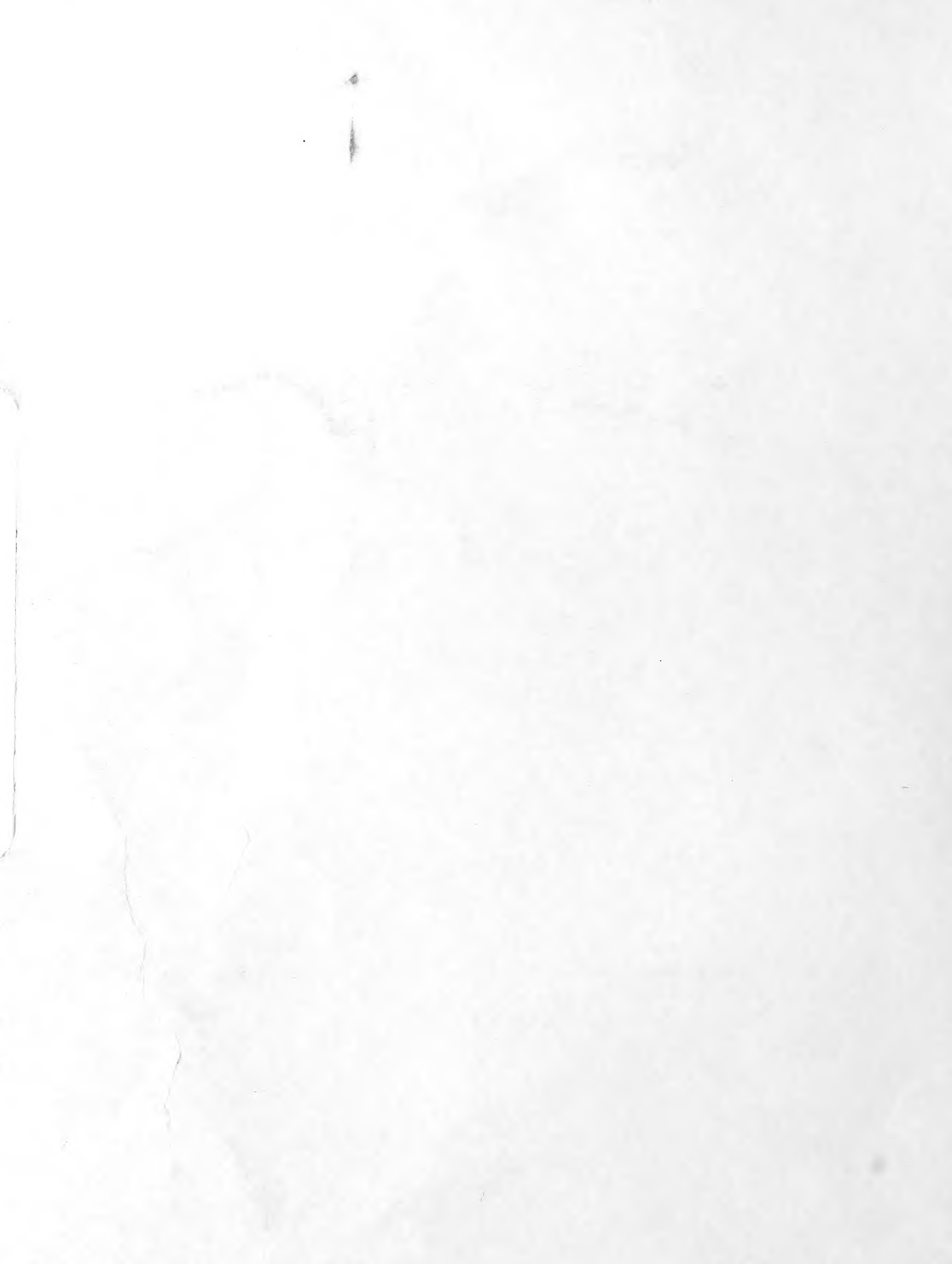


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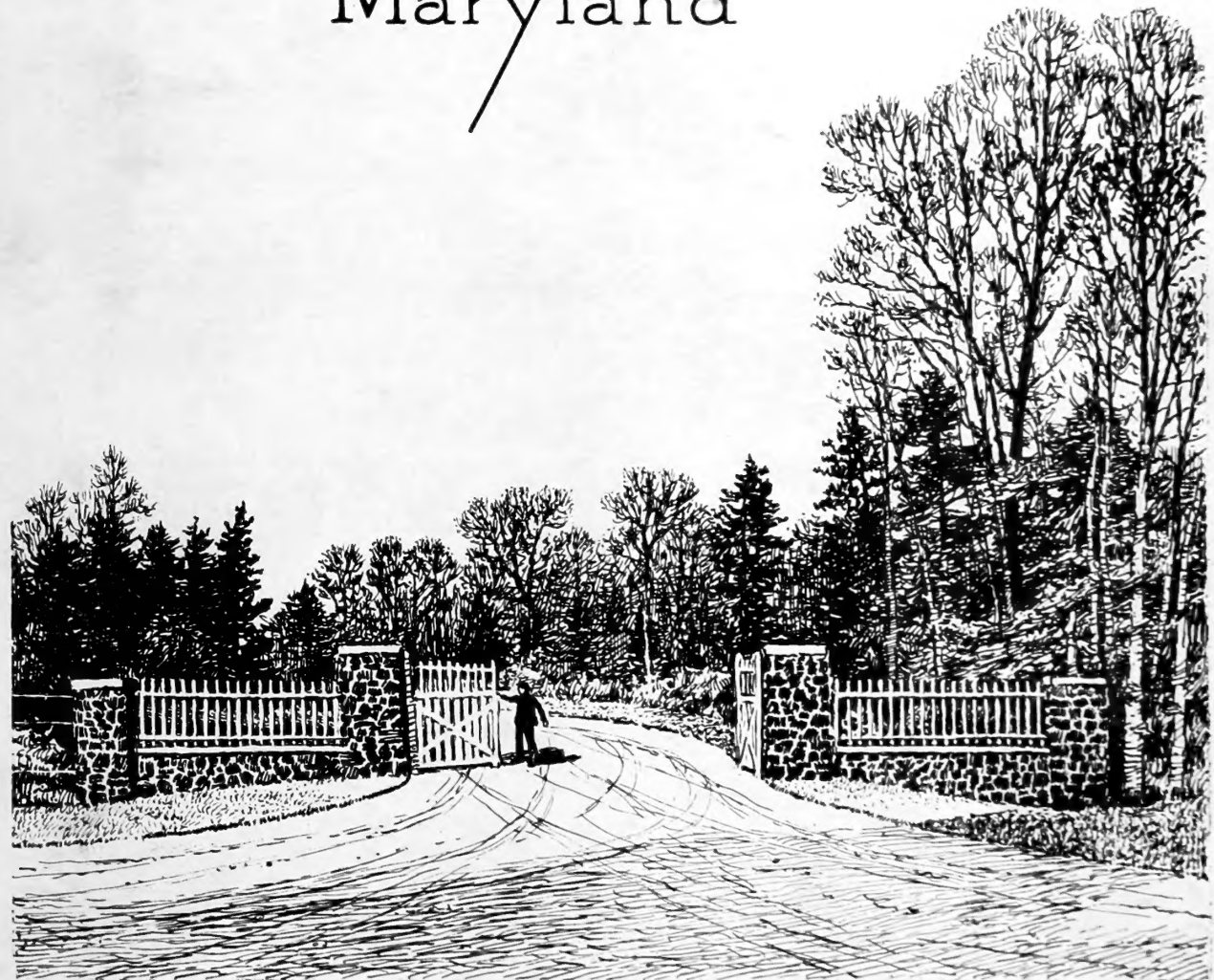
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FLORA of the Patuxent Research Refuge Maryland



United States Dept. of the Interior
Bureau of Biological Survey
Wildlife Leaflet BS-154

FOREWORD

Recognizing the complicated interrelationships of wildlife with man's changing uses of the land, the Biological Survey has for many years conducted studies in various parts of North America, obtaining facts on which to base wise management of our wildlife resources. Opportunity for research has been lacking on lands where deliberate changes in management practices and where the habitat requirements of the native species of wild animals could be under control of the Biological Survey. This gave rise to the establishment of the first national wildlife experiment station of a general nature. On the Patuxent Research Refuge, wildlife problems relating to the production of agricultural crops and to the practice of forestry will receive careful study. As a basis for long-time research the physiography and the fauna and flora will be studied. This contribution is the first of a number of reports that will deal with the natural history of this research refuge.

United States Department of the Interior
Bureau of Biological Survey

Wildlife Leaflet BS-154

Washington, D. C.

*

May 1940

FLORA OF THE PATUXENT RESEARCH REFUGE, MARYLAND 1/

By Neil Hotchkiss, Biologist, Section of Food Habits
Division of Wildlife Research

Contents

	Page		Page
Description of refuge	1	Description of refuge--Continued.	
Location and size	1	Vegetation	4
Topography and water supply	2	The flora	10
Geology and soils	2	List of plants	10

DESCRIPTION OF REFUGE

The following notes are based on observations and collections made by the writer on 78 nonconsecutive days, scattered through the growing and fruiting seasons from October 19, 1936, to July 25, 1939, on the Patuxent Research Refuge, maintained by the Bureau of Biological Survey.

Location and Size

The Patuxent Research Refuge lies along both sides of the Patuxent River in Prince Georges and Anne Arundel Counties, Md., from about 3 miles south-southeast of Laurel southeastward for approximately 3 miles in a strip varying from 3/4 to 1-3/4 miles wide; thence southwestward, in Prince Georges County, for approximately 3 miles in a strip varying from 1/4 to 1 mile wide, to a point about 1-1/2 miles west of Bowie. (See map, p. 3; also the U. S. Geological Survey's map of the Laurel quadrangle.)

There are three separately fenced, but adjacent, tracts, which are referred to in the following discussion as "west," "east," and "south" (in the plant list as W, E, and S.). The first lies between the Laurel-Bowie road and the Patuxent River and extends southeastward to Telegraph Road, which crosses the River at Duvall Bridge; the second lies across Telegraph Road to the southeast; the third is south and west of the Laurel-Bowie road. The 3 tracts total more than 2,000 acres. A small

1/ Contribution from the Patuxent Research Refuge--No. 1

unfenced tract adjacent to the south tract on the east side of the Laurel-Bowie road, and that part of the refuge in Anne Arundel County are not covered in this study.

Topography and Water Supply

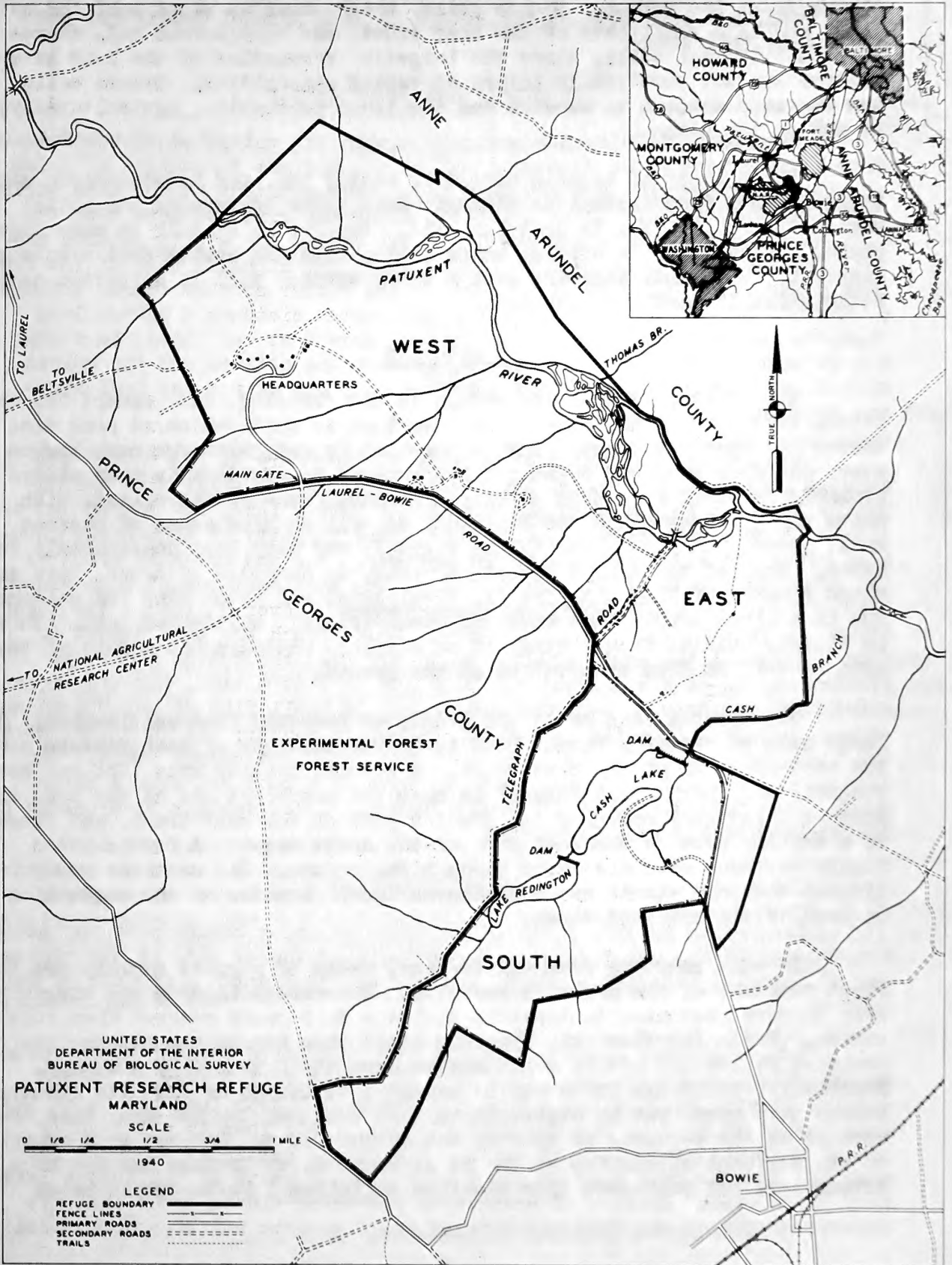
The refuge is situated entirely within the watershed of the Patuxent River, which here flows through a valley the maximum dimensions of which are about 3 miles wide and 150 feet deep. The altitude of the area varies from less than 80 feet above sea level along the river to more than 220 feet near the west and south ends, but the slopes are mostly gentle, except for frequent 5- to 15-foot bluffs along the highland side of the bottoms. The river falls 20 to 25 feet in its rather crooked course through a part of the refuge, traversing for the entire distance a bottom land that, on the southwest side of the river, except at one place, is a quarter to half a mile wide. In places, between the bottoms and the upland slopes, are broad, nearly level terraces that lie only a few feet above the bottoms.

Several brooks rise just outside the boundary of the refuge and flow more or less directly toward the river. They are so small that the majority do not maintain channels across the bottom land, but spread out or disappear on broad, flat areas or lose their identity in high-water channels along the highland side of the bottoms. One and one-half miles is the greatest length of any brook except the southeasternmost, Cash Branch, which drains the south tract and has a length of over 3 miles. Its lower course is outside the refuge boundary. Cash Branch has been dammed to form 2 lakes in the south tract. In most years, the bottom lands are flooded on one or more occasions for a few days at a time, but the river normally flows between well-defined banks. A small flow of water continues through a few shallow side channels, except in summer; and in places along the highland side of the bottoms there are permanent swampy areas. The deepest and largest of these, which is more of a peat bog than a river swamp, lies just southwest of Duvall Bridge. A few springs occur along the bottom-land bluffs and elsewhere.

Geology and Soils

The refuge is only a few miles from the inner boundary of the Atlantic Coastal Plain, which follows a northeast-southwest line in the vicinity of Laurel. Underlying strata are all unconsolidated sediments of Cretaceous age.

The soils have developed mostly from weathered Coastal Plain rocks. An exception is the Congaree silt loam (See 1925 Soil Survey of Prince Georges County, Md.), which covers the Patuxent bottom land but which has been washed there from the Piedmont Plateau. This loam is potentially one of the most productive of soils. Its origin partially accounts for this and for the fact that on the better drained parts of the bottom land many "rich woods" species of herbaceous flowering plants occur that are characteristic of the Piedmont Plateau and that have not been discovered



elsewhere on the refuge. Tuxedo soils, which occur on about half the south tract and on a small part of the west tract, are homogeneous and, therefore, not typical soils, since the long-time occupation of the land by vegetation has not resulted in layers of varied composition. Tuxedo soils are the most subject to erosion and the least productive, agriculturally, of any on the refuge.

The content of organic matter is mostly low, and hydrogen-iron concentrations range from neutral to strongly acid. The texture of the soils varies from silt loams to gravelly sand. Impervious subsoil in many places causes a perched, or confined, water table, with the result that a subsurface reservoir is formed, allowing even a sandy surface soil to support a characteristically marshy vegetation.

Vegetation

The greater part of the refuge is now forested, but, except for the bottom land, nearly all appears to have been in cultivation at some time during the past 200 years. The bottom-land forest, although much logged over, contains some old trees and its present composition in many places probably is similar to that of virgin forest. Some of the upland, with white oak (Quercus alba) now dominant, as well as some areas of poorest soil, grown with pitch pine (Pinus rigida), may have been continuously forested. Much of the upland forest, however, is composed of dense, pure or mixed strands of Virginia pine (P. virginiana) and pitch pine (of uniform age in a given tract) that have reclaimed formerly cultivated land. This is clearly evident from a study of an airplane photographic mosaic of the area as well as from observation on the ground.

The cleared land is in all stages of recovery from cultivation. A large area of recently farmed land is in the vicinity of headquarters near the northwest end of the west tract. A second, smaller area (the one most recently and intensively farmed) is near the southeast end of the west tract. Another large area occupies the greater part of the east tract, and there is a smaller area on the east side of the south tract. A few isolated fields are scattered elsewhere through the refuge. Old orchards and cultivated dooryard plants are conspicuous local elements of the vegetation on each of the unworked farms.

In this recovery from cultivation, weeds of a great variety are the first invaders of the unused cornfields. Broomsedge (Andropogon virginicus) soon appears, becoming dominant in fields 3 to 5 years removed from cultivation. Pines (particularly Virginia pine) then invade the broomsedge-dominant fields and within a generation commonly form a closed canopy. Eventually, deciduous trees may be expected to invade as the pine forests become more open, but no observations have been made on how soon this occurs or on the sequence of species and associations. Whether good examples of the regional climax forest are to be found on the refuge has not been determined, but tuliptree (Liriodendron tulipifera) is thought to be an

indicator here of a stage of vegetational development approximating the climax.

On formerly cultivated damp soils, sedges, rushes, grasses, and other native herbs quickly form a dense cover. This, in turn, is frequently invaded by sweetgum (Liquidambar styraciflua), which locally forms pure stands as dense as the pines on well-drained sites. Further stages in this line of succession have not been studied.

Plant communities are of numerous and often complex types, because of the many variations in soil, sites, and other environmental factors, and these are further complicated by man's drastic disturbance of the original vegetation. Their exact definition and their relationships to each other remain to be investigated. A brief description, however, will indicate the dominant vegetation, grouped in 10 plant communities, as follows: (1) water; (2) marsh; (3) wet meadow; (4) shrub swamp; (5) swamp forest; (6) bottom-land forest; (7) terrace forest; (8) slope and upland forest; (9) abandoned fields; and (10) hedgerows and woods margins.

1. Water.--Aquatic plants are rare on the refuge, because of the heavy shading of most of the waters by trees, the swiftness of the river and the brooks, and the impermanence of water in the shallow bottom-land runs. The species that have been found are sufficiently interesting as indicators of soft- or acid-water conditions to be listed as follows:

Potamogeton epihydrus--river.	Callitriche heterophylla--springs
P. pusillus--brook.	and runs.
Heteranthera reniformis--pond.	Utricularia geminiscapa--brook.
Podostemum ceratophyllum--river.	

2. Marsh.--The areas in marsh are small but widely scattered. Marsh plants occur along narrow bottom-land runs for short distances, in and along the brooks, and in openings in and along the margins of shrub swamps. The commonest species are:

Isoetes engelmanni	Polygonum sagittatum.
Sparganium spp.	Nuphar advena.
Sagittaria pubescens.	Ranunculus laxicaulis.
Echinochloa crusgalli.	R. pusillus.
Leersia oryzoides.	Hypericum mutilum.
Carex lupulina.	H. virginicum.
C. typhina.	Viola lanceolata.
Eleocharis obtusa.	Ludvigia palustris.
Juncus spp.	Proserpinaca palustris.
Polygonum arifolium.	Lycopus spp.
P. hydropiperoides.	Bidens connata.
P. punctatum.	

3. Wet meadow.--Many acres of formerly cultivated fields scattered throughout the refuge are nearly level and have a compact clay subsoil, resulting in a confined water table and enough moisture in the surface soil to maintain a great variety of typically marsh-meadow plants. The growth is much the same whether the fields are on terraces just above the level of the river bottoms or on the broad tops of the higher hills. The commonest plants are:

Panicum microcarpon.	Rhexia spp.
Carex lurida.	Oenothera longipedicellata.
Eleocharis capitata.	Apocynum cannabinum, var. pubescens.
Rhynchospora capitellata.	Pycnanthemum spp.
Juncus spp.	Eupatorium spp.
Viola sagittata.	

Liquidambar styraciflua is an early and abundant invader of wet meadows. Where wet-meadow soil has recently been bared, Cyperus strigosus and Fimbristylis mucronulata are common.

4. Shrub swamp.--The largest shrub swamp is on the highland side of the bottoms near the southeast end of the west tract; other much smaller ones are scattered along the highland side of the bottoms, along the valleys of the brooks, on the river-valley terraces, and rarely in seepage areas on the slopes. The most abundant shrubs and the conspicuous herbs are:

Shrubs

Alnus rugosa.	Ilex verticillata.
Magnolia virginiana.	Clethra alnifolia.
Aronia arbutifolia.	Rhododendron viscosum.
Rosa palustris.	Vaccinium atrococcum.
Toxicodendron vernix.	Cephalanthus occidentalis.

Herbs

Osmunda cinnamomea.	Carex laevivaginata.
Carex folliculata.	C. stricta.

5. Swamp forest.--Small tracts of swamp forest occur along the highland side of the bottoms, on the terraces, along brooks, and in upland hollows. Dominant trees and common shrubs and herbs are:

Trees

Betula nigra.	Liquidambar styraciflua.
Quercus palustris.	Acer rubrum.
Q. phellos.	Nyssa sylvatica.
Magnolia virginiana.	

Shrubs

Smilax spp.
Ilex verticillata.
Leucothoe racemosa.

Lyonia ligustrina.
Viburnum nudum.
V. pubescens.

Herbs

Woodwardia areolata.
Osmunda cinnamomea.
Cinna arundinacea.
Glyceria striata.

Carex crinita.
C. folliculata.
Symplocarpus foetidus.
Rubus hispida.

6. Bottom-land forest.--Forest trees cover nearly all the extensive bottom lands of the west and east tracts. Slight differences in elevation account for striking differences in the flora of localities only a few feet apart. The herbaceous vegetation is particularly luxuriant and includes practically all of the "spring flowers" of the refuge. The dominant trees and common shrubs and herbs are:

Trees

Betula nigra.
Carpinus caroliniana.
Fagus grandifolia.
Quercus palustris.
Q. prinus.
Ulmus americana.

Liriodendron tulipifera.
Liquidambar styraciflua.
Cornus florida.
Fraxinus spp.
Viburnum prunifolium.

Shrubs

Lindera aestivalis.
Toxicodendron radicans.

Evonymus americanus.

Herbs

Cinna arundinacea.
Festuca obtusa.
Poa sylvestris.
Arisaema triphyllum.
Erythronium americanum.
Uvularia sessilifolia.
Boehmeria cylindrica.
Laportea canadensis.
Polygonum virginianum.
Stellaria longifolia.
Claytonia virginica.
Ranunculus abortivus.

Ranunculus recurvatus.
Podophyllum peltatum.
Dentaria laciniata.
Geum canadense.
Amphicarpa bracteata.
Viola affinis.
Panax trifolium.
Cryptotaenia canadensis.
Steironema ciliatum.
Mimulus alatus.
Galium aparine.
Lobelia cardinalis.

7. Terrace forest.--This is not an outstanding type. In general it resembles that of the slopes and uplands except that, being level, it retains more moisture and this is reflected in slight differences in the vegetation. Much the same type of forest occurs in places along the bottom-land bluffs and on the gentle slopes bordering the valleys of some of the brooks. Terrace forest appears to be the nearest approach to a climax of any type of vegetation observed on the refuge. Species commoner here than elsewhere are Fagus grandifolia and Liriodendron tulipifera. Ilex opaca and Kalmia latifolia are common members of the understory. Abundant herbs are:

<i>Dryopteris noveboracensis.</i>	<i>Medeola virginiana.</i>
<i>Lycopodium complanatum.</i>	<i>Epifagus virginiana.</i>
<i>Carex swanii.</i>	<i>Mitchella repens.</i>

8. Slope and upland forest.--This characterizes a greater part of the area than does any other type. It is usually of mixed oak and pine, but on recently cleared land it is pure pine. On some cut-over areas the stand is largely oak. The dominant trees and characteristic shrubs and herbs of slope and upland forest are:

Trees

<i>Pinus rigida.</i>	<i>Quercus coccinea.</i>
<i>P. virginiana.</i>	<i>Q. falcata.</i>
<i>Quercus alba.</i>	<i>Q. velutina.</i>

Shrubs

<i>Castanea pumila</i> (cut-over areas).	<i>Kalmia latifolia.</i>
<i>Gaylussacia baccata.</i>	<i>Rhododendron nudiflorum.</i>
<i>G. frondosa.</i>	<i>Vaccinium stamineum.</i>
	<i>V. vacillans.</i>

Herbs

<i>Pteridium latiusculum.</i>	<i>Pyrola americana.</i>
<i>Chimaphila maculata.</i>	<i>Epifagus virginiana.</i>

9. Abandoned fields.--Recently cultivated land comprises a large acreage, mostly on slopes and uplands, but also to some extent on terraces along the Patuxent Valley. The soils of the latter are noticeably more sandy than elsewhere, and this is reflected in differences in vegetation. A characteristic of fields that have been out of cultivation for 1 to 3 years is the great variety of weedy species that grow there. Most common of these are:

Aristida dichotoma.
A. longespica.
Bromus commutatus.
Panicum lindheimeri.
Paspalum spp.
Rumex acetosella.
Rubus sp. (dewberry).
Cassia fasciculata.
C. nictitans.
Lespedeza striata.
Trifolium spp.
Polygala curtisii.
Hypericum gentianoides.

Trichostema dichotomum.
Solanum carolinense.
Linaria canadensis.
Plantago lanceolata.
Diodia teres.
Specularia perfoliata.
Achillea millefolium.
Ambrosia artemisiifolia.
Anthemis arvensis.
Chrysanthemum leucanthemum.
Erigeron spp.
Krigia virginica.

Meadows and pastures are usually weedy. A few species that appear to be somewhat more characteristic of these than of abandoned cultivated fields are Triodia flava, Ranunculus bulbosus, and Plantago rugelii. Plants that do not occur elsewhere generally but that are conspicuously abundant on the sandy terrace soils of the west and east tracts are:

Eragrostis spectabilis.
Smilax glauca.
Potentilla canadensis.
Desmodium spp.

Lespedeza spp.
Lechea racemulosa.
Tecoma radicans.
Solidago juncea.

Within 2 or 3 years after a field has been abandoned, broomsedge (Andropogon virginicus) begins to appear. It soon becomes dominant and maintains dominance until it is crowded out by invasion of pines. Pinus virginiana and P. rigida both invade broomsedge fields, but the former is nearly everywhere in much greater abundance. Sassafras officinale is also found in old fields, commonly appearing in the poorer soils soon after the fields have been abandoned. On sterile slopes and hilltops, bluestem (Andropogon scoparius) is sometimes dominant. These areas appear to have been cleared for a much longer time and they are changing much more slowly than are the more typical older fields. Common species associated with stands of bluestem are:

Desmodium spp.
Lespedeza spp.
Gerardia spp.

Chrysopsis mariana.
Sericocarpus linifolius.

10. Hedgerows and woods margins.--Many of the fields are bordered by hedgerows dominated by a variety of trees having dense undergrowth of shrubs and woody vines, which, likewise, in many places form a dense barrier along the edges of the woods. Among the most conspicuous species are:

Smilax spp.
Corylus americana.
Rhus spp.

Vitis spp.
Clethra alnifolia.
Lyonia ligustrina.

THE FLORA

Seven hundred and six species of flowering plants and ferns have been collected on the Patuxent Research Refuge by the writer, including 93 grasses, 61 sedges, 79 composites, 46 trees, and 55 shrubs and woody vines. All but 7 of the species are included in Hitchcock and Standley's 1919 Flora of the District of Columbia and Vicinity (or its 1930 Supplement by McAtee), which describes a total of 1771 species. This is a rich flora considering that so many plants of the Washington region are restricted to the Piedmont Plateau or to the Potomac River Valley. A number of species listed in the "District Flora" as occurring only on the Piedmont Plateau have been found to be common on and in the vicinity of the Patuxent bottoms. The Piedmont-derived soil and the continuity of the bottom lands from the lower Piedmont Plateau through the Coastal Plain help to explain this distribution. Although Sanguinaria canadensis has been identified from growing plants on the refuge, it is the only species in the following list that is not yet represented by one or more permanently filed specimens. Possibly 100 additional species could be listed in 2 or 3 more years of collecting, but there are not many common plants, with the exception of certain composites, carices, and panicums, that have been overlooked.

List of Plants

"West," "east," and "south" (W, E, and S, respectively), refer to the three separately fenced tracts of the refuge. Numbers in parentheses, except as otherwise noted, refer to plants collected by the writer; identifications other than those by the writer are so indicated.

POLYPODIACEAE:

- Asplenium platyneuron (L.) Oakes.--Occasional; W, S; hedgerows and former clearings. (5155)
Athyrium asplenioides (Michx.) Desv.--Occasional; W; terrace forest. (5248)
Dennstaedtia punctilobula (Michx.) Moore.--Occasional; W, S; mostly terrace forest. (5438)
Dryopteris cristata (L.) A. Gray.--Occasional; W; swamp forest. (5055)
D. hexagonoptera (Michx.) C. Chr.--Occasional; W; well-drained bottom-land forest. (5310)
D. marginalis (L.) A. Gray.--Rare; W, S; terrace and slope forest. (5054)
D. noveboracensis (L.) A. Gray.--Common; W, S; terrace forest. (5423)
D. spinulosa (Muell.) Kuntze, var. intermedia (Muhl.) Underw.--Occasional; W; terrace forest. (5056, det. W. R. Maxon)
D. thelypteris (L.) A. Gray.--Occasional; W, E, S; open shrub swamp. (5501)
Onoclea sensibilis L.--Occasional; W, E; wet meadow. (5586)
Polystichum acrostichoides (Michx.) Schott.--Occasional; W, E, S; terrace and slope forest. (5445)
Pteridium latiusculum (Desv.) Maxon.--Common; W, E, S; terrace (rare), and slope and upland forest. (5608)
Woodwardia areolata (L.) Moore.--Common; W, E, S; swamp forest. (5500)
W. virginica (L.) Sm.--Rare; W; shrub swamp. (5503)

OSMUNDACEAE:

- Osmunda cinnamomea L.--Common; W; shrub swamp and swamp forest. (5193)
O. regalis L., var. spectabilis (Willd.) Gray.--Occasional; W; swamp forest. (5187)

OPHIOGLOSSACEAE:

- Botrychium dissectum Spreng.--Rare; W, S; former clearings, and swamp forest. (5663)
B. dissectum, form a obliquum (Muhl.) Fern.--Occasional; W, S; wet meadow, swamp forest, and hedgerows (5053, 6026)
B. virginianum (L.) Sw.--Occasional; W; well-drained bottom-land forest. (5177)

LYCOPODIACEAE:

- Lycopodium clavatum L.--Rare; S; woods margin. (5794)
L. complanatum L., var. flabelliforme Fern.--Abundant; W, S; terrace and slope forest. (5444)
L. lucidulum Michx.--Occasional; W; terrace forest. (5048)
L. obscurum L.--Common; W, S; terrace forest. (5049)

SELAGINELLIACEAE:

- Selaginella apoda (L.) Fern.--Occasional; W, E; wet meadow and open swamp forest. (5130)

ISOETACEAE:

- Isoetes engelmanni A. Br.--Occasional; W; runs in bottom-land forest. (5175 ?, 5909)

PINACEAE:

- Juniperus virginiana L.--Occasional; W, S; bottom-land to upland forest. (5768)
Pinus echinata Mill.--Rare; W; slope forest. (5805)
P. rigida Mill.--Abundant; W, S; terrace forest (rare), slope and upland forest and abandoned fields. (5051, 5803)
P. strobus L.--One tree; S; upland forest. (5144)
P. taeda L.--Rare; S; woods margin. (5744)
P. virginiana Mill.--Very abundant; W, S; terrace forest (rare), slope and upland forest and abandoned fields. (5052)

TYPHACEAE:

- Typha latifolia L.--Rare; W, E, S; marsh and open shrub swamp. (5283, 6029)

SPARGANIACEAE:

- Sparganium americanum Nutt.--Occasional; S; marsh. Relative abundance of the two species has not been determined. (6328)
S. androcladum (Engelm.) Morong. (S. lucidum)--Occasional; W, S; marsh. (5753, 5328 ?, 6030 ?)

NAJADACEAE:

- Potamogeton epihydrus Raf.--Rare; W, E; margin of river. (5491)
P. pusillus L., var. typicus--Rare; S; pond below dam. (6077)

ALISMACEAE:

- Alisma plantago-aquatica L.--Occasional; W, E, S; marsh. (5316)
Sagittaria latifolia Willd.--Occasional; W, E; marsh. (6015)
S. pubescens Muhl.--Occasional; W, S (common along Cash Branch);
marsh. (5329)

GRAMINEAE (Determined by J. R. Swallen, except as otherwise noted):

- Agropyron repens (L.) Beauv.--Occasional; W; abandoned fields.
(5772, 5893)
Agrostis alba L.--Locally common; W; wet meadow. (5272)
A. hiemalis (Walt.) B. S. P.--Occasional; W, E; wet meadow. (5216)
A. perennans (Walt.) Tuckerm.--Occasional; W; terrace and slope and
upland forest. (5474)
Aira caryophyllea L.--Occasional; W, E, S; roadsides and abandoned
fields. (5145)
Andropogon elliottii Chapm.--Occasional; W, E, S; abandoned fields.
(5739)
A. scoparius Michx.--Locally abundant; W, E, S; abandoned fields.
(5591)
A. virginicus L.--Very abundant; W, E; abandoned fields. (5649)
Anthoxanthum odoratum L.--Occasional; W; abandoned fields. (5199)
Aristida dichotoma Michx.--Common; W, S; abandoned fields. (5745)
A. longespica Poir.--Common; W, E; abandoned fields. (5559, 5629)
A. oligantha Michx.--Rare; W, S; abandoned fields. (5785)
A. purpurascens Poir.--Rare; E; abandoned field on sandy terrace.
(5650)
Brachyelytrum erectum (Schreb.) Beauv.--One plant; W; bottom-land
forest. (5489)
Bromus commutatus Schrad.--Common; W; abandoned fields. (5226)
Calamagrostis cinnoides (Muhl.) Barton.--Occasional; W, S; wet
meadow (5587)
Cenchrus pauciflorus Benth.--Occasional; W, E; abandoned fields.
(6018)
Cinna arundinacea L.--Abundant; W, S; swamp and bottom-land forest.
(5053 1/2, 5603)
Cynodon dactylon (L.) Pers.--Occasional; S; in gravel road. (6324)
Dactylis glomerata L.--Occasional; W; margin of old road. (5161)
Danthonia spicata (L.) Beauv.--Common; W; abandoned fields. (?) (5237)
Digitaria filiformis (L.) Koel.--Occasional; W, S; along wood roads
and in recent clearings. (5706)
D. ischaemum (Schreb.) Muhl.--Locally common; W, E; roadsides and
abandoned fields. (5510)
D. sanguinalis (L.) Scop.--Occasional; W; yards and abandoned
fields. (5505)
Echinochloa crusgalli (L.) Beauv.--Occasional; W; marsh and wet
meadow. (5477, 5764, 6103)
Eleusine indica (L.) Gaertn.--Occasional; E; roadside. (5383)
Elymus virginicus L.--Occasional; W; bottom-land forest. (5487)
Eragrostis capillaris (L.) Nees.--Rare; W; recent clearing. (5777)
E. cilianensis (All.) Link.--Occasional; W; yards and abandoned
fields. (5504)

GRAMINEAE--Continued.

- E. hypnoides (Lam.) B. S. P.--Occasional; W, S; wet meadow. (6089)
- E. pectinacea (Michx.) Nees.--Rare; W; in old road. (5693)
- E. spectabilis (Pursh) Steud.--Occasional; W, E; abandoned fields on sandy terraces. (5531)
- Festuca elatior L.--Rare; E; yard. (5902)
- F. myuros L.--Occasional; W, E; abandoned fields. (5848, det. A. Chase)
- F. obtusa Spreng.--Common; W; bottom-land forest. (5488)
- F. octoflora Walt.--Occasional; W, E; woods margins and abandoned fields. (5213)
- Glyceria canadensis (Michx.) Trin.--Rare; S; marsh at south end of lake. (6113, 6327)
- G. obtusa (Muhl.) Trin.--Locally common; S; marsh. (5568)
- G. pallida (Torr.) Trin.--Rare; W; marsh in bottom-land runs. (5898)
- G. septentrionalis Hitchc.--Occasional; W, E, S; marsh in bottom-land runs and in swamp forest (rare). (5181)
- G. striata (Lam.) Hitchc.--Common; W, E, S; swamp forest. (5203, 5284)
- Holcus lanatus L.--Occasional; W; margin of old road. (5150)
- Hystrix patula Moench.--Rare; W; bottom-land forest. (5490)
- Leersia oryzoides (L.) Swartz--Common; W, S; marsh. (5472)
- L. virginica Willd.--Occasional; W; bottom-land (and terrace ?) forest. (5473)
- Lolium multiflorum Lam.--Rare, W; yard. (5883, det. A. Chase)
- L. perenne L.--Rare; W; yard. (5884, det. A. Chase)
- Muhlenbergia mexicana (L.) Trin.--Rare; W; yard. (6108)
- M. schreberi Gmel.--Occasional; W, E; yards and abandoned fields. (5718)
- M. sylvatica Torr.--Rare; W; bottom-land forest. (6079)
- Panicum agrostoides Spreng.--Rare; S; wet meadow. (5790)
- P. anceps Michx.--Occasional; W, E, S; abandoned fields. (5434)
- P. ashei Pearson.--Occasional (?); W; upland forest. (5670)
- P. barbulatorum Michx.--Occasional (?); S; cleared shrub swamp (5392)
- P. boschii Poir.--Occasional; W; partly cleared terrace forest. (5425)
- P. capillare L.--One plant; W; abandoned orchard. (5709)
- P. clandestinum L.--Common; W; abandoned fields and hedgerows. (5484)
- P. columbianum Scribn. --Rare (?); W; upland forest. (5671)
- P. commutatum Schult.--Occasional; W; terrace, and slope and upland forest. (5405, 5669)
- P. depauperatum Muhl.--Occasional; W; recently cleared upland forest. (5197)
- P. dichotomiflorum Michx.--Common; W, S; recently disturbed soil of wet meadows and yards. (6091)
- P. dichotomum L.--Occasional; W, E; well-drained bottom-land to upland forest. (5354, 5672)
- P. gattingeri Nash.--Rare; W; former cornfield. (5722)
- P. huachucae Ashe--Occasional; W, S; wet meadow and recently cleared slope forest. (5340, 6094)
- P. lindheimeri Nash.--Common; W, E, S (?); wet meadow and abandoned fields. (5276, 5337, 5387)

GRAMINEAE--Continued.

- P. longifolium Torr.--Occasional; W; wet meadow. (5394, 5478)
- P. microcarpon Muhl.--Occasional; W, S; wet meadow and cleared shrub swamp. (5214, 5499, 6092, 6095)
- P. philadelphicum Bernh.--Occasional; W; abandoned fields on terrace and upland. (5560, 5786)
- P. polyanthes Schult.--Occasional; W; open bottom-land and terrace forest and abandoned fields. (5297)
- P. scoparium Lam.--Occasional; W; wet meadow. (5336)
- P. sphaerocarpon Ell.--Rare; E; abandoned field on sandy terrace. (5648)
- P. stipitatum Nash.--Rare; W; wet meadow. (5581)
- P. verrucosum Muhl.--Common; W, S; recently cleared shrub swamp and swamp forest. (5498)
- P. virgatum L.--One clump; E; abandoned field. (5734)
- Paspalum laeve Michx.--Occasional; W, E; wet meadow. (5368)
- P. longipilum Nash.--Rare (?); W, E; abandoned fields. (5367, 5417)
- P. pubescens Muhl.--Occasional; W, E; abandoned fields on sandy terraces. (5397, 6023)
- P. setaceum Michx.--Rare (?); E; abandoned field on sandy terrace. (5362)
- Phleum pratense L.--Occasional; W; margin of old road. (5455)
- Poa annua L.--Occasional; W; wet meadow. (5096)
- P. autumnalis Muhl.--Occasional; W; bottom-land forest. (5166)
- P. compressa L.--Occasional; W, S; abandoned fields. (5428)
- P. pratensis L.--Occasional; W; margin of old road. (5151)
- P. sylvestris A. Gray.--Common; W; bottom-land forest. (5131)
- P. trivialis L.--Occasional; W; bottom-land forest. (5169)
- Setaria geniculata (Lam.) Beauv.--Occasional; W, E; wet meadow and abandoned fields. (5584)
- S. lutescens (Weigel) F. T. Hubb.--Locally common; W, E; abandoned fields. (5458)
- S. viridis (L.) Beauv.--Occasional; W; abandoned fields. (5701)
- Sorghastrum nutans (L.) Nash.--Occasional; W; abandoned fields. (5580)
- Sphenopholis intermedia (Rydb.) Rydb.--Occasional; W; bottom-land forest. (5173)
- Sporobolus vaginiflorus (Torr.) Wood.--Locally common; W; abandoned fields. (5771)
- Triodia flava (L.) Smyth.--Common; W, E, S; abandoned fields. (5626)
- Uniola laxa (L.) B. S. P.--Occasional; W; well-drained bottom-land and terrace forest. (5484)

CYPERACEAE:

- Bulbostylis capillaris (L.) C. B. Clarke.--Occasional; W, E, S; abandoned fields and recently cleared forest on sandy terraces. (5609)
- Carex spp.--Determined by F. J. Hermann, except as otherwise noted.
- C. abscondita Mack.--Rare; W; terrace forest. (5252)
- C. albolutescens Schwein.--Occasional; W, E; wet meadow. (5840, 5907)
- C. annectens Bickn.--Occasional; W, E; margins of swamp forest. (5291)
- C. bullata Schkuhr.--Rare (?); W, S; shrub swamp. (5793, det. Hotchkiss) (5880)

CYPERACEAE--Continued.

- C. canescens L., var. disjuncta Fern.--Rare; W; open shrub swamp.
(5259)
- C. caroliniana Schw.--Occasional; W; open terrace forest and abandoned fields. (5260, 5302, 5873)
- C. cephalophora Muhl.--Rare; W; open terrace forest. (5872)
- C. complanata Torr. & Hook.--Occasional; W; abandoned fields on sandy terraces. (5298, 5321)
- C. convoluta Mack.--Rare; W; open terrace forest. (5874)
- C. crinita Lam.--Common W, E, S; swamp forest. (5023, det. Hotchkiss)
(5257)
- C. debilis Michx.--Occasional; W, E; terrace forest. (5244)
- C. digitalis Willd.--Rare; W; open terrace forest. (5875)
- C. emmonsii Dewey.--Rare; S; moist opening in upland forest. (5143)
- C. festucacea Schkuhr.--Rare; W; open terrace forest. (5870)
- C. folliculata L.--Common; W, E, S; shrub swamp and swamp forest.
(5246)
- C. glaucodea Tuckerm.--Occasional; W, E, S; wet meadow and openings in terrace and upland forest. (5198, 5833, 5972)
- C. hirsutella Mack.--Rare; W; abandoned field on sandy terrace. (5305)
- C. incompta Bickn.--Occasional; W, E; open shrub swamp. (5256, det. Hotchkiss) (5839)
- C. intumescens Rudge.--Occasional; W, E; swamp and terrace forest.
(5245)
- C. lacustris Willd.--Locally common; W; margin of shrub swamp. (5382)
- C. laevivaginata (Ktckenth.) Mack.--Common; W, E; shrub swamp. (5227)
(5838, det. Hotchkiss)
- C. laxiflora Lam.--Occasional; W; open terrace forest. (5869)
- C. longii Mack.--Rare; W; wet meadow. (F. J. Hermann 10371)
- C. lupuliformis Sartw.--Rare; W; run in bottom-land forest. (6013)
- C. lupulina Muhl.--Common; W; marsh in bottom-land runs. (5766, det. Hotchkiss) (5897)
- C. lurida Wahl.--Common; W, E; wet meadow. (5223, 5273)
- C. richii (Fern.) Mack.--Occasional; W; open shrub swamp. (5255)
- C. rosea Schkuhr.--Rare; W; terrace forest. (5247)
- C. scoparia Schkuhr.--Occasional; W, E; wet meadow and shrub swamp.
(5230, 5270) (5286, det. Hotchkiss)
- C. seorsa E. C. Howe.--Rare; W; margin of swamp forest. (5876)
- C. squarrosa L.--Occasional; W, E; bottom-land forest. (5851, 5927)
(5928, det. Hotchkiss)
- C. stipata Muhl.--Occasional; W, E; margin of shrub swamp and swamp forest. (5837) (5881, det. Hotchkiss)
- C. stricta Lam.--Common; W, E; shrub swamp. (5307) (5836 is var. strictior (Dewey) Carey)
- C. swanii (Fern.) Mack.--Common; W, E; swamp margins and terrace forest. (5251)
- C. tribuloides Wahl.--Occasional; W; abandoned field along hedgerow and margin of swamp forest. (5908)
- C. typhina Michx.--Occasional; W, E; marsh in bottom-land runs.
(5028, det. Hotchkiss) (5357, 5765, 6019)
- C. vulpinoidea Michx.--Rare; W; abandoned field. (5894)

CYPERACEAE--Continued.

- Cyperus cylindricus (Ell.) Britton.--Occasional; E, S; recent clearings in terrace and upland forest. (5733)
- C. esculentus L.--Rare; W; abandoned field. (6017)
- C. filiculmis Vahl.--Occasional; E; abandoned field on sandy terrace. (5360)
- C. flavescens L.--Occasional; W, E; wet meadow. (5564)
- C. microdontus Torr.--Rare; W; wet meadow. (5565)
- C. ovularis (Michx.) Torr.--Occasional; W; wet meadow. (5338, 5583)
- C. rivularis Kunth.--Occasional; W, E; wet meadow. (5067, 5563)
- C. strigosus L.--Common; W, S; wet meadow. (5533)
- Dulichium arundinaceum (L.) Britton.--Occasional W, S; marsh. (5573)
- Eleocharis acicularis R. & S. (?)--Locally common; W; pond. (5770)
- E. capitata (L.) R. Br.--Common; W; wet meadow. (5277)
- E. obtusa (Willd.) Schult.--Common; W, S; marsh. (5266, 5773, 6090)
- Fimbristylis mucronulata (Michx.) Blake.--Common; W, E; wet meadow. (5339, 5362)
- Kyllinga purila Michx.--Occasional; W, S; wet meadow. (5066, 5715)
- Rhynchospora capitellata (Michx.) Vahl.--Occasional; W; wet meadow. (5479)
- R. corniculata (Lam.) A. Gray.--Rare; W; marsh in bottom-land runs. (5027, 6012)
- R. cymosa Ell.--Occasional; E; brushy wet meadow. (5376)
- Scirpus atrovirens Muhl.--Occasional; W; clearing in swamp forest. (5290)
- S. cyperinus (L.) Kunth.--Occasional; W, S; wet meadow. (6027)
- S. debilis Pursh.--Locally common; S; marsh. (5569, 5774, 6082)
- S. eriophorum Michx.--Occasional; W; wet meadow. (5593, 5689)
- S. polyphyllus Vahl.--Occasional; W; clearing in swamp forest. (5327)
- Scleria pauciflora Muhl.--Occasional; E; brushy wet meadow. (5377)

ARACEAE:

- Arisaema triphyllum (L.) Schott.--Common; W; bottom-land forest and shrub swamp. (5090, 5136)
- Orontium aquaticum L.--Occasional; W, E; runs in bottom-land forest. (5111)
- Symplocarpus foetidus (L.) Nutt.--Locally abundant; W, E; shrub swamp and swamp forest. (5811)

XYRIDACEAE:

- Xyris caroliniana Walt.--Rare; S; sandy soil in cleared shrub swamp. (5574)
- S. torta J. E. Smith.--Occasional; W (?), E, S; wet meadow. (5372)

COMMELINACEAE:

- Commeline communis L.--Occasional; W; along road in terrace forest and margin of shrub swamp. (5404, 5468)
- C. hirtella Vahl.--Rare; W; margin of bottom-land run. (5451)

PONTEDERIACEAE:

- Heteranthera reniformis R. & P.--Rare; W; pond. (5716)
Pontederia cordata L.--Rare; E; marsh in bottom-land run. (5353)

JUNCACEAE:

- Juncus acuminatus Michx.--Occasional; W; marsh. (5267)
J. bufonius L.--Occasional; W, E; moist sandy roadside. (5867)
J. canadensis J. Gay.--Occasional; W; wet meadow. (5595)
J. effusus L.--Common; W, E, S; marsh and wet meadow. (5271)
J. macer S. F. Gray.--Occasional; W; wet meadow. (5269, 5274)
J. marginatus Rostk.--Occasional; W, S; wet meadow. (5268 and 5994,
det. F. J. Hermann)
J. scirpoides Lam.--Occasional; W; wet meadow. (5594)
J. secundus Beauv.--Occasional; W, S; wet meadow. (5993, det. F. J.
Hermann)
J. tenuis Willd. (J. dichotomus Ell.)--Occasional; W; wet meadow.
(F. J. Hermann 10366)
Luzula echinata (Small) Hermann.--Occasional; W; open terrace forest.
(5105 and 5871, det. F. J. Hermann)
L. multiflora (Ehrh.) Lejeune, var. bulbosa (Wood) Hermann.--Occa-
sional; E; abandoned field on sandy terrace. (5309, det. F. J.
Hermann)

LILIACEAE:

- Aletris farinosa L.--Occasional; W, E; wet meadow and sandy aban-
doned fields. (5304)
Allium canadense L.--Occasional; W; bottom-land forest. (5132)
A. vineale L.--Locally common; W; abandoned fields. (5262)
Asparagus officinalis L.--Rare; W, E; abandoned fields. (5740)
Erythronium americanum Ker.--Common; W, E; bottom-land forest. (5812)
Heimerocallis fulva L.--Occasional; W; open forest and hedgerow. (5325)
Lilium superbum L.--Occasional; W; wet meadow. (5395)
Maianthemum canadense Desf.--Locally common; W; swamp forest. (5137)
Medeola virginiana L.--Common; W; terrace forest. (5138)
Ornithogalum umbellatum L.--Locally abundant; W; abandoned fields
on sandy terraces. (5098)
Polygonatum biflorum (Walt.) Ell.--Rare; W; upland forest. (5664)
P. commutatum (R. & S.) Dietr.--Occasional; W, E; bottom-land for-
est. (5171)
Smilacina racemosa (L.) Desf.--Occasional; W; terrace forest. (5427)
Smilax glauca Walt.--Common; W, E, S; bottom-land to upland forest
and abandoned fields on sandy terraces. (5762)
S. herbacea L.--Rare; W; open terrace forest. (5604)
S. rotundifolia L.--Occasional; W; shrub swamp, bottom-land forest,
hedgerows (?). (5691)
Stenanthium robustum Wats.--Rare; W; margin of swamp on bottomland
(5977)
Uvularia sessilifolia L.--Common; W; bottom-land forest. (5029,
5089)

DIOSCOREACEAE:

- Dioscorea glauca Muhl.--Occasional; W; swamp and terrace forest.
(5441)

AMARYLLIDACEAE:

Hypoxis hirsuta (L.) Coville.--Occasional; W; bottom-land to upland forest. (5165)

IRIDACEAE:

Iris virginica L. (?)--Occasional; W, E, S; marsh. (5208, 5835)

Sisyrinchium atlanticum Bickn.--Occasional; W, E; wet meadow.
(5217, 5905)

S. gramineum Curtis.--Occasional; W; wet meadow. (5192, 5878)

ORCHIDACEAE:

Cypripedium acaule Ait.--Locally common; W; slope and upland forest.
(5122)

Epipactis pubescens (Willd.) A.A. Eaton.--Occasional; W, S; terrace and slope forest. (5406)

Habenaria ciliaris (L.) R. Br.--Rare; E; brushy wet meadow. (5375)

H. lacera (Michx.) R. Br.--Rare; W, S; open margin of swamp forest.
(5971)

Pogonia verticillata (Willd.) Nutt.--Occasional; W; terrace and slope forest. (5121, 5548)

Spiranthes cernua (L.) Richard.--Rare; W; wet meadow. (5592)

Tipularia discolor (Pursh) Nutt.--Occasional; W; terrace forest.
(5063, 5403)

SALICACEAE:

Populus alba L.--Rare; E; brushy abandoned field. (5643)

P. grandidentata Michx.--Occasional; W, S; margins of slope and upland forest. (5188)

Salix humilis Marsh.--Occasional; W, E, S; abandoned fields. (5060, 5079, and 5638, det. C. R. Ball)

S. nigra Marsh.--Occasional; W; shrub swamp. (5447 and 5892, det. C. R. Ball)

S. tristis Ait.--Rare; W, E; abandoned fields. (5637, det. C. R. Ball)

JUGLANDACEAE:

Carya alba (L.) K. Koch.--Occasional; W, S; upland forest. (5653)

C. cordiformis (Wang.) K. Koch.--Rare; W, E; bottom-land and terrace forest. (5651)

C. glabra (Mill.) Spach.--Rare (?); W; bottom-land and terrace forest. (5613, 5697, 5700--pubescent form)

Juglans cinerea L.--One tree; W; bottom-land forest. (5685)

BETULACEAE:

Alnus rugosa (DuRoi) Spreng.--Common; W, S; shrub swamp. (5588)

Betula nigra L.--Abundant; W, E, S; swamp and bottom-land forest.
(5647)

Carpinus caroliniana Walt.--Common; W; bottom-land forest. (5170)

Corylus americana Walt.--Occasional; W; well-drained bottom-land forest, hedgerows and woods margins. (5440)

FAGACEAE:

- Castanea dentata (Marsh.) Borkh.--Occasional; W; slope and upland forest. (5239)
- C. pumila (L.) Mill.--Occasional; W, S; cut-over slope and upland forest. (5240)
- Fagus grandifolia Ehrh.--Abundant; W, S; bottom-land, terrace, and slope (occasional) forest. (5081)
- Quercus alba L.--Abundant; W, S; bottom-land (occasional) to upland forest. (5696)
- Q. bicolor Willd.--Occasional; W, S; swamp, bottom-land and terrace forest. (5052 1/2, 5698)
- Q. borealis Michx., var. maxima (Marsh.) Ashe.--Occasional; W; bottom-land to upland forest. (5761)
- Q. coccinea Muench.--Abundant; W, S; terrace to upland forest. (5695)
- Q. falcata Michx.--Common; W, S; upland forest. (5710)
- Q. ilicifolia Wang.--Rare; W; upland forest. (5261)
- Q. imbricaria Michx. (?)--Two trees; S; upland forest. (5724)
- Q. lyrata Walt.--Occasional; W; swamp and bottom-land forest. (5047, 5692)
- Q. marilandica Muench.--Occasional; W, S; upland forest. (5654)
- Q. montana Willd.--Occasional; W, S; upland forest. (5743)
- Q. palustris Muench.--Common; W, S; swamp and bottom-land forest. (5703)
- Q. phellos L.--Common; W, S; swamp and terrace forest. (5699)
- Q. prinus L.--Occasional; W; bottom-land forest. (5678, 6111)
- Q. stellata Wang.--Occasional; E, S; upland forest. (5642)
- Q. velutina Lam.--Common; W, S; bottom-land (rare) to upland forest. (5750)

URTICACEAE:

- Boehmeria cylindrica (L.) Sw.--Common; W, E; bottom-land forest. (5352)
- Humulus lupulus L.--One plant; E; bottom-land forest. (6021)
- Laportea canadensis (L.) Gaud.--Abundant; W(?), E. (5351)
- Morus rubra L.--Rare; W, E; bottom-land forest (one tree) and hedge-row. (5160)
- Pilea pumila (L.) A. Gray.--Occasional; W; bottom-land forest. (5452)
- Ulmus americana L.--Occasional; W, E (?); bottom-land forest. (5677, 5684, 6020 ?)

SANTALACEAE:

- Comandra umbellata (L.) Nutt.--Occasional; W; margin of woods on sandy terrace. (5204)

ARISTOLOCHIACEAE:

- Asarum canadense L.--Locally common; W; bottom-land forest. (5115)

POLYGONACEAE:

- Polygonum arifolium L.--Common; W, E, S; marsh. (5674)
- P. aviculare L.--Rare (?); W; abandoned field. (5705)
- P. dumetorum L.--Rare; W; open terrace forest. (5598)
- P. erectum L.--Rare; W; yard. (5712)

POLYGONACEAE--Continued.

- P. hydropiper L.--Occasional (?); E; roadside ditch. (5379)
P. hydropiperoides Michx.--Common; W; marsh. (5323)
P. orientale L.--One plant; S; cleared swamp. (6093)
P. pennsylvanicum L.--Common; W, E; wet meadow and abandoned fields.
(5026, 5536, 5763)
P. persicaria L.--Occasional; W; abandoned fields. (5457, 5530)
P. punctatum Ell.--Common; W, E, S; marsh and wet meadow. (5469, 5544,
5752)
P. sagittatum L.--Abundant; W, E, S; marsh. (5545)
P. scandens L.--Occasional; W; margin of bottom-land forest. (5543 ?,
6080)
P. virginianum L.--Common; W, E; bottom-land forest. (5439)
Rumex acetosella L.--Common; W, E; abandoned fields. (5128)
R. obtusifolius L.--Rare; E; yard. (5384, 5730)

CHENOPODIACEAE:

- Chenopodium album L.--Locally common; W; yard. (5708)
C. amrosioides L.--Rare; W; yard. (5508)

AMARANTHACEAE:

- Amaranthus hybridus L.--Occasional; W; abandoned fields. (5720)

PHYTOLACACEAE:

- Phytolacca americana L.--Occasional; W; woods margins. (5313)

ILLECEBRACEAE:

- Scleranthus annuus L.--Occasional; W; abandoned field. (5124)

AIZOACEAE:

- Mollugo verticillata L.--Occasional; W, E, S; recently bared soil of
abandoned fields, roadsides and clearings. (5467)

CARYOPHYLLACEAE:

- Arenaria serpyllifolia L.--Occasional; W; abandoned field. (5209)
Cerastium viscosum L.--Occasional; W; abandoned field. (5095)
Dianthus armeria L.--Occasional; W; abandoned fields. (5158)
Lychnis alba Mill.--Rare; W; abandoned field on sandy terrace. (5106)
Silene stellata (L.) Ait. f. --Occasional; W; open terrace forest. (5430)
Stellaria longifolia Muhl.--Common; W; bottom-land forest. (5168)
S. media (L.) Cyrill.--Locally common; W; abandoned field. (5721)
S. pubera Michx.--Occasional; W, E; bottom-land forest. (5095)

PORTULACACEAE:

- Claytonia virginica L.--Very abundant; W, E; bottom-land forest. (5083)

NYMPHAEACEAE:

- Nuphar advena (Ait.) Ait. f.--Common; W, S; marsh. (5129, 5906, 6031,
6083)

RANUNCULACEAE:

- Anemone quinquefolia L.--Rare; W; bottom-land and terrace forest. (5078)
Anemonella thalictroides (L.) Spach.--Occasional; W, E; bottom-land forest. (5114)
Clematis virginiana L.--Rare; W; margins of bottom-land and terrace forest. (5680, 6024)
Ranunculus abortivus L.--Occasional; W; bottom-land forest. (5084)
R. acris L.--Rare; E; abandoned field. (5842)
R. bulbosus L.--Locally common; W; abandoned field. (5127)
R. hispidus Michx. (?)--Occasional; W; runs in bottom-land forest. (5088)
R. laxicaulis (T. & G.) Darby--Occasional; W; marsh. (5229)
R. pusillus Poir.--Locally common; W; marsh. (5077)
R. recurvatus Poir.--Occasional; W; bottom-land forest. (5101)
R. repens L.--One patch; E; marsh. (5841)
Thalictrum polygamum Muhl.--Occasional; W.S; marsh and clearing in swamp forest. (5287, 5976)

MAGNOLIACEAE:

- Liriodendron tulipifera L.--Occasional; W, S (rare); bottom-land and terrace forest. (5612)
Magnolia virginiana L.--Common; W, E, S; shrub swamp and swamp forest. (5645)

ANONACEAE:

- Asimina triloba Dunal.--Occasional; W, E; bottom-land forest. (5180)

BERBERIDACEAE:

- Podophyllum peltatum L.--Common; W, E; bottom-land forest. (5091)

LAURACEAE:

- Lindera aestivalis (L.) Bl. (Benzoin aestivale).--Occasional; W; bottom-land forest. (5172, 5607)
Sassafras officinale Nees & Eberm.--Locally common; W; abandoned fields. (5099)

PAPAVERACEAE:

- Chelidonium majus L.--Rare; E; yard. (5845)
Sanguinaria canadensis L.--Rare; E; bottom-land forest. (See p.10)

FUMARIACEAE:

- Corydalis flavula (Raf.) DC.--Rare; E; bottom-land forest. (5816)
Dicentra cucullaria (L.) Bernh.--Occasional; W, E; bottom-land forest. (5814)

CRUCIFERAE:

- Barbarea verna (Mill.) Asch.--Occasional; W; abandoned fields. (5107, 5818)
B. vulgaris R. Br.--Rare; W; yard. (5828)

CRUCIFERAE--Continued

- Capsella bursa-pastoris (L.) Medic.--Occasional; W; abandoned fields. (5140)
Cardamine bulbosa (Schreb.) B. S. P. --Occasional; W; bottom-land forest. (5110)
C. pennsylvanica Muhl.--Rare; W; marsh in bottom-land run. (5182)
Dentaria laciniata Muhl.--Occasional; W, E; bottom-land forest. (5176, 5813)
Draba verna L.--Locally common; W, E; abandoned fields. (5808)
Lepidium campestre (L.) R. Br.--Occasional (?); W; abandoned field. (5210)
L. virginicum L.--Occasional (?); W; abandoned field. (5211)
Sisymbrium altissimum L.--Rare; E; yard. (5849)
S. officinale (L.) Scop., var. leiocarpum DC.--Rare; E; yard. (5844)
S. thalianum (L.) J. Gay.--Locally common; W; abandoned field on sandy terrace. (5071)

PODOSTEMACEAE:

- Podostemum ceratophyllum Michx.--Locally common; W, E; river. (5688)

CRASSULACEAE:

- Penthorum sedoides L.--Rare; W; marsh. (5448)

SAXIFRAGACEAE:

- Heuchera americana L.--Occasional; W; bottom-land and terrace forest. (5186)
Hydrangea arborescens L.--Rare; W; Terrace forest. (5686)
Itea virginica L.--Rare; W; swamp forest. (5899)

HAMAMELIDACEAE:

- Liquidambar styraciflua L.--Abundant; W, S; wet meadow, swamp forest and bottom-land forest. (5704)

PLATANACEAE:

- Platanus occidentalis L.--Occasional; W; bottom-land forest. (5681)

ROSACEAE:

- Agrimonia mollis (T. & G.) Britton.--Rare; W; hedgerow. (5780)
A. parviflora Ait.--Rare; W; margin of bottom-land forest. (5494)
Amelanchier oblongifolia (T. & G.) Roem.--Occasional; W; shrub swamp. (5074, 5258)
Aronia arbutifolia (L.) Ell.--Occasional; W, S; shrub swamp and hedgerows (5097 ?)
A. prunifolia (Marsh.) Rehd. (A. arbutifolia var. atropurpurea).--Rare; S; shrub swamp. (5792)
Crataegus straminea Beadle (?).--Rare; W; former clearing. (5661)
Fragaria virginiana Duchesne.--Occasional; W; abandoned fields. (5100)
Geum canadense Jacq.--Occasional; E; bottom-land forest. (5347)
Potentilla canadensis L. (P. pumila).--Common; W, E; abandoned fields on sandy terraces. (5108)

ROSACEAE--Continued.

- P. monspeliensis L.--Occasional; W; wet meadow. (5314)
P. recta L.--Rare; W; abandoned fields. (5896)
P. simplex Michx. (P. canadensis of Gray's Manual).--Occasional; W;
 abandoned field. (5117)
Prunus serotina Ehrh.--Occasional; W; hedgerows and woods margins.
 (5189)
Rosa carolina L.--Occasional; W; hedgerows and woods margins. (5783,
 5868)
R. paulustris Marsh.--Common; W, S; shrub swamp. (5064, 5279, 5974)
Rubus centralis Bailey.--Rare (?); W; abandoned field. This or other
 dewberry species common W, S. (5264, det. L. H. Bailey)
R. cuneifolius Pursh.--Rare; S; abandoned fields. (5787)
R. hispidus L.--Abundant; W, S; swamp forest. (5249)
R. occidentalis L.--Occasional; W, E; hedgerows and woods margins.
 (5429)
R. ostryifolius Rydb.--Occasional; W; former clearing. This or other
 highbush blackberry species common W, S. (5312, det. L. H. Bailey)
Sanguisorba canadensis L.--Rare; E, S; open shrub swamp. (5736)
Spiraea latifolia (Ait.) Borckh.--Occasional; E, S; shrub swamp.
 (5791)
S. tomentosa L.--Occasional; W; wet meadow. (5059, 5341)

LEGUMINOSAE:

- Amphicarpa bracteata (L.) Fern.--Common; W; bottom-land forest.
 (5486)
Apios tuberosa Moench.--Occasional; W; wet meadow. (5413, 5985)
Baptisia tinctoria (L.) R. Br.--Occasional; W, E, S; terrace to up-
 land forest. (5390)
Cassia fasciculata Michx.--Common (?); E; abandoned field. (5363)
C. nictitans L.--Common; W, E, S; abandoned fields. (5388)
Crotalaria sagittalis L.--Occasional; W, S; abandoned fields. (5334,
 5414)
Desmodium bracteosum (Michx.) DC., var.--Rare; E; hedgerow. (5386)
D. dillenii Darl.--Occasional; W; open terrace forest, abandoned
 fields and hedgerows. (5578, 5599, 5617)
D. marilandicum (L.) DC.--Rare; W; abandoned field on sandy terrace.
 (5550)
D. nudiflorum (L.) DC.--Occasional; W; terrace and slope forest.
 (5435)
D. obtusum (Muhl.) DC.--Occasional; W, E; sandy abandoned fields.
 (5616, 5633)
D. paniculatum (L.) DC.--Occasional; W; open forest and abandoned
 field on sandy terrace. (5600, 5614)
D. rotundifolium (Michx.) DC.--Rare; W; slope forest. (5877)
D. viridiflorum (L.) Beck.--Rare (?); W, E; abandoned fields on
 sandy terraces. (5615, 5738)
Lespedeza capitata Michx.--Occasional; E; abandoned field. (5662)
L. hirta (L.) Hornem.--Occasional; W; abandoned field on sandy
 terrace. (5611, 6016)

LEGUMINOSAE--Continued.

- L. intermedia (Wats.) Britton (L. frutescens).--Rare (?); W; abandoned field on sandy terrace. (5620)
- L. repens (L.) Bart.--Occasional; W; abandoned fields on sandy terraces. (5538, 5619, 5621, 5622)
- L. striata (Thunb.) H. & A.--Common; W, E; abandoned fields. (5769)
- L. virginica (L.) Britton.--Occasional; W, E; sandy abandoned fields. (5618, 5635, 5640)
- Medicago lupulina L.--Occasional; W, E; abandoned fields. (5825)
- M. sativa L.--Rare; E; yard. (5850)
- Melilotus alba Desr.--Occasional; W, E; abandoned fields. (5846)
- M. officinalis (L.) Lam.--Rare; W, E; yards. (5847)
- Robinia pseudo-acacia L.--Occasional; W; abandoned fields and upland forest. (5577)
- Strophostyles umbellata (Muhl.) Britton.--Occasional; W; abandoned fields on sandy terrace. (5409)
- Stylosanthes biflora (L.) B. S. P.--Rare; W; open terrace forest. (540i)
- Tephrosia virginiana (L.) Pers.--Occasional; W; upland forest. (5238)
- Trifolium agrarium L.--Locally common; W; abandoned fields. (5218)
- T. arvense L.--Occasional; W, E; abandoned fields. (5224)
- T. dubium Sibth.--Occasional; W; abandoned field. (5206)
- T. hybridum L.--Locally common; W, E; abandoned fields. (5507, 5831)
- T. pratense L.--Occasional; W, E; abandoned fields. (5282)
- T. procumbens L.--Common; W, E (?); abandoned fields. (5157)
- T. repens L.--Occasional; E; abandoned field. (5832)
- Vicia angustifolia Reichard.--Rare; W; abandoned field. (5879)
- V. villosa Roth.--Rare; E; abandoned field. (5829)

LINACEAE:

- Linum floridanum (Planch.) Trel.--Rare (?); W; wet meadow (5299, 5986)
- L. striatum Walt.--Occasional; W; wet meadows. (5987, 5991, 6100)
- L. virginianum L.--Rare; W; roadside in upland forest. (5667)

OXALIDACEAE:

- Oxalis stricta L.--Occasional; W; abandoned fields. (5191)

GERANIACEAE:

- Erodium cicutarium (L.) L'Her.--Occasional; W; abandoned field on sandy terrace. (5070)
- Geranium carolinianum L.--Occasional; W, E; abandoned fields. (5207, 5843)
- G. maculatum L.--Occasional; W; well-drained bottom-land forest. (5087)

POLYGALACEAE:

- Polygala curtissii A. Gray.--Common; W (?); E, S; abandoned fields. (5332, 5374, 5636)
- P. sanguinea L.--Occasional; W, E; wet meadow. (5285, 5373)
- P. verticillata L.--Occasional; W; abandoned field. (5324)

EUPHORBIACEAE:

- Acalypha gracilens A. Gray.--Occasional; W, E; partly cleared forest and abandoned fields. (5585)
A. virginica L.--Common; W; clearings in bottom-land forest and abandoned fields on sandy terraces. (5537)
Euphorbia corollata L.--Occasional; E; abandoned field on sandy terrace. (5359)
E. ipecacuanhae L.--Rare; S; clearing in upland forest. (5141)
E. preslii Guss.--Occasional; W; abandoned fields. (5460)

CALLITRICHACEAE:

- Callitriche austini Engelm.--Occasional; W, S; damp soil in terrace forest. (5243, 5973)
C. heterophylla Pursh.--Common; W, E; runs in bottom-land forest, springs and brooks. (5234, 5910)

ANACARDIACEAE:

- Rhus copallina L.--Common; W, E; abandoned fields and hedgerows. (5569, 5541)
R. glabra L.--Occasional; W, E; abandoned fields and hedgerows. (5540)
R. typhina Torner.--Occasional; W; hedgerows. (5539)
Toxicodendron radicans (L.) Kuntze.--Abundant; W; bottom-land forest, hedgerows, etc. 5751)
T. vernix (L.) Kuntze.--Common; W, E, S; shrub swamp. (5393)

AQUIFOLIACEAE:

- Ilex laevigata (Pursh) A. Gray.--Rare; S; swamp forest. (5791)
I. opaca Ait.--Common; W, S; terrace and slope forest, and hedgerows. (5068, 5153)
I. verticillata (L.) A. Gray.--Common; W, E, S; shrub swamp and swamp forest. (5646)

CELASTRACEAE:

- Evonymus americanus L.--Occasional; W; bottom-land forest. (5167)

ACERACEAE:

- Acer rubrum L.--Common; W, S; swamp forest and bottom-land to upland forest. (5655)
A. saccharinum L.--Rare; W, E; bottom-land forest. (5683)

BALSAMINACEAE:

- Impatiens biflora Walt.--Occasional; W; bottom-land forest. (5288)

RHAMNACEAE:

- Ceanothus americanus L.--Rare; W; upland forest. (5912)

VITACEAE:

- Parthenocissus quinquefolia (L.) Planch.--Occasional; W; bottom-land forest and hedgerows (?). (5690)

VITACEAE--Continued.

- Vitis aestivalis Michx.--Occasional; W, E; hedgerows and woods margins. (5030, 5222, 5639)
V. cordifolia Lam.--Occasional; W; bottom-land forest and hedgerow. (5159, 5682)
V. labrusca L.--Occasional; W; hedgerows and margins of bottom-land and terrace forest. (5156, 5694)

MALVACEAE:

- Abutilon theophrasti Medic.--Locally common; E; abandoned field. (5364)
Malva neglecta Wallr.--Rare; W; yard. (5506)
Sida spinosa L.--Rare; E; abandoned field. (5365)

HYPERICACEAE:

- Ascyrum hypericoides L.--Occasional; W; terrace and upland (?) forest and abandoned fields. (5402)
Hypericum canadense L.--Occasional; W, S; wet meadow. (5293, 5421, 5570)
H. denticulatum Walt. (H. virgatum)--Locally common; W, E; abandoned fields on sandy terraces. (5748, 5989)
H. gentianoides (L.) B. S. P.--Common; W; abandoned fields (?). (5422)
H. mutilum L.--Common; W; marsh. (5315)
H. perforatum L.--Occasional; W, E, S; abandoned fields. (5913)
H. petiolatum Walt.--Rare; W; marsh. (5916, 6014)
H. punctatum Lam.--Occasional; W; bottom-land run and wet meadow. (5300, 5450)
H. virginicum L.--Occasional; W, E, S; marsh. (5483)

CISTACEAE:

- Helianthemum bicknellii Fern.--Occasional; S; sandy abandoned fields. (5728)
H. canadense (L.) Michx.--Rare; W, S; open upland forest. (5711, 5788)
Lechea racemulosa Michx.--Common; W; abandoned fields on sandy terrace. (5610)

VIOLACEAE:

- Viola affinis LeConte.--Common; W, E; bottom-land forest. (5086, 5815)
V. brittoniana Pollard.--Rare; W; well-drained, open bottom-land forest. (6011)
V. cucullata Ait.--Occasional; W; marsh. (5076, 5820)
V. eriocarpa Schwein.--Occasional; W; bottom-land forest. (5178, 5819)
V. lanceolata L.--Locally common; W, S; marsh and wet meadow. (5072)
V. primulifolia L.--Occasional; W, S; wet meadow. (5073)
V. sagittata Ait.--Occasional; W, E; wet meadow. (5092)

LYTHRACEAE:

- Cuphea petiolata (L.) Koehne.--Occasional; W; abandoned fields (5465)
Rotala ramosior (L.) Koehne.--Occasional; W; marsh. (5482, 5717, 6025)

MELASTOMACEAE:

- Rhexia mariana L.--Common; W, E; wet meadow. (5275)
R. virginica L.--Occasional; W; wet meadow. (5317)

ONAGRACEAE:

- Circaea latifolia Hill.--Occasional; W; bottom-land forest. (5308)
Epilobium coloratum Muhl.--Occasional; W; wet meadow. (5475)
Ludwigia alterifolia L.--Occasional; W; wet meadow. (5319)
L. palustris (L.) Ell.--Abundant; W; marsh. (5232)
Cerothrum biennis L.--Occasional (?); W; abandoned field. (5542)
O. linearis Michx.--Occasional; W, S (?); abandoned fields. (5289)
O. longipedicellata (Small) Robinson.--Common; W, E; wet meadow.
(5315, 5904 ?)

HALORAGIDACEAE:

- Proserpinaca palustris L.--Occasional; W, E; marsh. (5356, 6102)

ARALIACEAE:

- Aralia nudicaulis L.--Occasional; W; terrace forest. (5446, 5822)
A. spinosa L.--Rare; S; terrace forest. (6112)
Panax trifolium L.--Occasional; W, E; bottom-land and terrace forest.
(5080)

UMBELLIFERAE:

- Angelica villosa (Walt.) B. S. P.--Rare; W; upland forest. (5784)
Cicuta maculata L.--Occasional; W; marsh. (5322)
Cryptotaenia canadensis (L.) DC.--Common; W, E; bottom-land forest.
(5346)
Daucus carota L.--Occasional, W; abandoned fields. (5325)
Hydrocotyle americana L.--Rare; W; bottom-land forest. (5306)
Oypolis rigidior (L.) Coult. & Rose.--Occasional; S; marsh. (5024,
(5371)
Sanicula canadensis L.--Rare; W; bottom-land forest. (5309)
Thaspium babinode (Michx.) Nutt.--One plant; W; bottom-land forest.
(6110)

CORNACEAE:

- Cornus amomum Mill.--Occasional; W, E; margins of bottom-land forest.
(5496, 5644)
C. florida L.--Common; W; bottom-land to upland forest. (5103)
Nyssa sylvatica Marsh.--Occasional; W, S; swamp forest. (5278)

ERICACEAE:

- Chimaphila maculata (L.) Pursh.--Common; W, S; terrace and slope and
upland forest. (5305)
C. umbellata (L.) Bart.--Occasional; W (rare), S; slope and upland
forest. (5575)
Clethra alnifolia L.--Common; W, S; shrub swamp and hedgerows and
woods margins. (5345)
Epigaea repens L.--Occasional; W, S; terrace to upland forest. (5635)

ERICACEAE--Continued.

- Gaultheria procumbens L.--Locally common; W; terrace to upland forest. (5656)
- Gaylussacia baccata (Wang.) K. Koch.--Abundant; W, S; slope and upland forest. (5130)
- G. frondosa (L.) T. & G.--Common; W, S; swamp forest (occasional) and slope and upland forest. (5195, 5398)
- Kalmia angustifolia L.--Occasional; W, S; swamp forest. (5196)
- K. latifolia L.--Common; W, S; terrace to upland forest. (5147)
- Leucothoe racemosa (L.) A. Gray.--Common; W, S; swamp forest. (5123)
- Lyonia ligustrina (L.) DC.--Common; W, E, S; swamp forest, brushy wet meadows, and hedgerows. (5296)
- L. mariana (L.) D. Don.--Occasional; W, E, S; terrace to upland forest. (5146)
- Monotropa hypopitys L.--Occasional; W, S; terrace to upland forest. (5443, 5668)
- M. uniflora L.--Occasional; W; terrace and slope forest. (5250)
- Pyrola americana Sweet.--Common; W, S; terrace and slope forest. (5061, 5330)
- P. chlorantha Sw. (?)--Rare; S; upland forest. (5062)
- P. elliptica Nutt.--One patch; S; upland forest. (5789)
- P. secunda L.--Rare; S; slope forest. (5804)
- Rhododendron nudiflorum (L.) Torr.--Occasional; W, S; terrace to upland forest. (5102)
- R. viscosum (L.) Torr.--Occasional; W, S; shrub swamp. (5194)
- Vaccinium atrococcum (A. Gray) Heller.--Occasional; W, E, S; shrub swamp, abandoned fields and hedgerows. (5075, 5925)
- V. stamineum L.--Occasional; S; slope and upland forest. (5142)
- V. vacillans Kalm.--Abundant; W, S; slope and upland forest and abandoned fields. (5119 and 5926, both var. crinitum Fern.)

PRIMULACEAE:

- Anagallis arvensis L.--Rare; S; recently broken soil in orchard. (5915)
- Lysimachia nummularia L.--Common; W, E; bottom-land forest. (5407)
- L. producta (A. Gray) Fern.--Locally common; W; abandoned field on bottom-land. (5292)
- L. quadrifolia L.--Occasional; W; terrace to upland forest. (5241)
- L. terrestris (L.) B. S. P.--Locally common; W; wet meadow. (5295)
- Steironema ciliatum (L.) Raf.--Common; W (?), E; bottom-land forest. (5355)
- S. lanceolatum (Walt.) A. Gray.--Occasional; W; wet meadow. (5320 5990)

EBENACEAE:

- Diospyros virginiana L.--Occasional; W; bottom-land forest, abandoned fields and hedgerows. (5223)

OLEACEAE:

- Chionanthus virginica L.--Occasional; W, E; bottom-land and terrace forest. (5162, 5826)
- Fraxinus biltmoreana Beadle.--Occasional; W; bottom-land forest. (5045, 5687 ?)
- F. pennsylvanica Marsh. (?)--Occasional; W; bottom-land forest. (5679)

GENTIANACEAE:

Bartonia paniculata (Michx.) Robinson.--Rare; W; terrace forest.
(5707)

Gentiana clausa Raf. (?)--Occasional; W, E, S; wet meadow. (5725,
6103 1/2)

Sabatia angularis (L.) Pursh.--Occasional; W; abandoned fields
on sandy terrace. (5410)

APOCYNACEAE:

Apocynum cannabinum L., var. pubescens (R. Br.) DC.--Occasional;
W; wet meadow. (5396)

ASCLEPIADACEAE:

Acerates viridiflora Ell.--Rare; W, S; abandoned fields. (5970)

Asclepias amplexicaulis Sm.--Rare; W; abandoned field. (5900)

A. pulchra Ehrh.--Occasional; W, E; wet meadow. (5318)

A. syriaca L.--Occasional; W; abandoned fields. (5454)

A. tuberosa L.--Rare; W, S; abandoned fields. (5301)

CONVOLVULACEAE:

Convolvulus sepium L.--Rare; W, E; abandoned fields. (5903, 5984)

Cuscuta compacta Juss.--Rare; W; woods margin. This or other
species occasional W, S. (5416)

Ipomoea hederacea Jacq.--Rare (?); W; abandoned fields. (5525)

I. lacunosa L.--Occasional; W; abandoned fields. (5526)

I. pandurata (L.) G. F. W. Mey.--Occasional; W, E; abandoned
fields on sandy terraces. (5361, 5551)

I. purpurea (L.) Roth.--Rare; W, E; yards. (5456)

POLEMONIACEAE:

Phlox maculata L.--Occasional; W; open forest and hedgerows and
woods margins on sandy terraces. (5344, 5424)

HYDROPHYLLACEAE:

Hydrophyllum virginianum L.--Rare; W, E; bottom-land forest.
(5179)

BORAGINACEAE:

Mertensia virginica (L.) Link.--Occasional; W, E; bottom-land
forest. (5113, 5817)

Myosotis laxa Lehm.--Occasional; W; marsh. (5231, 5280)

VERBENACEAE:

Verbena hastata L.--Locally common; W, E, S; wet meadow. (5370)

Verbena urticaefolia L.--Occasional (?); E; abandoned field.
(5382)

LABIATAE:

Collinsonia canadensis L.--Locally common; W, E; bottom-land and
terrace forest. (5431)

Cunila origanoides (L.) Britton.--Rare; S; upland forest. (5802,
6096)

LABIATAE--Continued.

- Hedeoma pulegioides (L.) Pers.--Occasional; W; open terrace and up-land forest. (5493)
- Lamium amplexicaule L.--Rare; W; yard. (5236)
- Leonurus cardiaca L.--Rare; E; yard. (5830)
- Lycopus americanus Muhl.--Occasional (?), E; wet meadow. (5378)
- L. uniflorus Michx.--Locally common; S; cleared shrub swamp. (5726)
- L. virginicus L.--Occasional (?); W; marsh. (5399)
- Mentha canadensis L.--Locally common; W (?), E; springy meadows. (5371)
- Nepeta hederacea (L.) Trevisan.--Locally common; W; former clearing. (5125)
- Perilla frutescens (L.) Britton.--Rare; W, E; open bottom-land forest. (5566)
- Prunella vulgaris L.--Occasional; W, E; abandoned fields. (5381)
- Pycnanthemum flexuosum (Walt.) B. S. P.--Occasional; W; wet meadow. (5342)
- P. incanum (L.) Michx.--Rare; W; clearings in terrace and slope forest. (5436, 5779)
- P. muticum (Michx.) Pers.--Occasional; W, E; wet meadows and abandoned field. (5343, 5782)
- P. verticillatum (Michx.) Pers.--Rare; W; clearings in terrace and slope forest. (5437, 5778)
- Scutellaria integrifolia L.--Occasional; W; wet meadow. (5294)
- S. lateriflora L.--Occasional; W, S; marsh. (5449)
- S. ovalifolia Pers.--Rare; W; open terrace forest. (5891, 5911)
- Teucrium canadense L.--Rare; E; bottom-land forest. (5348)
- Trichostema dichotomum L.--Common; W; abandoned fields. (5058, 5527, 5528)

SOLANACEAE:

- Datura stramonium L.--Occasional; E; yard. (5731)
- Physalis subglabrata Mack. & Bush.--Rare; W; abandoned field and yard. (5781, 6101)
- Solanum carolinense L.--Common; W, E; abandoned fields. (5263)
- S. nigrum L.--Rare; W, E; yards. (5719)

SCROPHULARIACEAE:

- Aureolaria virginica (L.) Pennell.--Occasional; W; terrace and up-land forest. (5400, 5673)
- Chelone glabra L.--Rare; W, S; marsh. (5572, subsp. *typica*)
- Gerardia decemloba Greene.--Occasional; E; abandoned field. (5631)
- G. purpurea L.--Common; W, E, S; abandoned fields. (5549)
- Gratiola virginiana L. (*G. sphaerocarpa*).--Occasional; W; run in bottom-land forest. (5183)
- Linaria canadensis (L.) Dumont.--Occasional; W; abandoned fields. (5126)
- Lindernia anagallidea (Michx.) Pennell.--Occasional; W, S; marsh. (5481, 6032)
- L. dubia (L.) Pennell, subsp. *major* (Pursh) Pennell.--Occasional; W, S; marsh. (5480, 5675, 6033)
- Melampyrum lineare Desr., subsp. *latifolium* (Muhl.) Beauverd.--Occasional; W, S; terrace and slope forest. Some sight records may not be this subspecies. (5254)

SCROPHULARIACEAE--Continued.

- Mimulus alatus Ait.--Common; W; bottom-land forest. (5408)
M. ringens L.--Rare; W; wet meadow. (5466)
Pedicularis lanceolata Michx.--One clump; E; open shrub swamp. (5737)
Verbascum blattaria L.--Rare (?); E; abandoned field. (5389)
V. thapsus L.--Rare; W; abandoned field. (5265)
Veronica arvensis L.--Occasional; W; abandoned fields. (5094, 5221)
V. officinalis L.--Occasional; W, S; abandoned fields (5149)
V. peregrina L.--Rare; W; abandoned field (5139)
V. serrylifolia L.--Occasional; W; abandoned field. (5095)

LENTIBULARIACEAE:

- Utricularia geminiscapa Benj.--Rare; W, S; brooks. (5992, 6076)

OROBANCHACEAE:

- Epifagus virginiana (L.) Bart.--Common; W, S; terrace and slope forest.
(5623)
Orobanche uniflora L.--Rare; W; bottom-land forest. (5134)

BIGNONIACEAE:

- Tecoma radicans (L.) Juss.--Locally common; W, E; abandoned fields or
sandy terraces. (5366)

PHYRYACEAE:

- Phryma leptostachya L.--One plant; W; bottom-land forest. (5453)

PLANTAGINACEAE:

- Plantago aristata Michx.--Occasional; W; roadside. (5335)
P. lanceolata L.--Common; W; abandoned fields. (5104)
P. rugelii Donc.--Common; W; abandoned fields. (5459, 5532)
P. virginica L.--Occasional; W, E; abandoned fields. (5163)

RUBIACEAE:

- Cephalanthus occidentalis L.--Common; W, E, S; shrub swamp. (5261)
Diodia teres Walt.--Abundant; W, E, S; abandoned fields (5418)
Galium aparine L.--Common; W; bottom-land forest. (5135)
G. circaeazans Michx.--Rare; W; terrace forest. (5311, 5426)
G. clavtoni Michx.--Locally common; W; wet meadow. (5233)
G. pilosum Ait.--Rare; W, S; upland forest and abandoned field on
sandy terrace. (5713, 5749)
G. tinctorium L.--Occasional; W; bottom-land forest. (5185, 5253)
G. triflorum Michx.--Occasional; W, E, S; bottom-land and terrace
forest. (5349, 6109)
Houstonia coccinea L.--Common; W, E; bottom-land forest, wet meadow,
abandoned fields, etc. (5082)
H. purpurea L.--Occasional; W; bottom-land forest, etc. (?) (5134)
Mitchella repens L.--Common; W, S; terrace and slope forest. (5022,
5212)
Oldenlandia uniflora L.--Rare; W; wet meadow. (5714)

CAPRIFOLIACEAE:

- Lonicera japonica Thunb.--Common; W, E, S; bottom-land, swamp and terrace forest, abandoned fields and hedgerows. (5154)
Sambucus canadensis L.--Occasional; W, S; bottom-land forest, shrub swamp and hedgerows. (5221)
Viburnum acerifolium L.--Occasional; W; well-drained bottom-land and terrace forest. (5164)
V. dentatum L.--Occasional (?); E; shrub swamp. (5834)
V. nudum L.--Occasional; W; swamp forest. (5065, 5553, 5767, 5827)
V. prunifolium L.--Occasional; W; bottom-land forest. (5046, 5112)
V. pubescens (Ait.) Pursh.--Common; W, S; bottom-land, swamp and terrace forest and hedgerows. (5050, 5220, 5579, 5605, 5662, 5795)

CUCURBITACEAE:

- Sicyos angulatus L.--Rare; W; bottom-land forest. (5676)

CAMPANULACEAE:

- Specularia perfoliata (L.) A. DC.--Occasional; W, E; abandoned fields. (5200)

LOBELIACEAE:

- Lobelia cardinalis L.--Common; W, E; bottom-land forest. (5350)
L. inflata L.--Occasional; E; abandoned field. (5380)
L. puberula Michx.--Locally common; W; wet meadow. (5463, 5552)
L. spicata Lam.--Rare; W; open forest and abandoned field on sandy terrace. (5411)

COMPOSITAE (Determined by S. F. Blake, except as otherwise noted):

- Achillea millefolium L.--Occasional; W; abandoned fields. (5225)
Actinomeris alternifolia (L.) DC.--Rare; W, E; open bottom-land forest. (6022, det. Hotchkiss)
Ambrosia artemisiifolia L.--Common; W, E; abandoned fields. (5057, 5509)
A. trifida L.--Rare; W; open bottom-land forest. (5492)
Antennaria neglecta Greene.--Occasional; W, E; abandoned fields. (5116) (5810, det. Hotchkiss)
A. neodica Greene.--Rare; W; abandoned field. (5118)
A. parlinii Fern.--Rare; W; roadside. (5148)
Anthemis arvensis L.--Common; W, E; abandoned fields. (5205) (5895, det. Hotchkiss)
A. cotula L.--Rare; E; yard. (5914, det. Hotchkiss)
Arctium minus (Hill) Bernh.--Occasional; E; yard. (5385)
Aster divaricatus L.--Rare; E; bottom-land forest. (5537)
A. dumosus L.--Occasional; W; open shrub swamp. (5554)
A. linariifolius L.--Rare; W, E; woods margins. (5775)
A. paniculatus Lam. (?).--Occasional (?); W; open shrub swamp (5555) and roadside. (5760, form)
A. umbellatus Mill.--Rare; W; wet meadow. (6039)
A. undulatus L.--Occasional; W; partly cleared terrace and upland forest. (5601, 5776)
A. vimineus Lam.--Occasional; S; abandoned field. (5746)

COMPOSITAE--Continued.

- Bidens bipinnata L.--Rare; E; yard. (5627)
B. connata Muhl.--Common; W; marsh. (5558)
B. frondosa L.--Rare; W; wet meadow. (5534)
B. vulgata Greene.--Rare; W; abandoned field. (5723)
Cacalia atriplicifolia L.--Rare; W; open terrace forest. (5433)
Chrysanthemum leucanthemum L., var. pinnatifidum Lecoq & Lanotte.--
Common; W, E; abandoned fields. (5152)
Chrysopsis mariana (L.) Nutt.--Common; W, E, S; terrace forest (rare)
and abandoned, often brushy fields. (5634)
Cichorium intybus L.--Occasional; E; yard. (5628)
Cirsium lanceolatum (L.) Hill.--Occasional; W; abandoned fields.
(5476)
Coreopsis verticillata L.--Occasional; W, S; upland forest and aban-
doned fields. (5442)
Eclipta alba (L.) Hassk.--Occasional; W, E; wet meadow. (5652)
Elephantopus carolinianus Willd.--Occasional; W; woods margins. (5557)
Erechtites hieracifolia (L.) Raf.--Common; W, S; cleared swamp and
upland (rare) forest. (5502)
Erigeron annuus (L.) Pers.--Common; W, E; abandoned fields. (5202)
E. canadensis L.--Common; W, E; abandoned fields. (5461)
E. ramosus (Walt.) B. S. P.--Common; W, E; abandoned fields. (5201)
Eupatorium album L.--Rare; E; abandoned field under pine. (5735)
E. aromaticum L.--Rare; W; open terrace forest. (5597)
E. coelestinum L.--Rare; W; abandoned field. (5462)
E. hyssopifolium L.--Rare; W; wet meadow. (5582)
E. perfoliatum L.--Occasional; W, E; wet meadow. (5470)
E. pubescens Muhl.--Rare; S; abandoned field. (5742)
E. purpureum L.--Occasional; W; wet meadow and abandoned field.
(5419)
E. rotundifolium L.--Occasional; W; wet meadow. (5590)
E. torreyanum Short.--Rare; E; abandoned field among pines (5641)
E. verbenaefolium Michx.--Occasional; W, S; open terrace forest
and abandoned field. (5547, 5741)
Galinsoga ciliata (Raf.) Blake.--Rare; W; yard. (5235)
Gnaphalium obtusifolium L.--Occasional; W; abandoned fields (5524)
G. purpureum L.--Occasional (?); W; abandoned field. (5190)
Helenium autumnale L.--Rare; W, E; wet meadow. (6028)
H. nudiflorum Nutt.--Occasional; W, S; abandoned fields. (5497)
(5975, det. Hotchkiss)
Helianthus giganteus L.--Occasional; W; margins of bottom-land and
terrace forest. (5495--form, 5535)
Hieracium Gronovii L.--Occasional; W; abandoned field on sandy ter-
race. (5412)
H. paniculatum L.--Occasional; well-drained bottom-land and terrace
forest. (5624)
H. scabrum Michx.--Rare; W; woods margin. (5120)
H. venosum L.--Occasional; W; slope and upland forest. (5242)
Krigia virginica (L.) Willd.--Common; W, E; abandoned fields. (5109)
Lactuca canadensis L., form.--Occasional; W; abandoned field. (5326)
L. floridana (L.) Gaertn.--Occasional; W; woods margins. (5415)

COMPOSITAE--Continued.

- L. scariola L.--Occasional; W; yard. (5988)
Liatris graminifolia (Walt.) Willd.--Locally common; W (rare), E, S; abandoned fields. (5630)
Mikania scandens (L.) Willd.--Rare; W; bottom-land forest. (5606)
Prenanthes serpentaria Pursh.--Rare; W, E; woods margins. (5602) (6081, det. Hotchkiss)
Rudbeckia hirta L.--Locally common; W, S; abandoned fields. (5219)
R. laciniata L.--Occasional; W, E; bottom-land forest. (5485)
Senecio aureus L.--Rare; W; bottom-land forest. (5174)
S. smallii Britton.--Rare; W, E; abandoned fields. (5901, det. Hotchkiss)
Sericocarous asteroides (L.) B. B. P.--Occasional; S; slope forest. (5331)
S. linifolius (L.) B. S. P.--Common; E, S; abandoned fields. (5333)
Solidago altissima L.--Occasional; W; abandoned field. (5576)
S. bicolor L.--Rare; W, E, S; well-drained bottom-land to upland forest. (5665)
S. caesia L.--Rare; W; open terrace forest. (5596)
S. graminifolia (L.) Salisb., var. nuttallii (Greene) Fern.--Rare; W; abandoned field. (5529)
S. juncea Ait.--Locally common; E; abandoned field on sandy terrace. (5358)
S. nemoralis Ait.--Locally common; W; abandoned field. (5589)
S. puberula Nutt.--Locally common; W, S; open upland forest and abandoned field. (5666, 5727)
S. rugosa Mill.--Occasional; W; open terrace forest. (5432, 5546)
Taraxacum laevigatum (Willd.) DC. (T. erythrospermum).--Rare; E; yard. (5732)
T. officinale Weber.--Occasional; W, E; partly cleared terrace forest (rare) and yards. (5823, det. Hotchkiss)
Vernonia noveboracensis Willd.--Occasional; W; wet meadow. (5471)
Xanthium pungens Wallr.--Occasional; W; abandoned fields. (5702)



