arisaema triphyllum* (Jack-in-the-pulpit), *Blephilia hirsuta* (hairy wood mint), *Desmodium glutinosum* (pointed-leaf tick trefoil), *Phytolacca americana* (the abundant pokeweed), *Podophyllum peltatum* (mayapple), and *Stachys tenuifolia* (smooth hedge-nettle).

At the end of July, a new selection of species is in flower. These plants, which grow 1–2 m tall, include *Aralia racemosa* (American spikenard), *Campanula americana* (tall bellflower), and *Eupatorium purpureum* (purple Joe-pye weed).

In August *Eupatorium rugosum* (white snakeroot), *Helianthus microcephalus* (small wood sunflower), *Pilea pumila* (clearweed), *Scrophularia marilandica* (late figwort), *Solidago caesia* (blue-stemmed goldenrod), and *Verbesina alternifolia* (yellow ironweed) are added.

By the end of September, most species at the preserve have gone to seed. A notable exception is the abundant *Eupatorium rugosum*, whose white flowers are conspicuous in the high, dry woods well into October.

Cypress swamp.—(This habitat is well-shaded, usually with standing water that varies from a few centimeters to an estimated depth of 0.5 m as judged by traces of a waterline on the cypress trees.)

The variety of flowering plants is much smaller in the cypress swamp than in the rest of the preserve. Only plants that can thrive in standing water are found in this habitat.

The dominant tree in the swamp is bald cypress tree (*Taxodium distichum*). According to the IDNR list (1993), *Taxodium distichum* is listed as threatened in Indiana. Another prominent tree is *Populus heterophylla* (swamp cottonwood), which in May drops cotton-like clusters of seeds that float on the dark waters of the swamp.

The only flowering species noted in April

is *Ranunculus flabellaris* (yellow water buttercup). Also in April, the surface of the swamp is often covered with duckweed (*Lemna* sp.).

In May, the unusual *Hottonia inflata* (featherfoil) might be seen. This aquatic plant is sparse in some years and abundant in others. According to the IDNR list (1993), *Hottonia inflata*, is listed as a threatened species in Indiana.

Cephalanthus occidentalis (buttonbush) and *Rosa palustris* (swamp rose) come into bloom in June. At the edge of the swamp, in very shallow water, is a large stand of *Saururus cernuus* (lizard's tail).

In September, *Bidens discoidea* (swamp beggar-tick) comes into flower. The inconspicuous orange flowers may be seen in large numbers as summer ends.

APPENDIX 1

Catalog of Vascular Plants of the Twin Swamps Nature Preserve (arranged alphabetically by family)

DIVISION POLYPODIOPHYTA

Thelypteridaceae

Phegopteris hexagonoptera (Michx.) Fee: Broad beech fern; high, dry woods; common, but in only a few locations; USIH 963.

DIVISION MAGNOLIOPHYTA

Acanthaceae (Acanthus Family)

Ruellia strepens L.: Smooth ruellia or wild penitencia; May (blooming); low, dry woods; infrequent; narrow range; USIH 945.

Anacardiaceae (Cashew Family)

Toxicodendron radicans (L.) Kuntze: Common poison ivy; low, wet to high, dry woods; abundant in all habitats; USIH 914.

Apiaceae (Carrot Family)

Cicuta maculata L.: Water hemlock; July-August; low, wet woods; frequent; USIH 968.

Cryptotaenia canadensis (L.) DC.: Honewort; June; low, dry to high woods; abundant in dry, shady woods; USIH 940.

Daucus carota L.: Queen Anne's lace; July-August; fields; infrequent in open field; USIH 973.

Sanicula canadensis L.: Canadian black snake-root; May; low, dry woods; infrequent; USIH 985.

Sanicula gregaria Bickn.: Common snakeroot; May; low, dry woods; frequent; USIH 948.

Apocynaceae (Dogbane Family)

Apocynum cannabinum L.: Indian hemp; June; field; common; USIH 961.

Araceae (Arum Family)

Arisaema dracontium (L.) Schott.: Green dragon; May; low wet; low dry; high dry woods; frequency varies - hard to find some years, frequent in others; thrives in poorly-drained soil; USIH 929.

Arisaema triphyllum (L.) Schott.: Jack-in-the-pulpit; May; high, dry woods; infrequent; prefers well-drained soil; USIH 954.

Araliaceae (Ginseng Family)

Aralia racemosa L.: American spikenard; July; high, dry woods; infrequent and sparse; USIH 986.

Asclepiadaceae (Milkweed Family)

Asclepias incarnata L.: Swamp milkweed; August; field; infrequent; in poorly-drained area of field; USIH 988.

Asclepias purpurascens L.: Purple milkweed; May-June; low, dry woods; infrequent, but conspicuous; limited habitat; USIH 938.

Asteraceae (Aster Family)

Achillea millefolium L.: Common yarrow; May; field; infrequent; USIH 994.

Ambrosia artemisiifolia L.: Common ragweed; August; field; abundant; USIH 975.

Aster ericoides L.: Heath aster; August-September; field; frequent; USIH 974.

Aster pilosus Willd.: Frost-weed aster; September; low, wet woods; infrequent; USIH 976.

Bidens aristosa (Michx.) Britt.: Western tickseed sunflower; August; field; infrequent, though very conspicuous; USIH 989.

Bidens discoidea (Torr. & Gray) Britt.: Swamp beggar-tick; August-September; cypress swamp; abundant; USIH 990.

Boltonia asteroides (L.) L'Her.: False aster; August; field; sparse; USIH 927.

Cirsium discolor (Muhl.) Spreng.: Field thistle; August-September; field; frequent; USIH 1018.

Conyza canadensis (L.) Cronq.: Horseweed; August; field; frequent; USIH 1019.

Erigeron annuus (L.) Pers.: Daisy fleabane; June-August; field; frequent; USIH 1020.

Eupatorium coelestinum L.: Mistflower; August; low, wet woods; sparse; USIH 971.

Eupatorium perfoliatum L.: True boneset; August; field; infrequent; USIH 1027.

Eupatorium purpureum L.: Purple Joe-pye weed; July-August; high, dry woods; infrequent; USIH 993.

Eupatorium rugosum Houtt.: White snakeroot; August-September; high, dry woods; abundant; conspicuous; USIH 987.

Eupatorium serotinum Michx.: Late or false boneset; August; field; infrequent; USIH 1024.

Euthamia graminifolia (L.) Salisb.: Grass-leaved goldenrod; August; low, moist areas of field; abundant; USIH 1025.

Gnaphalium obtusifolium L.: Old-field balsam (rabbit-tobacco); August; field; infrequent; USIH 1023.

Helianthus divaricatus L.: Woodland sunflower; July-August; low, dry woods; frequent and conspicuous; USIH 1006.

Helianthus microcephalus Torr. & Gray: Small wood sunflower; August; high, dry woods; sparse; USIH 1007.

Helianthus sp.: Species unknown; July-August; field; infrequent; USIH 1008.

Krigia biflora (Walt.) Blake: Dwarf or false dandelion; May; low, wet woods; infrequent, conspicuous; USIH 932.

Lactuca biennis (Moench) Fern.: Tall blue lettuce; August-September; low, dry woods; infrequent; USIH 1022.

Prenanthes altissima L.: Rattlesnake root or tall white lettuce; August-September; high, dry woods; sparse; USIH 970.

Senecio glabellus (Poir.): Butterweed; April-May; low, dry woods; common; USIH 946.

Solidago caesia L.: Blue-stemmed or woodland goldenrod; September-October; high, dry woods; infrequent; USIH 1002.

Solidago canadensis L.: Tall goldenrod; August-September; field; abundant; USIH 1003.

Solidago juncea Ait.: Early goldenrod; July; field; abundant; USIH 1004.

Solidago nemoralis Ait.: Gray goldenrod; August-September; field; frequent; USIH 1005.

Taraxacum officinale Weber: Common dandelion; field; frequent; USIH 1021.

Verbesina alternifolia (L.) Britt.: Yellow ironweed or wingstem; August-September; high, dry woods; common; USIH 977.

Verbesina helianthoides Michx.: Yellow crown-beard; June; low, dry woods; infrequent; USIH 947.

Vernonia fasciculata Michx.: Ironweed; August; low, wet woods; infrequent; USIH 965.

Balsaminaceae (Touch-Me-Not Family)

Impatiens capensis Meerb.: Spotted (orange) jewelweed; June-August; low, wet to low, dry woods; abundant; USIH 931.

Berberidaceae (Barberry Family)

Podophyllum peltatum L.: Mayapple; April-May; high, dry woods; abundant; USIH 950.

Bignoniaceae (Trumpet Creeper Family)

Campsis radicans (L.) Seem.: Trumpet creeper; June-July; field; sparse, although abundant along nearby roads; USIH 962.

Boraginaceae (Borage Family)

Cynoglossum virginianum L.: Hound's tongue or wild comfrey; April; high, dry woods; infrequent; USIH 921.

Hackelia virginiana L.: Stickseed; July; low, wet to high, dry woods; abundant; USIH 964.

Lithospermum latifolium Michx.: American gromwell; April-May; high, dry woods; infrequent; USIH 925.

Mertensia virginica (L.) Pers.: Virginia bluebell; April; high, dry woods; abundant in certain locations; USIH 918.

Myosotis verna Nutt.: Scorpion grass; May; field; infrequent; USIH 1028.

Brassicaceae (Mustard Family)

Alliaria petiolata (Bieb.) Cavara & Grande: Garlic mustard; April; field; frequent; USIH 1032.

Cardamine bulbosa (Schreb.) BSP.: Spring cress; April; low, wet woods; frequent; USIH 915.

Dentaria laciniata Muhl.: Cut-leaved toothwort; March-April; high, dry woods; frequent; USIH 922.

Caesalpiniaceae (Caesalpinia Family)

Cassia fasciculata Michx.: Partridge pea; July-August; field; frequent; USIH 1031.

Campanulaceae (Bellflower Family)

Campanula americana L.: Tall bellflower; July-August; high, dry woods; infrequent; USIH 967.

Triodanis perfoliata (L.) Nieuwl.: Venus's looking-glass; May-June; field; infrequent; USIH 966.

Caprifoliaceae (Honeysuckle Family)

Lonicera japonica Thunb.: Japanese honeysuckle; May; field; abundant at edge of woods; USIH 1029.

Caryophyllaceae (Pink Family)

Dianthus armeria L.: Deptford pink; June; field; infrequent; USIH 991.

Silene stellata (L.) Ait.: Starry campion; June-August; low, dry woods; infrequent; USIH 992.

Convolvulaceae (Morning Glory Family)

Ipomoea pandurata (L.) G.F.W. Mey: Wild potato vine; July-August; field; frequent and conspicuous; USIH 1034.

Cuscutaceae (Dodder Family)

Cuscuta gronovii Willd.: Dodder; August-September; field; infrequent; USIH 1041.

Dioscoreaceae (Yam Family)

Dioscorea villosa L.: Wild yam; June; high, dry woods; sparse; USIH 1043.

Euphorbiaceae (Spurge Family)

Euphorbia corollata L.: Flowering spurge; August; low, wet woods; sparse; USIH 1045.

Fabaceae (Pea Family)

Desmodium glabellum (Michx.) DC.: Tick trefoil; August; low, wet woods; frequent; USIH 1036.

Desmodium glutinosum (Muhl.) Wood: Pointed tick trefoil; June-July; high, dry woods; Infrequent; USIH 949. *Desmodium paniculatum* (L.) DC.: Panicked tick trefoil; August; field and low, wet woods; infrequent; USIH 1035.

Lespedeza virginica (L.) Britt.: Slender bush clover; August; field; frequent and conspicuous; USIH 1030.

Trifolium pratense L.: Red clover; June; field; infrequent; USIH 995.

Trifolium repens L.: White clover; July-August; field; frequent; USIH 996.

Geraniaceae (Geranium Family)

Geranium carolinianum L.: Wild cranesbill; May; field; infrequent; USIH 997.

Geranium maculatum L.: Wild geranium; April; high, dry woods; infrequent; USIH 920.

Hypericaceae (St. John's Wort Family)

Hypericum punctatum Lam.: Spotted St. John's wort; July; field; infrequent; USIH 1037.

Lamiaceae (Mint Family)

Blephilia hirsuta (Pursh) Benth.: Hairy wood-mint; June-August; high, dry woods; frequent; USIH 953.

Lamium sp.: Dead nettle; March-April; field; USIH 1009.

Lycopus rubellus Moench.: Stalked water horehound; August; field; infrequent in poorly-drained areas of field; USIH 1010.

Prunella vulgaris L.: Self-heal or heal-all; July-August; field to low, dry woods; frequent; USIH 1033.

Pycnanthemum tenuifolium Schrad.: Slender mountain mint; June-July; low, wet to low, dry woods; frequent; USIH 936.

Stachys tenuifolia Willd.: Smooth hedge-nettle; June-August; high, dry woods; frequent; USIH 952.

Lauraceae (Laurel Family)

Lindera benzoin (L.) Blume: Spicebush; March-April; high, dry woods; frequent; USIH 923.

Lemnaceae (Duckweed Family)

Lemna sp.: Duckweed; cypress swamp, overcup oak slough; abundant; USIH 956.

Liliaceae (Lily Family)

Hymenocallis caroliniana (L.) Herb.: Spider-lily; August; low, dry woods; sparse; USIH 979.

Smilacina racemosa (L.) Desf.: False Solomon's seal; April-May; low, dry to high, dry woods; infrequent; USIH 1038.

Uvularia sessilifolia L.: Sessile-leaved bellwort; April; high, dry woods; infrequent; USIH 926.

Lobeliaceae (Lobelia Family)

Lobelia cardinalis L.: Cardinal flower; August; low, wet woods; infrequent; USIH 1012.

Lobelia inflata L.: Indian tobacco; July; low, dry woods; infrequent; USIH 1011.

Onagraceae (Evening Primrose Family)

Circaea lutetiana Aschers. & Magnus: Enchanter's nightshade; May-June; high, dry woods; infrequent; USIH 978.

Ludwigia alternifolia L.: Seedbox; July; low, wet woods; infrequent; USIH 1040.

Oenothera biennis L.: Evening primrose; June-August; low, dry woods and field; infrequent; USIH 1039.

Oxalidaceae (Wood Sorrel Family)

Oxalis dillenii Jacq.: Yellow wood sorrel; May-August; field to high, dry woods; abundant; USIH 933.

Papaveraceae (Poppy Family)

Corydalis flavula (Raf.) DC.: Yellow corydalis; April; high, dry woods; frequent; USIH 924.

Passifloraceae (Passion-Flower Family)

Passiflora lutea L.: Yellow passionflower; July; field; sparse; USIH 1042.

Phrymaceae (Lopseed Family)

Phryma leptostachya L.: Lopseed; June-July; low, dry to high, dry woods; abundant; USIH 943.

Phytolaccaceae (Pokeweed Family)

Phytolacca americana L.: Pokeweed; June-July; high, dry woods; abundant; USIH 1017.

Plantaginaceae (Plantain Family)

Plantago major L.: Common plantain; July; field; abundant; USIH 1044.

Poaceae (Grass Family)

Agrostis sp.: August; low, wet woods; frequent; USIH 1026.

Andropogon virginicus L.: Broom sedge; August; field; abundant; USIH 1056.

Chasmanthium latifolium (Michx.) Yates: Spangle grass or sea oats; June-October; low, dry woods; infrequent; USIH 939.

Leersia lenticularis Michx.: Catchfly grass; August; low, wet woods; infrequent; USIH 1046.

Setaria glauca (L.) Beauv.: Foxtail; August-September; field to low, dry woods; abundant; USIH 981.

Polemoniaceae (Phlox Family)

Phlox glaberrima L.: Smooth phlox; May-August; low, wet woods; abundant; USIH 934.

Polygonaceae (Smartweed Family)

Polygonum hydropiperoides Michx.: Mild water pepper; August-September; low, wet woods; infrequent; USIH 1047.

Polygonum pennsylvanicum L.: Pennsylvania smartweed; August; field (wet areas); infrequent; USIH 980.

Polygonum virginianum L.: Virginia knotweed; July-August; low, dry to high, dry woods; abundant; USIH 1049.

Portulacaceae (Purslane Family)

Claytonia virginica L.: Spring beauty; March-April; high, dry woods; abundant; USIH 919.

Primulaceae (Primrose Family)

Hottonia inflata Ell.: Featherfoil; May; cypress swamp and overcup oak slough; abundant some years, sparse in others; USIH 1058.

Ranunculaceae (Buttercup Family)

Ranunculus flabellaris Raf.: Yellow water buttercup; April; cypress swamp; infrequent; USIH 927.

Ranunculus septentrionalis Poir.: Swamp buttercup; April; low, wet woods; infrequent; USIH 913.

Thalictrum thalictroides (L.) Eaves & Boivin: Rue anemone; April; high, dry woods; frequent; USIH 916.

Rosaceae (Rose Family)

Agrimonia rostellata Wallr.: Woodland agrimony; July-August; low, dry woods; infrequent; USIH 1013.

Geum canadense Jacq.: White avens; June-August; low, dry woods; infrequent; USIH 942.

Porteranthus stipulatus (Muhl.) Britt.: Indian physic or American ipecac; May-June; low, dry woods; infrequent; USIH 944.

Potentilla simplex Michx.: Common cinquefoil; May; low, wet woods; infrequent; USIH 935.

Rosa multiflora Thunb.: Multiflora rose; May; field; frequent; USIH 983.

Rosa palustris Marsh.: Swamp rose; June; cypress swamp; sparse; USIH 958.

Rosa setigera Michx.: Prairie rose; June; field; infrequent; USIH 984.

Rubus sp.: Blackberry; May; field; abundant; USIH 982.

Rubiaceae (Madder Family)

Cephalanthus occidentalis L.: Buttonbush; June; cypress swamp; abundant; USIH 955.

Galium aparine L.: Cleavers; May-June; low, wet to low, dry woods; frequent; USIH 998.

Galium triflorum Michx.: Sweet-scented bedstraw; June; low, wet woods; infrequent; USIH 1015.

Galium sp.: Bedstraw; May-June; low, dry woods; frequent; USIH 941.

Hedyotis purpurea var. *calycosum* (Gray) Fosberg: Houstonia; May; low, wet woods; frequent; USIH 930.

Saxifragaceae (Saxifrage Family)

Penthorum sedoides L.: Ditch stonecrop; August; low, wet woods; sparse; USIH 1001.

Saururaceae (Lizard's-Tail Family)

Saururus cernuus L.: Lizard's tail; June; cypress swamp; abundant; USIH 959.

Scrophulariaceae (Figwort Family)

Mimulus alatus Ait.: Monkey flower; August; low, wet woods; infrequent; USIH 1050.

Penstemon alluviorum Pennell: Lowland beardstongue; May; low, wet woods; frequent; USIH 937.

Scrophularia marilandica L.: Maryland figwort; July-August; high, dry woods; infrequent; USIH 1048.

Solanaceae (Nightshade Family)

Solanum carolinense L.: Horse nettle; July; field; infrequent; USIH 1016.

Urticaceae (Nettle Family)

Boehmeria cylindrica (L.) Sw.: False nettle; July-August; low, wet to low, dry woods; frequent; USIH 1014.

Laportea canadensis (L.) Wedd.: Wood nettle; July-August; low, wet to low, dry woods; infrequent; USIH 1053.

Pilea pumila (L.) Gray: Clearweed; August; high, dry woods; abundant; USIH 1054.

Verbenaceae (Vervain Family)

Verbena urticifolia L.: White vervain; June-August; low wet to high, dry woods; abundant; USIH 1052.

Violaceae (Violet Family)

Viola eriocarpa (Schwein.) Russell: Smooth yellow violet; April; plentiful in high, dry woods; USIH 917.

Viola papilionacea Pursh: Common violet; April; low, wet to low, dry woods; abundant; USIH 912.

Vitaceae (Grape Family)

Parthenocissus quinquefolia (L.) Planch.: Virginia creeper; throughout woods; abundant; USIH 1051.

LITERATURE CITED

- Abrell, D.B. 1997. A taste of the south: The southern bottomlands natural region. 582 pp. *In* The Natural Heritage of Indiana. (M.T. Jackson, ed.) Indiana University Press. Bloomington, Indiana.
- Deam, C. 1940. Flora of Indiana. Dept. of Conserv., Wm. B. Burford Printing Co. Indianapolis, Indiana. 1236 pp.
- Gleason, H.A. & A. Cronquist. 1991. Manual of the Vascular Plants of Northeastern United States and Adjacent Canada. New York Botanical Garden. Bronx, New York. 910 pp.
- Homoya, M.A. 1983. Additions to the flora of southern Indiana. Proceedings of the Indiana Academy of Science 92:379–382.
- Homoya, M.A. 1987. Additions to the flora of southern Indiana III. Proceedings of the Indiana Academy of Science 97:449–452.
- Homoya, M.A., D.B. Abrell, & J.R. Aldrich, & T.W. Post. 1985. The natural regions of Indiana. Proceedings of the Indiana Academy of Science 94:245–268.
- Homoya, M.A. & D.B. Abrell. 1986. Recent additions to the flora of southern Indiana. Proceedings of the Indiana Academy of Science 95:429–432.
- Homoya, M.A. & C.L. Hedge. 1990. Additions to the flora of southern Indiana. Proceedings of the Indiana Academy of Science 99:67–72.
- Indiana Department of Natural Resources. 1993. Indiana's rare plants and animals: A checklist of endangered and threatened species. Indiana Department of Natural Resources. Indianapolis, Indiana. 26 pp.
- Lindsey, A.A. 1962. Analysis of an original forest of the lower Wabash floodplain and upland. Proceedings of the Indiana Academy of Science 72: 282–287.
- Mohlenbrock, R.H. 1986. Guide to the Vascular Flora of Illinois. Southern Illinois Univ. Press. Carbondale, Illinois. 507 pp.
- Mohlenbrock, R.H. & J.W. Voigt. 1959. A Flora of Southern Illinois. Southern Illinois Univ. Press. Carbondale, Illinois. 390 pp.
- Ridgway, R. 1872. Notes on the vegetation of the Lower Wabash Valley. American Naturalist 6: 658–665.
- Venning, F.D. 1984. A Guide to Field Identification: Wildflowers of North America. Golden Press. New York, New York. 340 pp.
- Walters, D.R. & D.J. Keil. 1996. Vascular Plant Taxonomy. 4th ed. Kendall/Hunt Publishing Co., Dubuque, Iowa. 608 pp.
- Wharton, M. E. 1971. Guide to the Wildflowers and Ferns of Kentucky. Univ. of Kentucky Press. Lexington, Kentucky. 328 pp.
- Wharton, M.E. 1973. Trees and Shrubs of Kentucky. Univ. of Kentucky Press. Lexington, Kentucky. 582 pp.

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