

THE VASCULAR FLORA OF TURKEY RUN STATE PARK, PARKE COUNTY, INDIANA

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ABSTRACT. This floral list for Turkey Run State Park, Parke County, Indiana, documents 476 taxa of vascular plants found during 2003 to 2007 within its 964 ha (2382 acres) boundary, which includes both the park proper and the adjacent Rocky Hollow-Falls Canyon Nature Preserve. Extensive visual observations were made to document the relative abundance and specific locations of all plants. Particular emphasis was placed on locating and mapping invasive species as well as locally-rare native species. Because of time limitations, only a few grasses, rushes, and sedges are described. Included in this list are 55 species not encountered during the study but which are either recorded in the park in published reports or which exist as specimens from the park and kept at the Friesner Herbarium of Butler University in Indianapolis, Indiana.

Keywords: Flora, Parke County, vascular plants, Rocky Hollow, Turkey Run State Park

Turkey Run State Park became Indiana's second state park in 1916. (Fig. 1). Since then, it has grown from 117 ha (288 acres) to 964 ha (2382 acres), which include both the park proper and Rocky Hollow-Falls Canyon Nature Preserve—hereafter to be jointly referred to as “the park”. Situated within the Entrenched Valley Section of the Central Till Plain Natural Region along Sugar Creek, it is one of the most visited state parks in Indiana (IN.gov 2009). Yet, except for a few lists made in the 1920–30s (Swanson 1928; Test 1930), no complete floristic study of the entire park has been undertaken. Two ecological studies have been undertaken: a study of two hillside seeps (Ebinger & Bacone 1980) and a 1989 ecological evaluation of Turkey Run State Park by the Division of Nature Preserves of the Indiana Department of Natural Resources (A. Spingarn unpubl. data).

THE STUDY AREA

Turkey Run State Park lies along Sugar Creek within the Entrenched Valley Section of the Central Till Plain Natural Region of Indiana (Fig. 2). But, unlike the undulating swell-and-swale topography of most of this region, the Entrenched Valley is marked by deeply-cut valleys with exposed sandstone bedrock of Pennsylvanian Mansfield Formation. The exposures often form massive cliffs. The soils of the Central Till Plain are characterized by moderately thick loess over Wisconsin till. Within the Entrenched Valley the loess is underlaid by poorly-drained, acid-

to-neutral silt loams. (Homoya et al. 1985; Hedge 1997; Camp & Richardson 1999). Sugar Creek, a major tributary of the Wabash River, is the dominant landscape feature of the park. Running roughly east to west, it divides the park into two unequal sections. The larger north section, roughly two-thirds of the study area, consists primarily of the Rocky Hollow-Falls Canyon Nature Preserve. The state park itself, for the most part, lies south of Sugar Creek. Two other significant streams run through the study area. Sugar Mill Creek meanders through the northwest corner of the property and empties into Sugar Creek about 0.8 km (0.5 miles) west of the park. Turkey Run Creek begins in the headlands of the ravine system just beyond the southwest corner of the park and empties into Sugar Creek within the park. The sandstone bluffs are often topped by dense groves of hemlock trees. Between the steeper ravines there are large tracts of flatter uplands. The creeks form wide, flat floodplains. Myriad adjacent ravines network into these larger creek valleys, giving the parkland an overall rugged and “dreadfully broken” appearance – as the General Land Office surveyors (General Land Office 1799–1834) described nearby Shades State Park, which is also in the Entrenched Valley along Sugar Creek.

METHODS

All 964 ha (2382 acres) of the park were included in this study. No plants were collected

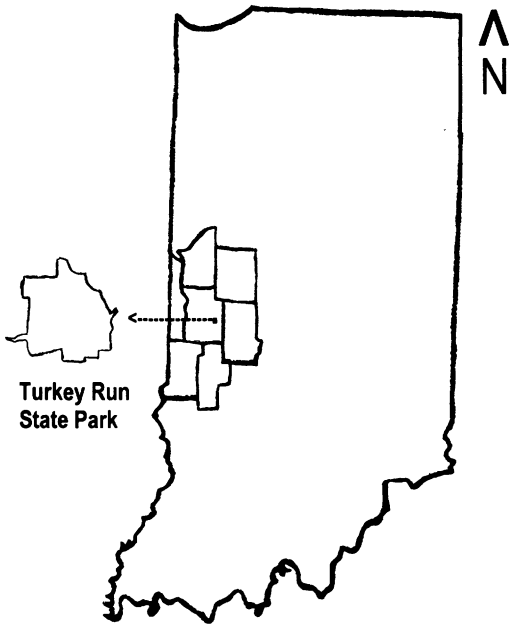


Figure 1.—Map of Indiana showing the location of Turkey Run State Park within Parke County.

on the north side of the creek within Rocky Hollow-Falls Canyon Nature Preserve. Due to collecting restrictions, plant identifications in the Preserve were made strictly in the field and verified later through personal photos. The majority of its plants had already been collected in other parts of the park. Except for the invasive grass, *Microstegium vimineum*, the ubiquitous sedge *Carex plantaginea*, and a few other graminoids identified by Roger Hedge, most grasses, sedges, and rushes are not included. Approximately 240 forays in the park were made from mid-October 2003 to mid-November 2007. Many sites were visited several times at different seasons. The principal manual used for identification was Gleason & Cronquist (1991). The USDA's Plant Data Base (USDA NRCS 2004) was the ultimate source for accepted scientific and common names. When recording observations of plants already identified, it was generally assumed to be the same subspecies and/or variety as determined from previously collected specimens. Problematic species were compared to specimens in the Friesner Herbarium of Butler University in Indianapolis, Indiana and/or sent to experts at the Missouri Botanical Garden for determination. The voucher specimens are housed in the Friesner Herbarium.

RESULTS AND DISCUSSION

In this study, 531 species in 111 families are included. The most common plant families were Asteraceae, Liliaceae, and Fabaceae with 73, 24, and 23 species respectively. Fifty-five of the total species are from reports only. Because of time limitations, only 17 grasses, sedges, and rushes are treated in this paper. Of the 531 total species listed for the study area, 418 are native and 93 are non-native; 30 of the non-native species are considered invasive. Twenty other species were planted and persist only near their original sites. The Catalogue of Plants (Appendix 1) indicates to which of these categories each species belongs. A few of the plants in the Entrenched Valley Section of the Central Till Plain are more common in northern or boreal regions of North America (Homoya et al. 1985; Hedge 1997). Of these, Canada yew (*Taxus canadensis*) and Eastern hemlock (*Tsuga canadensis*) were found during the study. Nearby Shades State Park, also in the Entrenched Valley, seems to possess a somewhat richer assembly of species than that of the study area. Only 406 native species (excluding all graminoids) were found at Turkey Run State Park. By contrast, Shades State Park, including its two adjacent Nature Preserves (Pine Hills and Pedestal Rock), was listed as having 602 native species (McCormick 1962). White pine (*Pinus strobus*) occurs naturally at Pine Hills, but at Turkey Run State Park it is found only as plantings.

Use of coefficients of conservatism.—The concept of using coefficients of conservatism to evaluate the floristic quality of natural areas has gained wide acceptance among environmental scientists, botanists and land stewards in Indiana. Led by Paul Rothrock, a panel of Indiana botanists have assigned, through consensus, the C-values (coefficients of conservatism) for most of the vascular plant species in Indiana (Rothrock 2004). Because the C-value provides an objective clue to an individual plant's importance to the natural communities in the park, it is given in the Catalogue of Plants section (Appendix 1). On a scale from 0–10, plants with a C-value of "0" are the most tolerant of disturbance while those with a C-value of "10" are restricted exclusively to remnant, pre-settlement landscapes. Non-native species have blank C-values. A full explanation of the meaning and use of Coeffi-

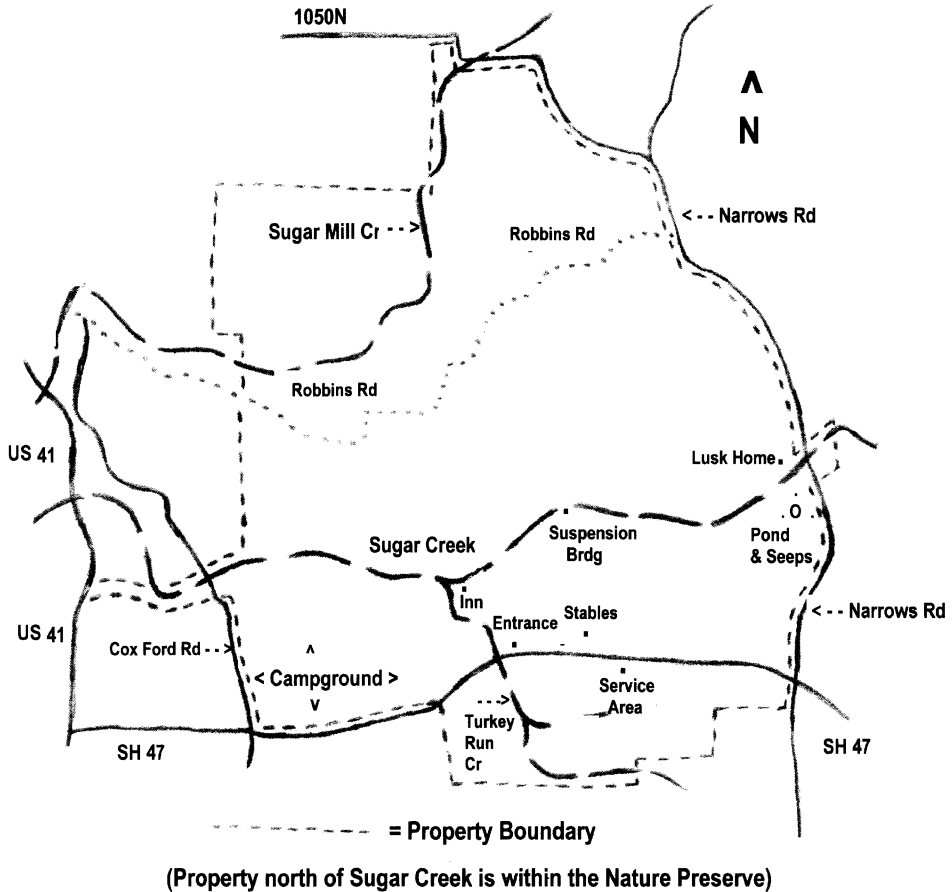


Figure 2.—Map of Turkey Run State Park including Rocky Hollow-Falls Canyon Nature Preserve within it.

cients of Conservatism can be found in *Plants of the Chicago Region* (Swink & Wilhelm 1994) and in the publication titled “Floristic quality assessment in Indiana” (Rothrock 2004).

Non-native, invasive, and planted species.—Plants in the catalogue section (Appendix 1) are identified as 1) native; 2) non-native; 3) invasive; and 4) planted. Species are here considered non-native if they are listed but are not assigned a numeric C-value in the floristic quality assessment paper (Rothrock 2004). At present, there is no official or published list of invasive plant species specifically for Indiana. To determine which species in the park were invasive, informal lists prepared by The Nature Conservancy and the Division of Nature Preserves of the Indiana Department of Natural Resources were consulted (E. Jacquart unpubl. data; M. Homoya unpubl.

data). Some planted species, such as *Hosta ventricosa*, that persist around demolished home sites are included. A few of these appear to have escaped beyond their planted borders and leave open the question of whether they have yet become naturalized in the park.

County records.—A surprising 120 of the 531 species catalogued in this study have never been properly recorded for Parke County and are therefore claimed here as county records. A species was considered a candidate for county record if it was not previously recorded specifically for Parke County by Deam (1940), by Jackson (2004), or by Keller et al. (1984); nor was it in the Natural Heritage Data Base maintained by the Division of Nature Preserves of the Indiana Department of Natural Resources (R. Hellmich unpubl. data). A park species, subspecies, or variety not specifically

listed for Parke County in any of the above references is considered a county record. Planted species were not considered candidates for county records.

Historic records.—An additional 55 non-graminoid species are included that were not found during this study but have been reported or previously collected in the park. Some records are from published reports (Swanson 1928; Test 1930; Ebinger & Bacone 1980); some are from plants listed in The Natural Heritage Data Base (R. Hellmich unpubl. data); and some are specimens at the Friesner Herbarium (R. Dolan unpubl. data).

Endangered, imperiled, or watch list species.—The Division of Nature Preserves of the Indiana Department of Conservation maintains a list of state endangered, imperiled, or watch list species (Indiana Natural Heritage Data Center 2008). Only two species on that list were actually observed in the park during this study: *Matteuccia struthiopteris* (state imperiled) and *Taxus canadensis* (state endangered). In addition, *Acalypha deamii* (state imperiled), *Aesculus flava* (state watch list), and *Botrychium biternatum* (state watch list) have been reported here (R. Hellmich unpubl. data).

HABITAT DESCRIPTIONS

According to Tom Swinford, ecologist at the Division of Nature Preserves of the Indiana Department of Natural Resources, the forested corridor along Sugar Creek and its associated tributaries (of which Turkey Run State Park is a major component) represents the largest contiguous forest block remaining in the Central Till Plain Region. Within this broad forest category, several generalized plant communities have been distinguished. Most of them overlap so extensively in the study area that it is hard to separate one from another. The following categories are combined from the terms used by Homoya (1985) in describing the Till Plain and Entrenched Valley as a whole and from a 1989 Ecological Evaluation of Turkey Run State Park by the Division of Nature Preserves of the Indiana Department of Natural Resources (A. Spingarn unpubl. data). Here they are employed as practical terms rather than as formal ecological units.

Wet floodplain forest.—The best examples of this community are in the wide, seasonally-flooded areas along Sugar Creek and Sugar Mill Creek. The large sycamores (*Platanus*

occidentalis) are the most striking feature of this floodplain. Silver maples (*Acer saccharinum*) are also abundant here.

Mesic floodplain forest.—Seldom flooded, this community is adjacent to the wet floodplain forest but on somewhat higher ground. Hackberry (*Celtis occidentalis*) and Ohio buckeye (*Aesculus glabra*) are abundant. Most notable are the black walnuts (*Juglans nigra*) with individuals approaching 1.5 m (5 feet) in diameter at breast height. Mesic floodplain communities can also be found in the wide ravine bottom along Turkey Run Creek south of State Highway 47, in low ground in the headland of Rocky Hollow ravine in the preserve, in low areas adjacent to the pond, and along Sugar Mill Creek.

Mesic upland forest.—This is the predominant forest type in the park with its mixture of beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), tulip poplar (*Liriodendron tulipifera*), and many others.

Dry-mesic upland forest.—This forest type is dominated by oaks such as *Quercus alba*, *Q. rubra*, *Q. velutina*, and *Q. muehlenbergii*; and by hickories such as *Carya ovata* and *C. cordiformis*. This community is most often found on the south-facing, drier slopes on the north side of Sugar Creek; but it can be encountered throughout the park in scattered patches.

Sandstone cliffs.—This plant community resides on the most striking landscape features of the park. Ferns with more rigid habitat preferences grow here. On the lower moister regions of the cliffs and boulders are walking fern (*Asplenium rhizophyllum*) and bulblet bladderfern (*Cystopteris bulbifera*). On drier but partly-shaded upper cliff ledges is rock polypody (*Polypodium virginianum*). The state endangered Canada yew (*Taxus canadensis*), once fairly common within the hemlock groves on ridge tops, is now almost entirely restricted to high cliff ledges, beyond the reach of deer (Cullina 2002). There is a remarkably abundant community of this plant on some cliffs overlooking Sugar Mill Creek but otherwise it is scattered and few.

Hemlock groves.—Above many sandstone cliffs or steep wooded slopes—often extending down and into the ravine bottoms below—are dense groves of hemlocks (*Tsuga canadensis*). White oaks (*Quercus alba*) are often scattered within and around these groves. The forest floor with this highly acidic leaf litter is sparsely vegetated. In small openings on mossy ridge tops is found

partridge berry (*Mitchella repens*) and pussy toes (*Antennaria plantaginifolia*) in abundance.

Hillside seeps.—These very small communities near the park's only pond contain very different flora than found in other areas of the park. Two such areas in particular were studied by Ebinger & Bacone (1980). Less than 0.2 ha each, they are on lower slopes with groundwater seeping to the surface through gravel and sand, thus rendering the soil slightly alkaline and cool. The hillside seep at the east end of the pond is dominated in the early spring by marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*). Curiously, the other seep, northwest of the pond, has no marsh marigolds. The flora of the two seeps is quite different from one another. Another smaller hillside seep was found during this study. This thick-muddy seep and the stream that runs through it are north of the pond. However, only three species found exclusively in the other two seeps—skunk cabbage (*Symplocarpus foetidus*), cowbane (*Oxypolis rigidior*), and watercress (*Nasturtium officinale*)—were found here.

Early to mid-successional forests.—Much of the flatter upland areas were farmed but have now become secondary growth forests. Many of these forests contain many stands of dead red cedar (*Juniperus virginiana*) indicating that the area was once quite open. Young tulip trees (*Liriodendron tulipifera*) are abundant, as are

black cherries (*Prunus serotina*). Many of these areas are now densely infested with invasive bush honeysuckle (*Lonicera morrowii*).

Old fields.—Several large tracts of the above farm acquisitions have not yet returned to a predominantly woodland condition. Canada goldenrod (*Solidago canadensis*) is abundant here. In addition to bush honeysuckle, much of these old fields is heavily beset with invasive autumn olive (*Elaeagnus umbellata*).

Developed and disturbed uplands.—The park's service areas and its facilities for visitors and campers are located in these flat uplands. Much of it has over the years been extensively landscaped and kept mowed. Many of the non-native species occur here.

ACKNOWLEDGMENTS

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APPENDIX I

CATALOGUE OF THE VASCULAR PLANTS IN TURKEY RUN STATE PARK (arranged alphabetically by family)

The numbers following the descriptions for each species refer to the voucher specimens which have been deposited in the Friesner Herbarium at Butler University, Indianapolis, Indiana. The symbols immediately following the voucher numbers refer to the following: a plus (+) indicates that the plant is a non-native; an asterisk (*) indicates the plant is invasive; an ampersand (&) indicates a Parke County record; a "P" indicates it was found as a planting only; a C = 0–10 represents the plant's coefficient of conservatism value. (C values are given only for native plants.)

DIVISION LYCOPODIOPHYTA

(Lycopods)

Lycopodiaceae (Club-Moss Family)

Huperzia lucidula (Michx.) Trevis.: shining clubmoss. Rare (one site): in preserve on canyon boulder; not collected; C = 5.

Lycopodium digitatum Dill. ex A. Braun: fan clubmoss. Rare: extensive colonies in two secondary wood sites in preserve; not collected; &; C = 2.

DIVISION EQUISETOPHYTA

(Horsetails or Scouring Rushes)

Equisetaceae (Horsetail Family)

Equisetum arvense L.: field horsetail. Infrequent in the Sugar Creek floodplain and wet woods; 437; C = 1.

Equisetum fluviatile L.: water horsetail. Collected along "swampy creek" in 1928; abundance not given; (accession # 33166, Friesner Herbarium); C = 10.

Equisetum hyemale L. var. *affine* (Engelm.) A.A. Eaton: scouringrush horsetail. Abundant in all floodplains; frequent in wet ravines and seeps; 535; C = 2.

DIVISION PTERIDOPHYTA

(Ferns)

Aspleniaceae (Spleenwort Family)

Asplenium platyneuron (L.) Britton, Sterns & Poggenb.: ebony spleenwort. Infrequent in successional woods in the preserve; rare on bedrock along Sugar Creek; 422; 224; C = 3.

Asplenium rhizophyllum L.: walking fern. Frequent on damp rocks in ravines and on damp cliff sides; 8; C = 10.

Dennstaedtiaceae (Bracken Fern Family)

Dennstaedtia punctilobula (Michx.) T. Moore: eastern hayscented fern. Reported on rocky ledge in preserve and on hillsides on the south side of Sugar Creek (Test 1930); C = 10.

Dryopteridaceae (Wood Fern Family)

Athyrium filix-femina (L.) Roth ssp. *angustum* (Willd.) R.T. Clausen: subarctic ladyfern. Reported as infrequent in upland woods (Test 1930); C = 6.

Cystopteris bulbifera (L.) Bernh.: bulblet bladderfern. Frequent on moist cliffs of ravines and on cliff walls along Sugar Creek; 234; 132; C = 9.

Cystopteris fragilis (L.) Bernh.: brittle bladderfern. Reported as frequent in upland woods (Test 1930); possibly confused with *C. protrusa*.

Cystopteris protrusa (Weath.) Blasdell: lowland bladderfern. Abundant in mesic woods; 233; 96; C = 4.

Cystopteris tenuis (Michx.) Desv.: upland brittle bladderfern. Reported in preserve (Hellmich unpubl. data); C = 10.

Deparia acrostichoides (Sw.) M. Kato: silver false spleenwort. Frequent in the Sugar Creek floodplain and moist canyons; 627; C = 8.

Diplazium pycnocarpon (Spreng.) Broun: glade fern. Frequent along moist ravines and in the Sugar Creek floodplain; 253; C = 9.

Dryopteris goldiana (Hook. ex Goldie) A. Gray: Goldie's woodfern. Reported as infrequent in ravine bottoms of preserve (Test 1930); C = 9.

Dryopteris intermedia (Muhl. ex Willd.) A. Gray: intermediate woodfern. Abundant in mesic woods especially on slopes; 230; 6; C = 10.

Dryopteris marginalis (L.) A. Gray: marginal woodfern. Abundant in mesic woods especially on slopes; 5; C = 8.

Matteuccia struthiopteris (L.) Todaro: ostrich fern. Rare: single colony on low terrace bordering Sugar Creek; not collected; C = 9.

Onoclea sensibilis L.: sensitive fern. Rare in upland woods; 498; C = 4.

Polystichum acrostichoides (Michx.) Schott: Christmas fern. Abundant in woods; 4; C = 5.

Woodsia obtusa (Spreng.) Torr.: bluntlobe cliff fern. Reported as infrequent on dry cliffs and fallen rocks (Test 1930); C = 4.

Ophioglossaceae (Adder's-Tongue Family)

Botrychium biternatum (Sav.) Underw.: sparselobe grapefern. Reported in preserve (Hellmich unpubl. data); C = 4.

Botrychium dissectum Spreng.: cutleaf grapefern. Infrequent in wood edges and openings; 639; &; C = 3.

Botrychium virginianum (L.) Sw.: rattlesnake fern. Frequent in open woods; 107; C = 4.

Osmundaceae (Royal Fern Family)

Osmunda claytoniana L.: interrupted fern. Reported as infrequent (Test 1930); C = 8.

Polypodiaceae (Polypody Fern Family)

Polypodium virginianum L.: rock polypody. Infrequent—but sometimes in dense colonies—on shaded rock ledges and rocky ridge tops along Sugar and Sugar Mill Creeks and ravines; 9; C = 10.

Pteridaceae (Maidenhair Fern Family)

Adiantum pedatum L.: northern maidenhair. Frequent in mesic woods; 232; C = 7.

Pellaea atropurpurea (L.) Link: purple cliffbrake. Reported on cliffs along Turkey Run Creek and Sugar Creek (Test 1930; Swanson 1928); C = 10.

Pellaea glabella Mett. ex Kuhn ssp. *glabella*: smooth cliffbrake. Very rare on ledge of north bedrock bank of Sugar Creek near Narrows Road; 325; 198; &; C = 10.

Selaginellaceae (Spike-Moss Family)

Selaginella apoda (L.) Spring: meadow spikemoss. Reported in seeps northeast and northwest of pond (Test 1930; Ebinger & Bacone 1980); C = 4.

Selaginella rupestris (L.) Spring: northern selaginella. Reported as collected by Charles Deam in 1921 on sandstone rock along Sugar Creek near Narrows Road (Test 1930); C = 10.

Thelypteridaceae (Marsh Fern Family)

Phegopteris hexagonoptera (Michx.) Fée: broad beechfern. Infrequent in mesic woods; 723.1; 675.1; C = 7.

Thelypteris noveboracensis (L.) Nieuwl.: New York fern. Rare: small colony in upland woods between campground and Sugar Creek; 723; C = 5.

Thelypteris palustris Schott var. *pubescens* (G. Lawson) Fernald: eastern marsh fern. Rare: seep northeast of pond; 844.1; C = 7.

DIVISION CONIFEROPHYTA

(Gymnosperms)

Pinaceae (Pine Family)

Picea abies (L.) Karst.: Norway spruce. Plantings opposite the park entrance on SH 47; 785; +P.

Pinus resinosa Aiton: red pine. In several small pine plantations; 775; +P.

Pinus strobus L.: eastern white pine. Many new and old plantings throughout park and preserve; not collected; P; C = 5.

Tsuga canadensis (L.) Carrière: eastern hemlock. Abundant often in groves on ridge tops and slopes of Sugar Creek, Sugar Mill Creek, and Turkey Run Creek and adjacent ravines; 7; C = 10.

Taxaceae (Yew Family)

Taxus canadensis Marsh.: Canada yew. Rare, confined to high cliff ledges with hemlocks: along one canyon in preserve; on cliffs along Sugar Mill Creek; three small plants at single site along Turkey Run Creek; not collected; C = 10.

DIVISION MAGNOLIOPHYTA

(Angiosperms)

Acanthaceae (Acanthus Family)

Justicia americana (L.) Vahl: American water-willow. Rare: seep northwest of pond; 844; C = 6.

Ruellia strepens L.: limestone wild petunia. Rare: forest opening and open bedrock edges of Sugar Creek; 460; 327; C = 4.

Aceraceae (Maple Family)

Acer negundo L.: boxelder. Abundant in floodplains; infrequent in uplands; 245; 33; C = 1.

Acer nigrum Michx. f.: black maple. Reported in uplands bordering the Sugar Creek floodplain (Swanson 1928); C = 6.

Acer rubrum L.: red maple. Frequent in secondary woods in the preserve; infrequent on ridges and slopes in mature woods; 40; 521; C = 5.

Acer saccharinum L.: silver maple. Frequent along Sugar Creek; 252.1; 72; C = 1.

Acer saccharum Marsh.: sugar maple. Abundant in woods; 246; C = 6.

Acoraceae (Sweetflag Family)

Acorus calamus L.: calamus. Abundant in seep northeast of pond; 833; +.

Agavaceae (Agave Family)

Yucca filamentosa L.: Adam's needle. Rare: woods of two old developed sites; not collected; +P.

Alismataceae (Water-plantain Family)

Sagittaria latifolia Willd.: broadleaf arrowhead. Reported along Sugar Creek (Swanson 1928); C = 3.

Amaranthaceae (Amaranth Family)

Amaranthus blitoides S. Watson: mat amaranth. Rare: beach of Sugar Creek; 626; +.

Amaranthus retroflexus L.: redroot amaranth. Rare: field near Inn; 338; +P.

Amaranthus tuberculatus (Moq.) Sauer: roughfruit amaranth. Frequent along Sugar Creek; 614; 598; &; C = 1.

Anacardiaceae (Sumac Family)

Rhus aromatica Aiton var. *arenaria* (Greene) Fernald: fragrant sumac. Planted in two historic sites near Inn; 156; P; C = 10.

Toxicodendron radicans (L.) Kuntze ssp. *negundo* (Greene) Gillis: eastern poison ivy. Abundant in woods; 162; &; C = 1.

Toxicodendron vernix (L.) Kuntze: poison sumac. Collected in 1952 in northwest edge of preserve (accession # 95344, Friesner Herbarium); C = 10.

Annonaceae (Custard Apple Family)

Asimina triloba (L.) Dunal: pawpaw. Abundant in moist woods and ravine slopes; 145; C = 6.

Apiaceae (Carrot Family)

Chaerophyllum procumbens (L.) Crantz: spreading chervil. Infrequent in moist woods; 81; 77; C = 10.

Conium maculatum L.: poison hemlock. Abundant along paved roads; infrequent in sunny wood edges and openings; 188; +&.

Cryptotaenia canadensis (L.) DC.: Canadian honewort. Abundant in floodplains and moist woods; 225; C = 3.

Daucus carota L.: Queen Anne's lace. Frequent in open areas; 363; +.

Erigenia bulbosa (Michx.) Nutt.: harbinger of spring. Abundant in woods; 22; 10; C = 5.

Osmorhiza claytonii (Michx.) C.B. Clarke: Clayton's sweetroot. Frequent in woods; 100; C = 3.

Osmorhiza longistylis (Torr.) DC.: longstyle sweetroot. Infrequent to frequent in moist woods; 135; 142; &; C = 3.

Oxypolis rigidior (L.) Raf.: stiff cowbane. Frequent to abundant in seeps; 729; 509; C = 7.

Pastinaca sativa L.: wild parsnip. Infrequent along paved roads; 270; *.

Sanicula canadensis L.: Canadian blacksnakeroot. Infrequent in woods; 300; C = 2.

Sanicula odorata (Raf.) K.M. Pryer & L.R. Phillippe: clustered blacksnakeroot. Abundant in woods; 288; 123; &; C = 2.

Sanicula trifoliata E.P. Bicknell: largefruit blacksnakeroot. Infrequent in woods; 287; C = 8.

Taenidia integerrima (L.) Drude: yellow pimpernel. Rare: two small colonies on north ridge overlooking Sugar Creek; not collected; C = 7.

Thaspium barbinode (Michx.) Nutt.: hairyjoint meadowparsnip. Frequent in the floodplain and moist woods; 133; C = 7.

Thaspium trifoliatum (L.) A. Gray var. *aureum* (L.) Britton: purple meadowparsnip. Collected "in wet wooded sandstone cliff" in nature preserve in 1932 by Ray C. Friesner (accession # 10476, Friesner Herbarium); C = 5.

Zizia aurea (L.) W.D.J. Koch: golden zizia. Frequent in moist woods; 92; C = 7.

Apocynaceae (Dogbane Family)

Apocynum androsaemifolium L.: spreading dogbane. Rare: edge of woods near Inn; 828; &; C = 6.

Vinca minor L.: common periwinkle. Large colonies in woods of several developed sites and former homesites; 64; * &.

Araceae (Arum Family)

Arisaema dracontium (L.) Schott: green dragon. Rare: floodplain of Sugar Creek and Turkey Run Creek; not collected; C = 5.

Arisaema triphyllum (L.) Schott ssp. *triphyllum*: Jack in the pulpit. Frequent in mesic woods; 169; 50; &; C = 4.

Symplocarpus foetidus (L.) Salisb. ex Nutt.: skunk cabbage. Abundant in seeps; 24; 11; C = 8.

Araliaceae (Aralia Family)

Aralia racemosa L.: American spikenard. Rare: shaded ravine and two cliff slopes; 436; C = 8.

Panax quinquefolius L.: American ginseng. Rare: steep ravine slope and along Sugar Creek in preserve; not collected; C = 7.

Aristolochiaceae (Birthwort Family)

Aristolochia serpentaria L.: Virginia snakeroot. Rare along Turkey Run Creek north of SH 47; not collected; C = 8.

Asarum canadense L.: Canadian wildginger. Abundant on ravine slopes; 47; C = 5.

Asclepiadaceae (Milkweed Family)

Asclepias exaltata L.: poke milkweed. Rare: steep slope of Turkey Run Creek south of SH 47; not collected; C = 8.

Asclepias incarnata L. ssp. *incarnata*: swamp milkweed. Rare: Sugar Creek south floodplain; 623; C = 4.

Asclepias syriaca L.: common milkweed. Infrequent in open areas; 418; C = 1.

Asteraceae (Sunflower Family)

Achillea millefolium L.: common yarrow. Infrequent along lightly-wooded old road through preserve; rare along Narrows Road near Sugar Creek; 201; C = 0.

Ageratina altissima (L.) King & H. Rob. var. *altissima*: white snakeroot. Very abundant in wood edges; 388; C = 2.

Ambrosia artemisiifolia L. var. *elatior* (L.) Des-courtils: annual ragweed. Abundant along SH 47; frequent on the bedrock along Sugar Creek; 467; C = 0.

Ambrosia trifida L.: great ragweed. Frequent along roads; infrequent on the beaches of Sugar Creek; 528; C = 0.

Antennaria plantaginifolia (L.) Richardson: woman's tobacco. Frequent in forest openings on ridge tops; 128; C = 3.

Arctium minus Bernh.: lesser burdock. Frequent in unmowed developed sites; 453; +.

Arnoglossum atriplicifolium (L.) H. Rob.: pale Indian plantain. Rare: along Sugar Creek in the nature preserve; not collected; C = 6.

Artemisia annua L.: sweet sagewort. Rare: on a beach of Sugar Creek; 613; + &.

Bidens bipinnata L.: Spanish needles. Rare: along SH 47 and on a sunny bank of Sugar Creek; 462; C = 0.

Bidens cernua L.: nodding beggartick. Infrequent on the banks of Sugar Creek; rare in a deep canyon; 605; C = 2.

Bidens tripartita L.: threelobe beggarticks. Frequent on the banks of Sugar Creek and ravine bottoms; rare in upland forest openings; 606; 593; &; C = 2.

Bidens vulgata Greene: big devils beggartick. Reported in the Sugar Creek floodplain (Swanson 1928); C = 0.

Centaurea biebersteinii DC.: spotted knapweed. Rare: on bedrock along the north bank of Sugar Creek near Narrows Road; 724; * &.

Cichorium intybus L.: chicory. Infrequent along paved roads; 472; + &.

Cirsium altissimum (L.) Hill: tall thistle. Rare: in yard of Lusk Home north of Sugar Creek near Narrows Road; 586; C = 4.

Cirsium arvense (L.) Scop.: Canada thistle. Rare: colony along Turkey Run Creek near SH 47; 317.1; * &.

Cirsium muticum Michx.: swamp thistle. Rare: seep northeast of pond; 515; C = 8.

Cirsium vulgare (Savi) Ten.: bull thistle. Infrequent in open disturbed areas; 416; * &.

Conyza canadensis (L.) Cronquist var. *canadensis*: Canadian horseweed. Frequent in open fields; 473; &; C = 0.

Eclipta prostrata (L.) L.: false daisy. Rare: on a south beach of Sugar Creek at the suspension bridge; 720; 608; C = 3.

Erigeron annuus (L.) Pers.: eastern daisy fleabane. Frequent in open disturbed areas and wood edges; 239; C = 0.

Erigeron philadelphicus L.: Philadelphia fleabane. Frequent in moist open areas; 172; 140; C = 3.

Erigeron pulchellus Michx. var. *pulchellus*: robin's plantain. Rare: on a steep slope & ridge top above Sugar Creek in the preserve; not collected; &; C = 8.

Eupatorium maculatum L. var. *maculatum*: spotted joe pye weed. Abundant in seep northwest of pond; frequent in seep northeast of pond; 511; C = 5.

Eupatorium perfoliatum L. var. *perfoliatum*: common boneset. Frequent in seep northwest of pond; infrequent in the Sugar Creek south floodplain; 441; &; C = 4.

Eupatorium purpureum L.: sweetscented joe pye weed. Rare: along wooded lane southwest of Inn; 456.1; C = 5.

Eupatorium serotinum Michx.: lateflowering thoroughwort. Rare: open field near Inn; 551; C = 0.

Galinsoga quadriradiata Cav.: shaggy soldier. Rare: along Narrows Road near Sugar Creek; 392; 271; +&.

Helenium autumnale L. var. *autumnale*: common sneezeweed. Frequent in the Sugar Creek floodplain; 577; 557; &; C = 3.

Helianthus decapetalus L.: thinleaf sunflower. Infrequent along wood edges; 518; 479; C = 5.

Helianthus microcephalus Torr. & A. Gray: small woodland sunflower. Rare (three sites): on sunny ridge above Sugar Creek in preserve and in two wood edges in park; 421; C = 8.

Helianthus tuberosus L.: Jerusalem artichoke. Frequent in the Sugar Creek floodplain; 547; 533; C = 2.

Heliotropis helianthoides (L.) Sweet: smooth oxeye. Frequent in the Sugar Creek floodplain; infrequent along paved road east of the horse stables; 517; 506; C = 4.

Krigia biflora (Walter) S.F. Blake: twoflower dwarf dandelion. Rare: colonies on a slope and ridge top along the north side of Sugar Creek; not collected; C = 5.

Lactuca floridana (L.) Gaertn.: woodland lettuce. Frequent in open developed areas; 465; C = 5.

Leucanthemum vulgare Lam.: oxeye daisy. Abundant along SH 47; rare in woodland openings; 222; +.

Matricaria discoidea DC.: disc mayweed. Rare: on bedrock along the north bank of Sugar Creek near Narrows Road; 195; +&.

Oligoneuron riddellii (Frank ex Riddell) Rydb.: Riddell's goldenrod. Rare: seep northwest of pond; 727; C = 9.

Packera aurea (L.) A. Löve & D. Löve: golden ragwort. Rare: along Sugar Mill Creek and in seep northeast of the pond; 795; C = 4.

Packera glabella (Poir.) C. Jeffrey: butterweed. Infrequent in floodplains, moist ravines, moist open ground; 131; &; C = 0.

Packera obovata (Muhl. ex Willd.) W.A. Weber & A. Löve: roundleaf ragwort. Abundant in woods; 32; C = 7.

Packera paupercula (Michx.) A. Löve & D. Löve: balsam groundsel. Reported in seeps northwest and

northeast of the pond (Ebinger & Bacone 1980); C = 3.

Polymnia canadensis L.: whiteflower leafcup. Abundant in wood edges and openings; 269; C = 3.

Prenanthes altissima L.: tall rattlesnakeroot. Rare (three sites): along Sugar Creek and upland woods; 574; C = 5.

Rudbeckia fulgida Aiton var. *speciosa* (Wender.) Perdue: orange coneflower. Rare: seep northeast of the pond; 514; C = 8.

Rudbeckia hirta L. var. *pulcherrima* Farw.: black-eyed Susan. Rare: on the bedrock bank of Sugar Creek near Narrows Road; 376; &; C = 2.

Rudbeckia laciniata L. var. *laciniata*: cutleaf coneflower. Frequent in the Sugar Creek floodplain; 432; 428; &; C = 3.

Rudbeckia triloba L. var. *triloba*: browneyed Susan. Frequent in the Sugar Creek floodplain, and in forest openings and wood edges; 413; 382.1; &; C = 3.

Silphium perfoliatum L. var. *perfoliatum*: cup plant. Frequent in the Sugar Creek floodplain; 440; &; C = 4.

Solidago caesia L.: wreath goldenrod. Abundant in woods; 524; C = 7.

Solidago canadensis L. var. *canadensis*: Canada goldenrod. Collected in floodplain south of Sugar Creek; abundance throughout park not noted; 517.1; &; C = 0.

Solidago canadensis L. var. *hargerii* Fernald: Harger's goldenrod. Collected on a south ridgetop overlooking Sugar Creek; abundance throughout park not noted; 501; &; C = 0.

Solidago flexicaulis L.: zigzag goldenrod. Frequent in wooded areas; 566; 523; &; C = 6.

Solidago gigantea Aiton: giant goldenrod. Collected along SH 47; abundance throughout park not noted; 469; C = 4.

Solidago juncea Aiton: early goldenrod. Infrequent along Narrows Road; abundance throughout park not noted; 476; C = 3.

Solidago patula Muhl. ex Willd. var. *patula*: roundleaf goldenrod. Abundant in seep northeast of pond; 512; &; C = 8.

Solidago ulmifolia Muhl. ex Willd. var. *ulmifolia*: elmleaf goldenrod. Frequent in wood edges; 482; 455; &; C = 5.

Sonchus arvensis L.: field sowthistle. Infrequent along SH 47; 464; +&.

Sonchus arvensis L. ssp. *uliginosus* (M. Bieb.) Nyman: moist sowthistle. Rare: along SH 47; not collected; +&.

Sonchus asper (L.) Hill: spiny sowthistle. Infrequent along SH 47; 461; +&.

Symphotrichum lanceolatum (Willd.) G.L. Nesom ssp. *lanceolatum* var. *interior* (Wiegand) G.L. Nesom: white panicle aster. Collected on beech of Sugar Creek and in upland forest opening; abundance throughout park not noted; 581; 575; C = 3.

Symphotrichum lanceolatum (Willd.) G.L. Nesom ssp. *lanceolatum* var. *lanceolatum*: white panicle aster. Collected on north-facing cliffs of Sugar Creek near Narrows Road; abundance throughout park not noted; 589; &; C = 3.

Symphotrichum lanceolatum (Willd.) G.L. Nesom ssp. *lanceolatum* var. *latifolium* (Semple & Chmielewski) G.L. Nesom: white panicle aster. Collected on a beach of Sugar Creek; abundance throughout park not noted; 607; &; C = 3.

Symphotrichum lowrieianum (Porter) G.L. Nesom: Lowrie's blue wood aster. Frequent in woodlands; 632; 573; &; C = 5.

Symphotrichum novae-angliae (L.) G.L. Nesom: New England aster. Infrequent in seeps and on north bedrock bank of Sugar Creek near Narrows Road; 604; 587; C = 3.

Symphotrichum pilosum (Willd.) G.L. Nesom: hairy white oldfield aster. Collected in southeast border of park along paved road; abundance throughout park not noted; 579; C = 5.

Symphotrichum praealtum (Poir.) G.L. Nesom: willowleaf aster. Collected on the south beaches along Sugar Creek; abundance throughout park not noted; 543.1; 543; &; C = 6.

Symphotrichum puniceum (L.) A. Löve & D. Löve: purplestem aster. Rare (two sites): in seeps northeast and northwest of the pond; 603; C = 7.

Symphotrichum shortii (Lindl.) G.L. Nesom: Short's aster. Infrequent along wood edges; 585; C = 6.

Taraxacum officinale F.H. Wigg.: common dandelion. Abundant in all open areas; 43; +&.

Verbesina alternifolia (L.) Britton ex Kearney: wingstem. Abundant in floodplains; frequent in moist woods; 583; 444; C = 3.

Vernonia gigantea (Walter) Trel. ssp. *gigantea*: giant ironweed. Infrequent in forest openings and edges; 468; C = 2.

Xanthium strumarium L. var. *canadense* (Mill.) Torr. & A. Gray: Canada cocklebur. Infrequent on the beaches of Sugar Creek and Sugar Mill Creek; 556; &; C = 0.

Balsaminaceae (Impatiens Family)

Impatiens capensis Meerb.: jewelweed. Frequent in floodplains and moist woods; 439; C = 2.

Impatiens pallida Nutt.: pale touch-me-not. Abundant in floodplains and moist woods; not collected; C = 4.

Berberidaceae (Barberry Family)

Berberis thunbergii DC.: Japanese barberry. Infrequent in small scattered patches in woods throughout the park and preserve; 103; *&.

Caulophyllum thalictroides (L.) Michx.: blue cohosh. Rare (three sites): in two wet wooded areas and along Turkey Run Creek; 800; 791; C = 8.

Podophyllum peltatum L.: mayapple. Abundant in woods; 125; 94; C = 3.

Betulaceae (Birch Family)

Carpinus caroliniana Walter ssp. *virginiana* (Marsh.) Furlow: American hornbeam. Frequent in woods; 812; 571; C = 5.

Corylus americana Walter: American hazelnut. Rare (two sites): woods near former homesites in the preserve; not collected; C = 4.

Ostrya virginiana (Mill.) K. Koch: hophornbeam. Infrequent in woods; not collected; C = 5.

Bignoniaceae (Bignonia Family)

Campsis radicans (L.) Seem. ex Bureau: trumpet creeper. Infrequent along open roads and at wood edges of developed sites; rare on the bank of Sugar Creek; 617; C = 1.

Catalpa speciosa (Warder) Warder ex Engelm.: northern catalpa. Rare: along Turkey Run Creek south of SH 47; not collected; C = 0.

Boraginaceae (Borage Family)

Cynoglossum virginianum L. var. *virginianum*: wild comfrey. Rare: a colony on south-facing ridge top above Sugar Creek; not collected; &; C = 5.

Hackelia virginiana (L.) I.M. Johnst.: beggarslice. Rare: on shaded ravine slope; not collected; C = 0.

Mertensia virginica (L.) Pers. ex Link: Virginia bluebells. Abundant in floodplain; rare in mesic upland forest; 35; C = 6.

Myosotis stricta Link ex Roem. & Schult.: strict forget-me-not. Infrequent on mowed lawns; 692; +.

Brassicaceae (Mustard Family)

Alliaria petiolata (M. Bieb.) Cavara & Grande: garlic mustard. Abundant in floodplains, campground and horsetrails; frequent in disturbed upland areas; 75; *&.

Arabis hirsuta (L.) Scop. var. *pyncocarpa* (M. Hopkins) Rollins: creamflower rockcress. Rare: on bedrock along the north bank of Sugar Creek near Narrows Road; 196; C = 5.

Arabis laevigata (Muhl. ex Willd.) Poir.: smooth rockcress. Infrequent on forest ridge tops, steep ravine slopes and cliffs; 90; 80; C = 5.

Barbarea vulgaris W.T. Aiton: garden yellowrocket. Frequent in open developed areas and old fields; infrequent in forest openings; 66; +&.

Brassica nigra (L.) W.D.J. Koch: black mustard. Infrequent in the Sugar Creek floodplain; 559.1; 433; +.

Capsella bursa-pastoris (L.) Medik.: shepherd's purse. Rare on lawn of picnic area; 57; +.

Cardamine bulbosa (Schreb. ex Muhl.) Britton, Sterns & Poggenb.: bulbous bittercress. Infrequent in seeps north and northeast of pond; rare in a wet ravine bottom; 88; C = 4.

Cardamine concatenata (Michx.) Sw.: cutleaf toothwort. Abundant in woods; 14; C = 4.

Cardamine douglassii Britton: limestone bittercress. Abundant in moist woods; 15; C = 5.

Cardamine hirsuta L.: hairy bittercress. Rare: on lawn of picnic area and along an open trail; 54; +&.

Cardamine parviflora L. var. *arenicola* (Britton) O.E. Schulz: sand bittercress. Rare in wet ravine bottom; not collected; C = 2.

Cardamine pensylvanica Muhl. ex Willd.: Pennsylvania bittercress. Infrequent in wet ravine bottoms; 167; 152; &; C = 2.

Draba verna L.: spring draba. Infrequent on lawns; 56; +&.

Hesperis matronalis L.: dames rocket. Rare in the Sugar Creek south floodplain; 804; *&.

Iodanthus pinatifidus (Michx.) Steud.: purple-rocket. Infrequent in the Sugar Creek south floodplain; 219; 236; C = 6.

Lepidium virginicum L. var. *virginicum*: Virginia pepperweed. Rare on bedrock along Sugar Creek on the northeast side of bridge at Narrows Road; 197; &; C = 0.

Nasturtium officinale W.T. Aiton: watercress. Frequent in seeps north and northeast of ponds; 228; 221; +.

Rorippa palustris (L.) Besser ssp. *fernaldiana* (Butters & Abbe) Jonsell: Fernald's yellowcress. Rare on the south beach of Sugar Creek near Narrows Road; 218; C = 2.

Rorippa sylvestris (L.) Besser: creeping yellowcress. Frequent on the beaches of Sugar Creek; rare in low wet area near the suspension bridge; 540; 203; +.

Sisymbrium officinale (L.) Scop.: hedgemustard. Infrequent along Narrows Road north of SH 47; 838; 393; +.

Thlaspi arvense L.: field pennycress. Observed in abundance at two sites: open disturbed ground and in a wooded picnic area; 68; +&.

Campanulaceae (Bellflower Family)

Campanulastrum americanum (L.) Small: American bellflower. Abundant in forest borders and openings; 361; C = 4.

Lobelia inflata L.: Indian-tobacco. Infrequent in woods; 456; C = 3.

Lobelia siphilitica L. var. *siphilitica*: great blue lobelia. Frequent in floodplains, wet ravine bottoms and seeps; 496; &; C = 3.

Capparaceae (Caper Family)

Polanisia dodecandra (L.) DC. ssp. *dodecandra*: redwhisker clammyweed. Rare on beach of Sugar Creek; 542; C = 1.

Caprifoliaceae (Honeysuckle Family)

Lonicera japonica Thunb.: Japanese honeysuckle. Infrequent in secondary woods and wood edges; 295; *&.

Lonicera morrowii A. Gray: Morrow's honeysuckle. Very abundant throughout the park and preserve, especially in successional woods; 679; 85; *&.

Sambucus nigra L. ssp. *canadensis* (L.) R. Bolli: American black elderberry. Infrequent in floodplains and mesic woods; 346; C = 2.

Viburnum acerifolium L.: mapleleaf viburnum. Frequent in mature upland forest; rare in wooded floodplains and ravines; 215; 159; C = 8.

Viburnum dentatum L. var. *lucidum* Ait.: southern arrowwood. Infrequent as plantings at wood edges; 223; P; C = 6.

Viburnum lentago L.: nannyberry. Reported in the Sugar Creek floodplain (Swanson 1928); C = 5.

Viburnum opulus L. var. *opulus*: European cranberrybush. Rare in edges and openings of woods; 633.1; 500; *&.

Viburnum prunifolium L.: blackhaw. Frequent in moist woods and seeps; rare in dry upland woods; 279; 86; C = 4.

Caryophyllaceae (Pink Family)

Cerastium fontanum Baumg. ssp. *vulgare* (Hartm.) Greuter & Burdet: big chickweed. Rare: thick mat on lawn near parking lot; 83; +.

Dianthus armeria L.: Deptford pink. Infrequent in open disturbed areas and wood edges; 331; +&.

Myosoton aquaticum (L.) Moench: giantchickweed. Rare on the south banks of Sugar Creek; 449; +&.

Saponaria officinalis L.: bouncingbet. Rare near the sunny bedrock of Sugar Creek and along the wood edge of a lawn; 370; 484; +.

Silene nivea (Nutt.) Muhl. ex Otth: evening campion. Rare in the Sugar Creek south floodplain near the suspension bridge; 345; C = 7.

Silene stellata (L.) W.T. Aiton: widowsfrill. Infrequent in open woods and edges; 364; C = 5.

Silene virginica L.: fire pink. Infrequent on wooded slopes and ridge tops; 97; C = 7.

Stellaria longifolia Muhl. ex Willd.: longleaf starwort. Rare on the beach of Sugar Creek near Narrows Road; 217; C = 7.

Stellaria media (L.) Vill.: common chickweed. Abundant in the Sugar Creek floodplain and moist ravines; frequent in woodland openings; 52; *.

Celastraceae (Bittersweet Family)

Celastrus orbiculatus Thunb.: Oriental bittersweet. Rare in wood edges near developed sites; 637; 2; *&.

Celastrus scandens L.: American bittersweet. Rare: on ravine slope near Sugar Mill Creek and along SH 47; not collected; C = 2.

Euonymus alatus (Thunb.) Siebold: burningbush. Infrequent in woody developed sites; 355; *&.

Euonymus atropurpureus Jacq.: burningbush. Infrequent in open woods and edges; 257; 410; C = 5.

Euonymus europaeus L.: European spindle tree. Rare in wood edge near the Inn; 889; 942; +P.

Euonymus fortunei (Turcz.) Hand.-Maz.: winter creeper. Large to small patches in woods and wood edges of several current and former developed sites; not collected; *&.

Euonymus obovatus Nutt.: running strawberry bush. Infrequent in woods; 616; C = 7.

Chenopodiaceae (Goosefoot Family)

Chenopodium album L.: lambsquarters. Frequent along SH 47 and in the Sugar Creek floodplain; 529; +.

Chenopodium ambrosioides L.: Mexican tea. Infrequent on the beaches of Sugar Creek; 591; +.

Clusiaceae (St. John's-wort Family)

Hypericum punctatum Lam.: spotted St. John's-wort. Rare: on bedrock along the south bank of Sugar Creek near Narrows Road; 853; C = 3.

Commelinaceae (Spiderwort Family)

Commelina communis L.: Asiatic dayflower. Frequent in the Sugar Creek floodplain; infrequent along SH 47; 520; +.

Tradescantia subaspera Ker Gawl. var. *subaspera*: zigzag spiderwort. Abundant in floodplains and moist woods; 309; C = 4.

Convolvulaceae (Morning Glory Family)

Calystegia sepium (L.) R. Br.: hedge false bindweed. Infrequent along paved roads and in the Sugar Creek south floodplain; 480; &; C = 1.

Convolvulus arvensis L.: field bindweed. Rare: along road to service area; 826; +&.

Ipomoea pandurata (L.) G. Mey.: man of the earth. Rare: along Sugar Creek near Narrows Road; 485; C = 3.

Cornaceae (Dogwood Family)

Cornus alternifolia L. f.: alternateleaf dogwood. Infrequent in the Sugar Creek floodplain and wide wet ravines; rare in wooded picnic area; 359; 166; C = 8.

Cornus amomum Mill.: silky dogwood. Reported in the upper floodplain of Sugar Creek (Swanson 1928); C = 10.

Cornus drummondii C.A. Mey.: roughleaf dogwood. Frequent in wood edges; 477; 318; &; C = 2.

Cornus florida L.: flowering dogwood. Frequent in open woods; 150; 65; C = 4.

Nyssa sylvatica Marsh.: blackgum. Infrequent in upland forests especially on ridges and steep slopes; 920; 634; C = 5.

Crassulaceae (Stonecrop Family)

Penthorum sedoides L.: ditch stonecrop. Infrequent in the Sugar Creek south floodplain; 594; 397; C = 2.

Sedum sarmentosum Bunge: stringy stonecrop. Rare: on unmowed lawn near Narrows Road; 695; +&.

Sedum ternatum Michx.: woodland stonecrop. Infrequent on damp rock ledges and fallen rocks; rare on steep wooded slopes; 168; C = 8.

Cucurbitaceae (Gourd Family)

Sicyos angulatus L.: oneseed bur cucumber. Infrequent along Sugar Creek; rare along paved road east of the horse stables; 635; 564; C = 3.

Cupressaceae (Cypress Family)

Juniperus virginiana L. var. *virginiana*: eastern red cedar. Frequent in forest openings or former clearings; 199; 200; C = 2.

Thuja occidentalis L.: arborvitae. Rare planting in former gravel pit near Sugar Mill Creek; P; C = 10.

Cuscutaceae (Dodder Family)

Cuscuta gronovii Willd. ex Schult.: scaldweed. Frequent along the beaches of Sugar Creek; 532; C = 2.

Cuscuta pentagona Engelm. var. *pentagona*: five-angled dodder. Frequent in seep northeast of pond; 513; C = 5.

Cuscuta sp.: dodder. This genus is frequent on the banks and beaches of Sugar Creek and in wet ravines throughout the park; (the distribution throughout the park applies to the genus only because of the difficulty of determining species during field observations alone).

Cyperaceae (Sedge Family)

Carex albursina Sheldon: white bear sedge. In mesic woods; abundance throughout park not noted; 675; C = 7.

Carex communis L.H. Bailey: fibrousroot sedge. In mesic woods; abundance throughout park not noted; 669; C = 8.

Carex hystericina Muhl. ex Willd.: bottlebrush sedge. In seep northwest of pond; abundance throughout park not noted; 841; C = 5.

Carex jamesii Schwein.: James' sedge. In mesic woods; abundance throughout park not noted; 323; C = 4.

Carex laxiflora Lam.: broad looseflower sedge. In mesic woods; abundance not noted; 675.5; C = 7.

Carex pensylvanica Lam.: Pennsylvania sedge. In mesic woods; abundance throughout park not noted; 669.1; C = 5.

Carex plantaginea Lam.: plantainleaf sedge. Abundant in woods especially on south- and west-facing slopes; 36; 16; C = 10.

Ebenaceae (Ebony Family)

Diospyros virginiana L.: common persimmon. Plantings near Inn and in old field in preserve along abandoned Robbins Road; 919; P; C = 2.

Elaeagnaceae (Oleaster Family)

Elaeagnus umbellata Thunb.: autumn olive. Very abundant in old fields in preserve along abandoned Robbins Road; frequent along SH 47 and near developed sites; 466; 153; *&.

Euphorbiaceae (Euphorbia Family)

Acalypha deamii (Weath.) H.E. Ahles: Deam's threeseed mercury. Reported in preserve (Hellmich unpubl. data); C = 5.

Acalypha rhomboidea Raf.: common threeseed mercury. Infrequent in the Sugar Creek floodplain; 606.1; 562; C = 0.

Acalypha virginica L.: Virginia threeseed mercury. Reported in Sugar Creek floodplain (Swanson 1928); C = 0.

Euphorbia commutata Engelm. ex A. Gray: tinted woodland spurge. Collected in 1919 by P.A. Young (R. Dolan unpubl. data); C = 5.

Euphorbia corollata L.: flowering spurge. Rare on steep slope northeast of the suspension bridge at Sugar Creek; not collected; C = 4.

Euphorbia dentata Michx.: toothed spurge. Rare on north bedrock bank of Sugar Creek near Narrows Road; 486; +.

Fabaceae (Pea Family)

Amphicarpaea bracteata (L.) Fernald: American hogpeanut. Abundant in wooded areas; 519; 507; C = 5.

Apios americana Medik.: groundnut. Rare (two sites); on bank of Sugar Creek at south side of the suspension bridge and in seep northeast of pond; 516; C = 3.

Cercis canadensis L.: eastern redbud. Frequent in wood edges; 185; 63; C = 3.

Coronilla varia L.: purple crownvetch. Rare along Sugar Creek and Turkey Run Creek; 317; *&.

Desmodium canescens (L.) DC.: hoary ticktrefoil. Rare on bank and ridgetop above Sugar Creek; 483; &; C = 3.

Desmodium glutinosum (Muhl. ex Willd.) Alph. Wood: pointedleaf ticktrefoil. Infrequent along wooded roads and paths; 360; C = 6.

Desmodium nudiflorum (L.) DC.: nakedflower ticktrefoil. Infrequent in woods; 409; C = 5.

Desmodium paniculatum (L.) DC.: panicleleaf ticktrefoil. Infrequent in wood edges; 505; 504; C = 2.

Gleditsia triacanthos L.: honeylocust. Infrequent to frequent in moist woods; 622; 621; C = 1.

Gymnocladus dioica (L.) K. Koch: Kentucky coffeetree. Infrequent in floodplains and moist woods; 252; C = 4.

Lathyrus palustris L.: marsh pea. Rare: seep northwest of the pond; 838.2; &; C = 7.

Lespedeza violacea (L.) Pers.: violet lespedeza. Rare in preserve along Sugar Creek; not collected; C = 5.

Medicago lupulina L.: black medick. Infrequent along SH 47; rare on sunny slope along Sugar Creek in preserve; 475; +.

Melilotus officinalis (L.) Lam.: yellow sweetclover. Infrequent on lawns and at sunny edges of woods; 280; *.

Orbexilum onobrychis (Nutt.) Rydb.: French-grass. Collected on wet wooded sandstone cliff in preserve in 1932 by Ray C. Friesner (accession # 10476, Friesner Herbarium); C = 4.

Robinia pseudoacacia L.: black locust. Frequent to abundant in secondary woods; 175; C = 1.

Senna hebecarpa (Fernald) Irwin & Barneby: American senna. Rare: a colony in seep northwest of pond; 427; C = 4.

Senna marilandica (L.) Link: Maryland senna. Reported as rare in seep northwest of pond (Ebinger & Bacone 1980); C = 4.

Trifolium campestre Schreb.: field clover. Rare along SH 47 near Narrows Road; 471; +.

Trifolium dubium Sibth.: suckling clover. Rare on lawn at Lusk Home near Narrows Road and on north bedrock bank of Sugar Creek below the Home; 197.1; 183; +&.

Trifolium pratense L.: red clover. Abundant along roads, on lawns, and in fields; 192; +&.

Trifolium repens L.: white clover. Abundant along roads, on lawns, and in fields; 187; *&.

Wisteria sp.: wisteria. Rare in secondary woods at old developed site near SH 47; possibly planted; species not determined due to lack of flowers or fruits; 595; 458; P.

Fagaceae (Beech Family)

Fagus grandifolia Ehrh.: American beech. Abundant in woods; 244; C = 8.

Quercus alba L.: white oak. Abundant in woods; 251; C = 5.

Quercus muehlenbergii Engelm.: chinkapin oak. Frequent in woods; 621.1; 568; C = 4.

Quercus rubra L.: northern red oak. Abundant in woods; 278; C = 4.

Quercus velutina Lam.: black oak. Abundant in upland woods; 629; 73; C = 4.

Fumariaceae (Fumitory Family)

Corydalis flavula (Raf.) DC.: yellow fumewort. Infrequent in the floodplain of Sugar Mill Creek and in damp woods; 53; C = 3.

Dicentra canadensis (Goldie) Walp.: squirrel corn. Frequent in mesic woods especially on slopes; 46; C = 7.

Dicentra cucullaria (L.) Bernh.: Dutchman's breeches. Abundant in mesic woods especially on slopes; 27; C = 6.

Gentianaceae (Gentian Family)

Gentiana andrewsii Griseb. var. *andrewsii*: closed bottle gentian. Rare: seep northwest of pond and on shaded, north-facing cliff along Sugar Creek near Narrows Road; 590; 601; &; C = 4.

Geraniaceae (Geranium Family)

Geranium maculatum L.: spotted geranium. Frequent in woods; 99; C = 4.

Grossulariaceae (Currant Family)

Ribes cynosbati L.: eastern prickly gooseberry. Frequent in moist woods and wood edges; 89; C = 4.

Ribes missouriense Nutt.: Missouri gooseberry. Reported in preserve (Hellmich unpubl. data); C = 3.

Hamamelidaceae (Witch Hazel Family)

Hamamelis virginiana L.: American witchhazel. Infrequent on steep wooded slopes and ravine edges; 328; 147; C = 5.

Liquidambar styraciflua L.: sweetgum. Persistent plantings in secondary woods in preserve; many plantings along parking lots; C = 4.

Hippocastanaceae (Horse-Chestnut Family)

Aesculus flava Aiton: yellow buckeye. Reported in preserve (Hellmich unpubl. data); C = 10.

Aesculus glabra Willd.: Ohio buckeye. Frequent in the Sugar Creek floodplain and wet ravines; rare in mesic upland woods; 130; C = 5.

Hydrangeaceae (Hydrangea Family)

Hydrangea arborescens L.: wild hydrangea. Frequent on wooded slopes; 274; C = 7.

Philadelphus coronarius L.: sweet mock orange. Infrequent to rare in woods near developed areas; 292; 454; +&.

Hydrophyllaceae (Waterleaf Family)

Hydrophyllum appendiculatum Michx.: great waterleaf. Frequent in woods; 117; C = 6.

Hydrophyllum canadense L.: bluntleaf waterleaf. Frequent in woods; 891.1; 262; C = 8.

Hydrophyllum macrophyllum Nutt.: largeleaf waterleaf. Frequent in woods; 888; 238; &; C = 7.

Hydrophyllum virginianum L.: eastern waterleaf. Reported as infrequent in the Sugar Creek floodplain (Swanson 1928); C = 4.

Phacelia bipinnatifida Michx.: fernleaf phacelia. Abundant in mesic woods; 76; 117.1; C = 6.

Phacelia purshii Buckley: Miami mist. Infrequent in floodplains and moist woods; 136; C = 3.

Iridaceae (Iris Family)

Iris germanica L.: German iris. Small persistent planting in former developed site along SH 47; 811; +P.

Sisyrinchium albidum Raf.: white blue-eyed grass. Reported in the Sugar Creek floodplain (Swanson 1928); C = 4.

Sisyrinchium angustifolium Mill.: narrowleaf blue-eyed grass. Rare along wooded roads and woodland openings; 208; C = 3.

Juglandaceae (Walnut Family)

Carya cordiformis (Wangenh.) K. Koch: bitternut hickory. Frequent in woods; 391; 324; C = 5.

Carya glabra (Mill.) Sweet: pignut hickory. Infrequent in woods; not collected; C = 4.

Carya ovata (Mill.) K. Koch: shagbark hickory. Frequent in woods; 272; C = 4.

Juglans cinerea L.: butternut. Reported in forests just above the Sugar Creek floodplain (Swanson 1928); C = 5.

Juglans nigra L.: black walnut. Frequent in floodplains; infrequent in moist upland woods; 250; C = 2.

Lamiaceae (Mint Family)

Agastache nepetoides (L.) Kuntze: yellow giant hyssop. Rare along paved road east of the horse stables; 508; C = 4.

Blephilia hirsuta (Pursh) Benth.: hairy pagoda-plant. Frequent in the Sugar Creek floodplain; infrequent in mesic woods; 442; 394; C = 5.

Collinsonia canadensis L.: richweed. Frequent in floodplains and ravine bottoms; infrequent in the upland forest; 452.1; C = 8.

Glechoma hederacea L.: ground ivy. Frequent in floodplains and wood edges; 51; *.

Lamium amplexicaule L.: henbit deadnettle. Infrequent in moist wood edges and on lawns; 55; +&.

Lamium purpureum L.: purple deadnettle. Frequent in secondary woods and on lawns at wood edges; 19; +&.

Lycopus americanus Muhl. ex W. Bartram: American waterhorehound. Infrequent on moist cliffs and steep slopes near south side of Sugar Creek; 722; 555; C = 3.

Lycopus virginicus L.: Virginia water horehound. Reported as infrequent in seep northeast of pond (Ebinger & Bacone 1980); C = 5.

Mentha × *piperita* L. (pro sp.): peppermint. Reported as rare in seep northwest of pond (Ebinger & Bacone 1980); collected in 1929 by R.F. Daubemire (accession # 4529, Friesner Herbarium); +.

Monarda fistulosa L. ssp. *fistulosa* var. *fistulosa*: wild bergamot. Frequent in the floodplains; 344; &; C = 3.

Physostegia virginiana (L.) Benth.: obedient plant. Reported in the Sugar Creek floodplain (Swanson 1928); C = 5.

Prunella vulgaris L. ssp. *lanceolata* (W. Bartram) Hultén: lance selfheal. Frequent in the Sugar Creek floodplain; infrequent in upland wood edges; 447; 399; C = 1.

Pycnanthemum virginianum (L.) T. Dur. & B.D. Jacks. ex B.L. Rob. & Fernald: Virginia mountain-mint. Rare on bedrock along Sugar Creek near Narrows Road; 425; &; C = 5.

Scutellaria lateriflora L.: blue skullcap. Rare in deep wet canyon and in seep northeast of pond; 510; 492; C = 4.

Scutellaria ovata Hill ssp. *ovata*: heartleaf skullcap. Rare on north ridge of pond and on north ridge along Sugar Creek; 387; &; C = 7.

Stachys tenuifolia Willd.: smooth hedgenettle. Infrequent in the Sugar Creek floodplain; 348; 395; C = 4.

Synandra hispidula (Michx.) Britton: Guyandotte beauty. Rare along Turkey Run Creek north of SH 47; not collected; C = 5.

Teucrium canadense L. var. *canadense*: Canada germander. Infrequent along wood edges, ravine bottoms, and in the Sugar Creek floodplain; 852; 367; C = 3.

Lauraceae (Laurel Family)

Lindera benzoin (L.) Blume: northern spicebush. Abundant in moist woods; 247; 23; C = 5.

Sassafras albidum (Nutt.) Nees: sassafras. Abundant in woods and wood edges; 74; 180; C = 1.

Liliaceae (Lily Family)

Allium burdickii (Hanes) A.G. Jones: narrowleaf wild leek. Infrequent in scattered colonies especially on wooded ridges and ravine slopes; 304; &; C = 6.

Allium canadense L.: meadow garlic. Frequent in openings in wooded floodplains; 790; C = 1.

Allium cernuum Roth: nodding onion. Rare on the bedrock along Sugar Creek near Narrows Road; 423; 371; C = 4.

Allium tricoccum Aiton: ramp. Reported in preserve (Hellmich unpubl. data); C = 7.

Allium vineale L.: wild garlic. Frequent in sunny areas along Turkey Run and Sugar Mill Creeks and at the edges of secondary woods; 789; 776; +&.

Camassia scilloides (Raf.) Cory: Atlantic camas. Rare: seep northeast of the pond; 109; C = 5.

Erythronium albidum Nutt.: white fawnlily. Reported as frequent in the Sugar Creek floodplain (Swanson 1928); C = 3.

Erythronium americanum Ker Gawl.: dogtooth violet. Abundant in woods; 29; C = 5.

Hemerocallis fulva (L.) L.: orange daylily. Infrequent but often in dense colonies in wood edge of developed areas, open edges of creeks and within a former developed site; 827; *.

Hosta ventricosa (Salisb.) Stearn: blue plantain lily. Rare at a former yard in secondary woods near SH 47; 614.1; +P.

Maianthemum racemosum (L.) Link ssp. *racemosum*: feathery false lily of the valley. Frequent in mesic woods; 157; C = 4.

Maianthemum stellatum (L.) Link: starry false lily of the valley. Rare in floodplain of Sugar Creek and Sugar Mill Creek; 113; C = 6.

Medeola virginiana L.: Indian cucumber. Rare in two mesic wood sites; 721; C = 7.

Narcissus pseudonarcissus L.: daffodil. Infrequent in secondary woods of former developed sites and along Sugar Creek; 34; +&.

Ornithogalum umbellatum L.: sleepydick. Infrequent along wood edges; 181; *&.

Polygonatum biflorum (Walter) Elliot var. *commutatum* (Schult. & Schult. f.) Morong: smooth Solomon's seal. Rare: north bedrock bank of Sugar Creek near Narrows Road; and mesic woods near pond; 488; C = 4.

Polygonatum pubescens (Willd.) Pursh: hairy Solomon's seal. Frequent in woods; 326; 98; C = 8.

Trillium flexipes Raf.: nodding wakerobin. Infrequent in mesic woods especially on slopes; 78; &; C = 5.

Trillium grandiflorum (Michx.) Salisb.: white trillium. Reported in preserve (Hellmich unpubl. data); C = 8.

Trillium nivale Riddell: snow trillium. Infrequent on forest ridges and steep slopes; 20; C = 8.

Trillium recurvatum Beck: bloody butcher. Infrequent to frequent in mesic woods; 108; C = 4.

Trillium sessile L.: toadshade. Abundant in mesic woods; 31; C = 4.

Uvularia grandiflora Sm.: largeflower bellwort. Infrequent on slopes and ravines in mesic woods; 48; C = 7.

Veratrum woodii J.W. Robbins ex Alph. Wood: Wood's bunchflower. Rare (three sites): small colonies in upland woods; 810; C = 7.

Limnanthaceae (Meadow-Foam Family)

Floerkea proserpinacoides Willd.: false mermaid-weed. Rare: colony on hillside in moist woods; 674; C = 5.

Magnoliaceae (Magnolia Family)

Liriodendron tulipifera L.: tuliptree. Abundant in woods; 212; C = 4.

Malvaceae (Mallow Family)

Abutilon theophrasti Medik.: velvetleaf. Rare: one stunted plant on gravel shore of Sugar Creek; 550; +.

Menispermaceae (Moonseed Family)

Menispermum canadense L.: common moonseed. Infrequent in wood edges and openings; 191; C = 3.

Molluginaceae (Carpet-Weed Family)

Mollugo verticillata L.: green carpetweed. Collected in 1929 by Rexford F. Daubenmire (accession # 4524, Friesner Herbarium); +.

Monotropaceae (Indian Pipe Family)

Monotropa uniflora L.: Indianpipe. Encountered large populations within two hemlock groves; 298; C = 7.

Moraceae (Mulberry Family)

Maclura pomifera (Raf.) C.K. Schneid.: osage orange. About 30 large, old trees in a row northeast of the Inn; 263; +P.

Morus alba L.: white mulberry. Infrequent in wood edges especially in developed sites; 265; 206; *.

Morus rubra L.: red mulberry. Infrequent in wood edges and openings; 570; 419; C = 4.

Oleaceae (Olive Family)

Forsythia × *intermedia* Zabel: showy forsythia. Rare: plantings at wood edge of parking lot near Inn; 39; +P.

Fraxinus americana L.: white ash. Abundant in woods; 258; 176; C = 4.

Fraxinus nigra Marsh.: black ash. Infrequent along Turkey Run Creek; 631; C = 7.

Fraxinus pennsylvanica Marsh.: green ash. Infrequent along Turkey Run Creek; 630; 259; C = 3.

Fraxinus quadrangulata Michx.: blue ash. Infrequent to frequent in moist woods and floodplains; 625; 93; C = 7.

Ligustrum obtusifolium Siebold & Zucc.: border privet. Very abundant in woods south of Sugar Creek near Narrows Road; frequent in secondary wood edges and openings; 220; 1; *&.

Onagraceae (Evening Primrose Family)

Circaea lutetiana L. ssp. *canadensis* (L.) Asch. & Magnus: broadleaf enchanter's nightshade. Frequent in woods; 354; 337; C = 2.

Oenothera biennis L.: common evening primrose. Infrequent in sunny wood edges; 503; &; C = 0.

Orchidaceae (Orchid Family)

Aplectrum hyemale (Muhl. ex Willd.) Torr.: Adam and Eve. Infrequent in scattered colonies in woods; 207; C = 7.

Cypripedium pubescens Willd.: greater yellow lady's slipper. Rare (two sites): in oak woods north of Sugar Creek near Narrows Road; not collected; C = 8.

Galearis spectabilis (L.) Raf.: showy orchid. Rare (one site): north-facing ridge above Sugar Creek; not collected; C = 7.

Liparis liliifolia (L.) Rich. ex Ker Gawl.: brown widelip orchid. Rare (one site): woodland opening north of Sugar Creek near Narrows Road; not collected; C = 3.

Liparis loeselii (L.) Rich.: yellow widelip orchid. Reported as rare in seep northeast of the pond (Ebinger & Bacone 1980); C = 4.

Spiranthes lucida (H.H. Eaton) Ames: shining lady's tresses. Reported as infrequent in seep

northwest of the pond (Ebinger & Bacone 1980); C = 10.

Spiranthes ovalis Lindl. var. *erostellata* Catling: October lady's tresses. Rare (one site): opening in woods north of Sugar Creek near Narrows Road; not collected; &; C = 3.

Triphora trianthophora (Sw.) Rydb.: threebirds. Rare (one site): small colony in upland woods between campground and Sugar Creek; 489; C = 9.

Orobanchaceae (Broom-Rape Family)

Conopholis americana (L.) Wallr.: American cancer-root. Frequent beneath oaks in woods; 299; 297; C = 8.

Epifagus virginiana (L.) W. Bartram: beechdrops. Infrequent beneath beeches in woods near hemlock groves; 638; C = 8.

Oxalidaceae (Oxalis Family)

Oxalis corniculata L.: creeping woodsorrel. Reported as infrequent in Sugar Creek floodplain (Swanson 1928); +.

Oxalis stricta L.: common yellow oxalis. Very abundant on lawns and in edges and openings of woods; 182; C = 0.

Oxalis violacea L.: violet woodsorrel. Rare on steep wooded slopes and ridge tops; 127; 104; C = 7.

Papaveraceae (Poppy Family)

Sanguinaria canadensis L.: bloodroot. Abundant in woods especially on slopes and ridges; 21; C = 5.

Stylophorum diphyllum (Michx.) Nutt.: celandine poppy. Frequent on wooded hillsides and ravine bottoms; 42; C = 7.

Passifloraceae (Passionflower Family)

Passiflora lutea L.: yellow passionflower. Collected along Sugar Creek just below "Old Mill Site" in 1941 by Ray C. Friesner (accession # 54364, Friesner Herbarium); C = 7.

Phytolaccaceae (Pokeweed Family)

Phytolacca americana L.: American pokeweed. Infrequent but widespread in forest openings; 340; C = 0.

Plantaginaceae (Plantain Family)

Plantago lanceolata L.: narrowleaf plantain. Infrequent along roadsides, on lawns, and in sunny woodland openings; 335; 202; +.

Plantago rugelii Decne.: blackseed plantain. Abundant along roads, on lawns, and in sunny woodland openings; 352; C = 0.

Platanaceae (Plane-Tree Family)

Platanus occidentalis L.: American sycamore. Abundant in floodplains; frequent in wide wet

ravines; infrequent to rare in upland mesic woods; 252.2; C = 3.

Poaceae (Grass Family)

Brachyelytrum erectum (Schreb. ex Spreng.) P. Beauv.: bearded shorthusk. Found at edge of a hemlock grove just north of SH 47; abundance throughout park not noted; 596; C = 6.

Chasmanthium latifolium (Michx.) Yates: Indian woodoats. Found on the north bedrock bank of Sugar Creek at Narrows Road; abundance throughout park not noted; 597; C = 4.

Dactylis glomerata L.: orchardgrass. Found along Narrows Road from Sugar Creek to SH 47; abundance throughout park not noted; 805; +.

Dichanthelium clandestinum (L.) Gould: deer-tongue. Found on forest ridge tops; abundance throughout park not noted; 819; C = 3.

Elymus hystrix L.: eastern bottlebrush grass. Found in wood edges; abundance throughout park not noted; 814; 806; C = 5.

Elymus virginicus L.: Virginia wildrye. Found in woodland edge; abundance throughout park not noted; 813; &; C = 3.

Leersia virginica Willd.: whitegrass. Found on upper bank of Sugar Creek; abundance throughout park not noted; 576; C = 4.

Microstegium vimineum (Trin.) A. Camus: Nepalese browntop. Small patches found in 20 sites in the Sugar Creek floodplain; 563; 584; *&.

Phragmites australis (Cav.) Trin. ex Steud.: common reed. Rare in the floodplain of Sugar Mill Creek; 782; *&.

Poa nemoralis L.: wood bluegrass. Found along Narrows Road; abundance in the park not noted; 809; 809.1; +&.

Polemoniaceae (Phlox Family)

Phlox bifida Beck: cleft phlox. Rare on the north cliff edge and ridge top by the suspension bridge at Sugar Creek; not collected; C = 9.

Phlox divaricata L.: wild blue phlox. Abundant in woods; 41; C = 5.

Phlox paniculata L.: fall phlox. Frequent in the floodplain of Sugar Creek; infrequent to rare in open woods; 343; C = 3.

Polemonium reptans L. var. *reptans*: Greek valerian. Infrequent to rare in floodplains; 112; &; C = 5.

Polygalaceae (Milkwort Family)

Polygala ambigua Nutt.: whorled milkwort. Collected in 1929 by Rexford F. Daubenmire (accession # 4531, Friesner Herbarium); C = 4.

Polygonaceae (Buckwheat Family)

Polygonum lapathifolium L.: curlytop knotweed. Frequent on the beaches of Sugar Creek and in the bottoms of adjacent ravines; 431; 445; C = 0.

Polygonum pennsylvanicum L.: Pennsylvania smartweed. Frequent on the beaches of Sugar Creek and in the bottoms of adjacent ravines; 536; C = 0.

Polygonum persicaria L.: spotted ladysthumb. Abundant in the Sugar Creek floodplain and ravine bottoms; frequent at the edges of mesic upland woods; 424; 430; +.

Polygonum punctatum Elliot var. *punctatum*: dotted smartweed. Frequent in the Sugar Creek floodplain; 538; &; C = 3.

Polygonum scandens L. var. *dumetorum* (L.) Gleason: climbing false buckwheat. Infrequent in wood edges; 565; +&.

Polygonum virginianum L.: jumpseed. Abundant in woods; 403; C = 3.

Rumex altissimus Alph. Wood: pale dock. Rare in the Sugar Creek south floodplain; 446; &; C = 2.

Rumex crispus L.: curly dock. Infrequent in the floodplain of Sugar Creek and along sunny edges of secondary woods; 204; +.

Rumex obtusifolius L.: bitter dock. Frequent in the floodplain of Sugar Creek and seeps; infrequent at edges of upland woods; 819.1; +.

Rumex verticillatus L.: swamp dock. Reported as abundant on beaches of Sugar Creek (Swanson 1928); C = 5.

Portulacaceae (Purslane Family)

Claytonia virginica L.: Virginia springbeauty. Abundant in woods; 12; C = 2.

Primulaceae (Primrose Family)

Anagallis arvensis L. ssp. *arvensis*: scarlet pimpernel. Rare along SH 47; 831; 825; +&.

Dodecatheon meadia L. ssp. *meadia*: pride of Ohio. Infrequent colonies on forest ridge tops along Turkey Run Creek, Sugar Creek and Sugar Mill Creek and on bedrock of the south bank along Sugar Creek; 114; &; C = 7.

Lysimachia ciliata L.: fringed loosestrife. Infrequent in the Sugar Creek floodplain and in a wet ravine; 398; C = 4.

Lysimachia lanceolata Walter: lanceleaf loosestrife. Rare in the south floodplain of Sugar Creek near the suspension bridge and in the upland above it; 356; C = 7.

Lysimachia nummularia L.: creeping jenny. Frequent in the Sugar Creek floodplain; rare in upland wood edges and openings; 281; *.

Lysimachia quadriflora Sims: fourflower yellow loosestrife. Rare: seep northwest of the pond; 426; C = 9.

Pyrolaceae (Shinleaf Family)

Chimaphila maculata (L.) Pursh: striped prince's pine. Rare: hemlock grove along Turkey Run Creek north of SH 47; 293; C = 4.

Ranunculaceae (Buttercup Family)

Actaea pachypoda Elliot: white baneberry. Infrequent to frequent in upland mesic woods; 118; C = 7.

Anemone virginiana L.: tall thimbleweed. Infrequent in wood edges and openings; 357; 334; C = 4.

Aquilegia canadensis L.: red columbine. Infrequent on rocky ledges near Sugar Creek; rare on cliff of adjacent ravine; 115; C = 5.

Caltha palustris L.: yellow marsh marigold. Very abundant in the seep northeast of the pond; 25; C = 7.

Clematis virginiana L.: devil's darning needles. Infrequent to rare at the edges of moist woods; 481; C = 3.

Enemion biternatum Raf.: eastern false rue anemone. Abundant in woods; 18; C = 5.

Hepatica nobilis Schreb. var. *acuta* (Pursh) Steyerl.: sharplobe hepatica. Abundant on steep wooded ravine slopes and shaded cliff ledges; 17; C = 8.

Hydrastis canadensis L.: goldenseal. Rare in upland woods in the preserve; not collected; C = 7.

Ranunculus abortivus L.: littleleaf buttercup. Infrequent to rare at wood edges near open developed areas; 58; C = 0.

Ranunculus hispidus Michx. var. *nitidus* (Chapm.) T. Duncan: bristly buttercup. Frequent in floodplains and wet ravines; rare at the edges of moist upland woods; 141; 28; C = 5.

Ranunculus micranthus Nutt.: rock buttercup. Rare (two sites): secondary woods; 797; &; C = 4.

Ranunculus recurvatus Poir.: blisterwort. Infrequent in deep wet canyons and seeps; rare in mesic upland woods; 887; 801; C = 5.

Ranunculus sceleratus L.: cursed buttercup. Rare on south beach of Sugar Creek near Narrows Road; 216; C = 3.

Thalictrum dioicum L.: early meadow-rue. Infrequent in floodplains and rocky slopes of creeks; not collected; C = 7.

Thalictrum thalictroides (L.) Eames & B. Boivin: rue anemone. Infrequent to frequent in mesic woods; 49; C = 7.

Rosaceae (Rose Family)

Agrimonia pubescens Wallr.: soft agrimony. Collected in 1941 by Ray C. Friesner (accession # 54860, Friesner Herbarium); C = 5.

Agrimonia rostellata Wallr.: beaked agrimony. Infrequent in woods; 495; 402; C = 5.

Amelanchier arborea (Michx. f.) Fernald: common serviceberry. Infrequent along high rocky ledges and ridge tops of Sugar Creek; 155; 37; C = 6.

Crataegus punctata Jacq.: dotted hawthorn. Rare at two wood edges; 572; 240; &; C = 2.

Crataegus viridis L.: green hawthorn. Infrequent plantings in the campground; 180.1; P; C = 7.

Duchesnea indica (Andrews) Focke: Indian strawberry. Infrequent at edges of woods especially in developed sites; 180.2; 84; +&.

Fragaria virginiana Duchesne: Virginia strawberry. Infrequent in open fields; rare in wood edges; not collected; &; C = 2.

Geum canadense Jacq.: white avens. Frequent in woods; 830; 308; C = 1.

Geum vernum (Raf.) Torr. & A. Gray: spring avens. Infrequent in woods; 138; 87; &; C = 1.

Physocarpus opulifolius (L.) Maxim., orth. cons.: common ninebark. Planting at wood edge of parking lot near Inn; 502; P; C = 7.

Potentilla simplex Michx.: common cinquefoil. Infrequent along roads and in floodplains; 210; 174; &; C = 2.

Prunus serotina Ehrh.: black cherry. Abundant in woods; 126; C = 1.

Prunus virginiana L.: chokecherry. Rare (one site): north-facing, shaded cliff near Sugar Creek; 667; &; C = 3.

Rhodotypos scandens (Thunb.) Makino: jetbead. Rare as escaped plantings in wood edges; 677; 95; *&.

Rosa multiflora Thunb.: multiflora rose. Abundant in wood edges and openings; infrequent to rare in more mature forests; 177; *&.

Rosa palustris Marsh.: swamp rose. Collected in 1929 in unspecified "swamp" in 1911 (R. Dolan unpubl. data); C = 5.

Rosa setigera Michx.: climbing rose. Infrequent to rare in wood edges; 847; 773; C = 4.

Rubus allegheniensis Porter: Allegheny blackberry. Frequent in wood edges; 163; &; C = 2.

Rubus flagellaris Willd.: northern dewberry. Rare: in the Sugar Mill Creek floodplain; not collected; &; C = 2.

Rubus occidentalis L.: black raspberry. Abundant in wood edges; 178; C = 1.

Spiraea japonica L. f.: Japanese meadowsweet. Rare in woods of former developed area near SH 47; 886; 296; +P.

Spiraea prunifolia Siebold & Zucc.: bridalwreath spirea. Rare in woods along abandoned Robbins Road in preserve; not collected; +P.

Rubiaceae (Madder Family)

Galium aparine L.: stickywilly. Abundant in woods; 82; C = 1.

Galium circaeazans Michx. var. *hypomalacum* Fernald: licorice bedstraw. Frequent in woods; 333; 229; C = 5.

Galium concinnum Torr. & A. Gray: shining bedstraw. Frequent in wood edges; 266; C = 5.

Galium triflorum Michx.: fragrant bedstraw. Infrequent in mesic woods; 303; C = 5.

Houstonia purpurea L. var. *purpurea*: Venus' pride. Infrequent in woods; 332; 273; &; C = 6.

Mitchella repens L.: partridgeberry. Frequent on shaded rock ledges and ridge tops especially near hemlock groves; 276; 158; C = 8.

Rutaceae (Rue Family)

Ptelea trifoliata L.: common hoptree. Infrequent in mesic woods; 386; 241; C = 4.

Zanthoxylum americanum Mill.: common pricklyash. Reported in the Sugar Creek floodplain (Swanson 1928); observed near park office; C = 3.

Salicaceae (Willow Family)

Populus deltoides Bartram ex Marsh.: eastern cottonwood. Infrequent in floodplains; rare in mesic woods; not collected; C = 1.

Salix discolor Muhlb.: pussy willow. Reported in seep northeast of pond (Ebinger & Bacone 1980); C = 3.

Salix interior Rowlee: sandbar willow. Rare in the Sugar Creek south floodplain; 448; C = 1.

Salix nigra Marsh.: black willow. Rare: one small tree along south side of Sugar Creek near Narrows Road; 829; C = 3.

Saxifragaceae (Saxifrage Family)

Heuchera americana L. var. *hirsuticaulis* (Wheelock) Rosend., Butters & Lakela: American alumroot. Infrequent on rock ledges bordering Sugar Creek, Sugar Mill Creek, and Turkey Run Creek; 193; C = 7.

Mitella diphylla L.: twoleaf miterwort. Frequent along rocky edges of ravine bottoms and on rocky slopes; 45; C = 7.

Parnassia glauca Raf.: fen grass of Parnassus. Rare: large population in seep northwest of pond; 725; 600; C = 10.

Scrophulariaceae (Figwort Family)

Agalinis tenuifolia (Vahl) Raf.: slenderleaf false foxglove. Rare on north bedrock bank and south beach of Sugar Creek near Narrows Road; 553; C = 4.

Aureolaria flava (L.) Farw. var. *macrantha* Pennell: smooth yellow false foxglove. Rare on the north ridge top above the suspension bridge at Sugar Creek; not collected; C = 7.

Chelone glabra L.: white turtlehead. Reported in seep northeast of pond (Ebinger & Bacone 1980); C = 7.

Chelone obliqua L. var. *speciosa* Pennell & Wherry: red turtlehead. Infrequent to rare along Sugar Creek and in adjacent ravine hollows; 525; C = 8.

Mimulus alatus Aiton: sharpwing monkeyflower. Infrequent in Sugar Creek floodplain and seep northwest of pond; 429; C = 4.

Mimulus ringens L.: Allegheny monkeyflower. Infrequent in Sugar Creek floodplain; 588; 396; C = 4.

Pedicularis canadensis L.: Canadian lousewort. Infrequent on rocky ground, forest ridge tops and near hemlock groves; 116; C = 6.

Pedicularis lanceolata Michx.: swamp lousewort. Reported in seep northwest of pond (Ebinger & Bacone 1980); C = 6.

Penstemon hirsutus (L.) Willd.: hairy beardtongue. Infrequent on bedrock, cliff ledges and sandy slopes along Sugar Creek; 277; C = 5.

Scrophularia marilandica L.: carpenter's square. Infrequent in the Sugar Creek floodplain; 434; C = 5.

Verbascum blattaria L.: moth mullein. Rare at wood edge of parking lot near Inn; 420; +.

Verbascum thapsus L.: common mullein. Infrequent in sunny wood edges and openings; not collected; +.

Veronica arvensis L.: corn speedwell. Rare at wood edge of parking lot near Inn; 693; +.

Simaroubaceae (Quassia Family)

Ailanthus altissima (Mill.) Swingle: tree of heaven. Rare: several trees along Turkey Run Creek at bridge on SH 47; 463; 417; *.

Smilacaceae (Catbrier Family)

Smilax rotundifolia L.: roundleaf greenbrier. Frequent in woods; 544; 170; & C = 4.

Smilax tannoides L.: bristly greenbrier. Frequent in woods; 189; 271.1; C = 3.

Solanaceae (Nightshade Family)

Datura stramonium L.: jimsonweed. Rare along Sugar Creek and on pile of excavated soil in preserve; 612; +.

Physalis heterophylla Nees: clammy groundcherry. Collected by Ray C. Friesner in 1941 in fallow field in preserve (accession # 54863, Friesner Herbarium); C = 3.

Physalis longifolia Nutt.: longleaf groundcherry. Collected by Ray C. Friesner in 1941 in fallow field in preserve (accession # 54862, Friesner Herbarium); C = 0.

Solanum nigrum L.: black nightshade. Infrequent on beaches of Sugar Creek; 610; +.

Staphyleaceae (Bladdernut Family)

Staphylea trifolia L.: American bladdernut. Frequent in mesic woods; 237; 79; C = 5.

Thymelaeaceae (Mezereum Family)

Dirca palustris L.: eastern leatherwood. Frequent on forest ridge tops and slopes; infrequent in ravine bottoms; 124; 26; C = 8.

Tiliaceae (Basswood Family)

Tilia americana L. var. *americana*: American basswood. Infrequent but occurs in most woods; 249; & C = 5.

Typhaceae (Cat-Tail Family)

Typha angustifolia L.: narrowleaf cattail. Rare (two sites): in seep northwest of pond and in a ditch along SH 47; 840; +&.

Ulmaceae (Elm Family)

Celtis occidentalis L.: common hackberry. Abundant in floodplains; 205; C = 3.

Ulmus americana L.: American elm. Infrequent as small trees in mesic woods; 255; 71; C = 3.

Ulmus rubra Muhl.: slippery elm. Abundant in woods; 654; 582; C = 3.

Ulmus thomasii Sarg.: rock elm. Reported in the Sugar Creek floodplain (Swanson 1928); C = 10.

Urticaceae (Nettle Family)

Boehmeria cylindrica (L.) Sw.: smallspike false nettle. Infrequent in wet ravine bottoms and along the banks of Sugar Creek; 405; C = 3.

Laportea canadensis (L.) Weddell: Canadian woodnettle. Abundant in mesic woods; 301; C = 2.

Pilea pumila (L.) A. Gray: Canadian clearweed. Frequent in mesic woods; 490; C = 2.

Urtica dioica L. ssp. *dioica*: stinging nettle. Rare in Sugar Creek south floodplain; not collected; +&.

Urtica dioica L. ssp. *gracilis* (Aiton) Seland.: California nettle. Infrequent in the floodplain of Sugar Creek; rare in mesic upland woods; 527; 435; &; C = 1.

Valerianaceae (Valerian Family)

Valeriana pauciflora Michx.: largeflower valerian. Frequent in the Sugar Creek floodplain and moist ravine bottoms; 149; 139; C = 7.

Valerianella umbilicata (Sull.) Alph. Wood: navel cornsalad. A single but abundant colony in the Sugar Mill Creek floodplain; not collected; &; C = 5.

Verbenaceae (Verbena Family)

Phryma leptostachya L.: American lopseed. Infrequent to frequent in woods; 351; C = 4.

Phyla lanceolata (Michx.) Greene: lanceleaf fogfruit. Infrequent in the Sugar Creek floodplain; 451; 380; C = 2.

Verbena stricta Vent.: hoary verbena. Rare on north bedrock bank of Sugar Creek near Narrows Road; 375; C = 4.

Verbena urticifolia L. var. *urticifolia*: white vervain. Infrequent in the Sugar Creek floodplain; rare at edges of upland woods; 609; 381; &; C = 3.

Violaceae (Violet Family)

Hybanthus concolor (T.F. Forst.) Spreng.: eastern greenviolet. Infrequent (four sites): in mesic woods; 678; C = 6.

Viola canadensis L.: Canadian white violet. Reported in preserve (Hellmich unpubl. data); C = 8.

Viola cucullata Aiton: marsh blue violet. Abundant in mesic woods; 30; &; C = 9.

Viola nephrophylla Greene: northern bog violet. Reported as rare in seep northwest of pond (Ebinger & Bacone 1980); C = 8.

Viola palmata L.: early blue violet. Rare (four sites): in mesic woods on slopes and ridge tops; 120; &; C = 5.

Viola pedata L.: birdfoot violet. Reported in the Sugar Creek floodplain (Swanson 1928); C = 9.

Viola pubescens Aiton: downy yellow violet. Frequent in woods; 38; C = 5.

Viola sororia Willd.: common blue violet. Infrequent in moist woods; 67; C = 1.

Viola striata Aiton: striped cream violet. Frequent in moist woods; 91; C = 4.

Vitaceae (Grape Family)

Parthenocissus quinquefolia (L.) Planch.: Virginia creeper. Abundant in woods; 248; C = 2.

Vitis aestivalis Michx. var. *aestivalis*: summer grape. Infrequent in mesic woods; 452; 307; &; C = 4.

Vitis riparia Michx.: riverbank grape. Frequent in wood edges; 534; C = 1.

Vitis vulpina L.: frost grape. Infrequent in wood edges; 636; 291; C = 3.

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