

A SURVEY OF THE SPERMATOPHYTES
IN THE ISLAND LAKE
STATE RECREATION AREA

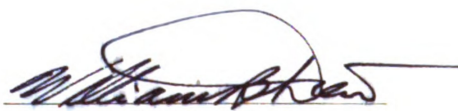
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A SURVEY OF THE SPERMATOPHYTES
IN THE ISLAND LAKE
STATE RECREATION AREA

by
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INTRODUCTION AND BACKGROUND

Location and Description of the Area

The Island Lake State Recreation Area is situated in Geenoak Township in the southeast corner of Livingston County, Michigan. Development of the area is under the Department of Conservation. It is estimated that 4,320 acres at length will have been incorporated into a park to provide camping, hunting and fishing for the general public. In view of the attention that will be given this area by persons interested in a general knowledge of native plants, and of the opportunity afforded to establish new distribution records in a part of Livingston County not hitherto studied, it was thought that a survey of the Spermatophytes would be worthwhile.

Of the 4,320 acres included in the proposed boundaries of the park (Map 1), 1,700 are in the possession of the state and are open to camping and hunting. The remaining 2,620 acres are broken up into farms, small plots around homes and a large gravel pit operated by the American Aggregates Corporation. At the south end of Island Lake there is centered the nucleus of the area consisting of camping grounds, a swimming beach and picnic grounds. This is the Island Lake State Park proper, which has been in use for 20 years. To expand recreational facilities, a group camp consisting of old CCC barracks is being built on the south side of the Huron River

about three-quarters of a mile east of Pleasant Valley Road.

Adjacent to the beach and picnic grounds is a resort area centered around Fonda, Island and Briggs Lakes. Although not a part of the park, it is mentioned here on account of the number of persons it attracts to the general vicinity. West of the junction of the Pere Marquette Railroad with Silver Lake Road is the village of Greenoak, now consisting of only a small cluster of houses with small acreages of land around them and no longer a factor in the disturbance of vegetation (Map 1.).

History of Land Use

Wheeting and Bergquist (1923) give the following account of the history of Livingston County. The first white settler is reported to have come to the county in 1828. In 1830, Greenoak Township was settled, and in the years following the whole county was gradually opened to farming. At first corn, wheat, and potatoes were grown largely as subsistence crops. These were in part succeeded by hops, broomcorn, tobacco, sweet potatoes and flax. In 1880, the population of the county reached its peak, and agriculture was built around producing corn, oats, wheat and rye for market. At this time, dairy products played a minor role, being consumed mostly at home. Since 1880, the population has decreased, and the growing of grain crops for cash has given way to dairying. Twenty-five years ago Livingston County was one of the largest Holstein-Friesian centers in the United States. Today it is

still a dairy county, with 75% of the agricultural income coming from the sale of milk (Livingston County Extension Service, 1947 Annual Report).

Climate

Being one of the interior counties of Michigan, Livingston possesses a climate alternating between continental and semi-marine. The former is characterized by hot weather in summer and bitter cold in winter and occurs when there is no wind. When a strong wind blows off the Lakes, temperatures are modified and weather of a semi-marine type prevails. Prevailing winds are from the southwest and average eight to 10 miles per hour for the year. Three P. M. is the hour of greatest daily velocity, the yearly average for this period being 10 to 12 mph. (Bingham, 1945).

The average growing season over a 27-year period at Howell, the county seat, is 151 days with the last killing frost in the spring for the same number of years coming on May 9, and the average date for the first killing frost in the fall occurring on October 7. The average January temperature for a 25-year period is 21.8 degrees F. and the average July temperature for the same period 71.4 F. April generally marks the beginning of plant growth, although the first spring plants often appear as early as mid-March. Growth has generally stopped by November. Winters are three to four months long, the coldest weather coming in February. Snowfall is usually lighter than in other parts of the state.

Snow is generally on the ground from early December to the latter part of March.

Bingham (1945) reports that of the total amount of sunshine available during the spring, only 50% to 60% is received in Oakland County which is adjacent to Livingston on the east. The figure rises in summer to 60% to 70%, and drops back to 40% to 50% in the fall. Much cloudiness prevails over the whole of Michigan during the winter. Relative humidity is correspondingly high during the winter months, but becomes moderate during the summer. The average number of days with rain for the whole state is 107 a year. At Howell, the average annual precipitation for a 29-year period is 28.58 inches, with the heaviest rainfall coming in May. The average precipitation for the months of plant growth, April to October inclusive, is 19.49 inches (Wills, 1941).

Topography and Glacial History

Livingston County lies in the south-central part of the Lower Peninsula, being the third county west of Lake St. Clair and the third county north of the Michigan-Ohio line. It is located in the southern hardwood section of Michigan, in what is known as the Thumb Upland. Till plains, terminal moraines and outwash plains and, in the southern half, lakes with associated marshes and swamps comprise the main physiographic features of the county (Wheeting and Bergquist, 1923). Veatch (1931) places Greenoak Township

and the southeastern half of the county in the Hillsdale-Lapeer sandy highland which extends in a southwesterly direction from the southern part of Tuscola County through Lapeer, Oakland, Livingston, Ingham and Jackson Counties, and into Washtenaw, Hillsdale and Calhoun Counties. With the addition of the Huron River Valley, which is the dominant physiographic feature in the park, Veatch's description of the Hillsdale-Lapeer sandy highland is applicable to the proposed recreation area: "...light-colored sandy loams and sand; medium to low fertility; in part stony; large aggregate of muck...Rolling and hilly highland with included level and pitted dry sand plains; lakes and swamps characteristic...Hardwood forest; mainly oak-hickory."

Outwash plain and kame are the most prominent geological formations in the recreation area. Situated at the junction of the Saginaw and Huron-Erie lobes of the Wisconsin Ice Sheet, the area was the first land uncovered in southeastern Michigan by the recession of the ice at the close of the Pleistocene period.

Outwash plains were deposited during the formation of terminal moraines by the Saginaw and Huron-Erie lobes and antedate the first Lake Maumee. They are large, flat areas formed by the washing of material from the moraines. The predominance of sand and gravel is noticeable. Kettle holes or basins in the plains, occupied largely by bogs and lakes, were formed by the melting of blocks of ice broken off from the retreating ice sheet. Outwash gravels were deposited

evenly over them. As the ice melted the surface gravel sank, and lakes were formed. Transeau (1905) also attributes the pitting of outwash plains to the differential settling of glacial deposits due to their heterogeneity. Outwash plain occupies roughly that part of the park north of the Huron River, and is a part of the Huron Valley Plain which extends southwestward to Portage Lake (Bay, 1938).

Kames are outwash formations differing from plains in being mound-like. Leverett (1915) believes kames associated with the Huron Valley Plain were formed along the line of the Saginaw and Huron-Erie lobes before they had withdrawn and, therefore, are older than outwash plains and moraines. The contour of the kame in the park has been obliterated by the gravel pit.

Drainage

The Huron River, with its headwaters north of Pontiac, flows through Oakland, Livingston, Washtenaw and Monroe Counties and empties into Lake Erie below Grosse Isle. It forms one of the major drainage channels of the Erie-St. Clair Basin of southeastern Michigan. The Huron Valley Plain, being the first uncovered by the ice, was the first land in the Erie-St. Clair Basin on which drainage features were developed. Waters of the early Huron River flowed west from the Island Lake area through the Pinckney Channel, marked by the present village of Pinckney, where they merged with streams of the Lake Michigan lobe, which drained into

the Mississippi River. The present Huron River in the park is a slow, meandering stream about 60 to 80 feet wide bordered by bogs, marshes and flood plains, or by steep banks covered with oak and hickory. In the park, it is fed by three small streams, one coursing through a marsh whereas the others are largely wooded on their borders.

Soils

The soils of southern Michigan are classified in the gray-brown forest group as opposed to the podzols of the northern part of the state. The southern soils are light brown and have a thicker humus than the podzols. Most of the gray-brown soils have developed from unconsolidated rocks deposited during the Wisconsin glaciation (Bingham, 1945). Soundings of lakes in the Huron Valley Plain have recorded depths of 150 feet, indicating that glacial deposits are at least that deep over the bed rock (Bay, 1938).

In Livingston County, a wide variety of rocks is represented, but limestone occurs in nearly all places. Soils in the park area might be classified by the drainage systems under which they developed. Taking them thus, they fall into two broad groups: (a) those developing under good drainage conditions, and (b) those developing under poor conditions. The former include: Miami loam, Bellefontaine sandy loam, Coloma loamy sand, Fox sandy loam and Fox loamy sand. In the latter group are: Newton sandy loam, Carlisle muck, Rifle peat and Greenwood peat.

For distribution of soils in the recreation area, reference is made to Map 2. Descriptions of soils occurring in the area are from Wheeting and Bergquist (1923).

Miami loam, with a high water-holding capacity, is a valuable agricultural soil. It is alkaline in reaction, the glacial drift underneath containing a considerable amount of lime carbonate.

Stones occur in all horizons of Bellefontaine soils. The substratum is porous and gravelly and consequently well drained. Because Bellefontaine sandy loam has developed where the surface is rolling to hilly, erosion is often a serious problem.

Fox sandy loam occurs in large areas with surfaces from level to undulating with shallow depressions. Because of the scattered tree growth and evenness of the terrain, these areas were the first farmed by settlers in Livingston County. Today, in the park, they are represented by abandoned fields. Fox loamy sand is quite similar to Fox sandy loam except that the latter occurs in larger areas.

Coloma loamy sand is extremely sandy throughout, and drainage is excessive. The supply of organic matter is consequently low. Coloma loamy sand occurs in small, scattered areas where the surface is usually rolling. The pH reaction is acid.

Newton sandy loam occurs in poorly drained situations.

This has resulted in the accumulation of organic matter in the surface layer and a generally acid reaction. It supports ash, elm, maple and some black and red oak.

Carlisle muck is an organic soil, low in mineral content, and with a pH range from alkaline to moderately acid. It supports a swamp-type growth of timber, or a more open growth of tamarack, aspen and shrubs.

In Rifle peat, the water table is higher than in Carlisle muck, and the state of decomposition is intermediate between it and Greenwood peat. Decomposition does not extend below a depth of a few inches. The pH reaction is more variable than in either of the other organic soils. Open marsh and tamarack bogs characterize land occupied by Rifle peat.

Greenwood peat is composed of plant materials in an early stage of decomposition. It is strongly acid with the water table at or near the surface throughout the year. Greenwood peat commonly supports a bog vegetation typified by Sphagnum and Hypnum mosses, Leatherleaf and Blueberries.

PLANT COMMUNITIES

The plant communities which evolve in an area are the product of many factors, important among which are: climate, topography, drainage and soils. The most important and most unstable of these factors is climate. The number of plants of a given species at a station will vary from season to season depending on meteorological conditions. The climate

of southern Michigan favors a broad-leaf mesophytic forest type of vegetation of which the beech-maple association is the climax. The principal criterion of the climax is that it is able to perpetuate itself without radical change, and that it is in equilibrium with the climate. In the area studied, there are several plant communities representing stages in succession in a hydrarch or xerarch series. They are in the process of evolution towards the beech-maple forest, or are being held back indefinitely by environmental conditions.

In the following discussion of plant communities, the descriptions of: lake, pond, bank of stream, marsh and ballast are based on Deam (1940). The definition of a bog is from Gates (1942).

Lake

Lake: a body of water deeper than eight feet, usually with an inlet and outlet. The shore may be gravelly and sandy, or muddy. A lake may be natural or artificial.

Natural lakes in or adjacent to the Island Lake State Recreation Area are: Island, Fonda and Briggs Lakes, and three small lakes on the east side of U. S. Highway 23.

Weld (1904), in a study of the Three-Sister Lakes near Ann Arbor, found the bottoms composed mainly of blue clay with a thin coating of organic material. The clay was derived from eroded material that had washed into the bottom before peat had accumulated. The organic layer over the clay had

been washed from peat at the edges of the lakes. Reed (1902), in studying the bottom of Big Sister Lake, one of the Three-Sister Lakes, found no plants beyond a depth of 20 feet. He attributed the absence of plants to the feeble light at that depth. From six to 18 feet *Chara* and *Potamogeton zosteræ-folius* were dominant. *P. lucens* also occurred in this zone. Collections were made in the south end of Island Lake to a depth of five feet. The species were: *Potamogeton ampli-folius*, *P. gramineus*, *P. illinoensis* and *P. pectinatus*.

An artificial lake occurs in the gravel pit. As yet there appear to be no higher plants in it (Figure 10, page 122). A second artificial lake was made in the spring of 1947 by damming the Huron River about three-quarters of a mile below the point at which it enters the proposed recreation area (Map 1.). No collections were made along the shores of the second lake, as the lake level fluctuated as work progressed, and not enough time had elapsed for aquatic vegetation to ecize.

Pond

Pond: a natural or artificial body of water, shallower than a lake, and scarcely if ever becoming dry.

Artificial ponds occur in the gravel pit operated by the American Aggregate Company. Vegetation supported depends largely on the age of the pond. *Vallisneria americana* seems to be one of the first plants to become established. A pond that was old enough to permit a rich growth of aquatics was

dominated by *Chara* from the middle, which was about five feet deep, to a depth of about two feet where Pondweeds became dominant. *Typha latifolia* and *T. angustifolia* grew at a shallow end. *Populus balsamifera* var. *virginiana* and *Salix* sp. (Figure 12, page 122) are quick to establish themselves in the gravel at the edges of these ponds.

Natural ponds are found in depressions frequently bordered by ash, elm and soft maple which support a luxuriant growth of wild grapevines. Two other trees occurring at the edges of natural ponds are *Populus balsamifera* var. *virginiana* and *P. tremuloides*. On the wet ground at their bases *Salix interior* frequently forms dense thickets. Two grasses which were found only in ponds are *Glyceria canadensis* and *G. septentrionalis*. *Lemna minor* is a common aquatic (Figure 6, page 120).

Marsh

Marsh: often referred to as a wet meadow; a flat, treeless area supporting mostly sedges and grasses with willows, dogwood and other shrubs around the edges.

The largest expanse of marsh extends from one to several hundred feet back to high ground on either side of Spring Creek (Figure 5, page 120). The limits of this marsh are represented by the distribution of Rifle peat in Map 2. Marshes also occur along the Huron River (Figures 2 and 3, page 119).

Sparganium eurycarpum is common in marshes where there

is water on the surface. Associated with it are Juncus canadensis and J. effusus var. solutus. Two sedges that are frequent in less wet parts are Carex hystericina and C. scoparia. Bromus ciliatus is a frequent grass. Elymus virginicus is frequent around thickets at the edges. Forbs characteristic of marshes are: Alisma subcordatum, Sagittaria latifolia, Polygonum amphibium var. stipulaceum f. fluitans, Ludwigia palustris, Epilobium coloratum, Scutellaria epilobifolia and Lycopus uniflorus.

The most common dogwood around marshes is Cornus stolonifera. C. racemosa is frequent and C. obliqua occasional. Salix discolor and S. rigida are the most common willows. A frequent shrub, often growing in shallow water, is Cephalanthus occidentalis.

Stream

Stream: that part of a stream containing water at the time the collection is made.

Streams in the park, with the exception of Spring Creek, have sandy bottoms. The bottom of Spring Creek is mucky. Because the bed of this stream did not afford a safe footing, it was not studied. In the category of stream is included the Huron River.

Growing in sluggish water in the Huron River where silt has accumulated are: Potamogeton nodosus, P. gramineus and P. pectinatus. Thick, buoyant masses of vegetation are formed

by Ceratophyllum demersum in embayments where there is very little current. Najas flexilis and Vallisneria americana are common in shallow streams and in the river. Other aquatics are: Sagittaria latifolia, Pontederia cordata (Figure 3, page 119), Nuphar advena and Nymphaea tuberosa.

Bank of Stream

Bank of stream: the land from the edge of the water, up the slope of the channel and as far back as moisture and light differentiate the vegetation.

Banks of the Huron River are either steep and high supporting a predominance of oak in the black oak group with white oak frequent and hickories scattered, or are low expanding into flood plains, marshes and senescent bogs. Spring Creek is bounded on either side by marsh. The banks of the other two streams (Map 1.) are wooded. The vegetation is like that of the flood plain.

Flood Plain

Flood plain: a broad, alluvial area bordering a stream and forested with elm, ash and soft maple; actually a part of the bank.

Flood plains might also be called wooded swamps. In the synoptic list of plants, the expression flood-plain forest is frequently used. These areas are called forests because they are more or less continuous along streams and

are more extensive than oak-hickory associations, which are called woods. The latter are called woods, because for the most part they are broken up into small units.

Acer rubrum is generally a dominant tree. Fraxinus americana and F. pennsylvanica are often co-dominants with it. At one place, Ulmus americana and Populus grandidentata share the dominance.

Shrubs associated with the flood plain community reach their greatest abundance near the edges where light is more plentiful. Sambucus canadensis is one of the most frequent. Others are Benzoin aestivale and Grossularia Cynosbati. On the edges of streams, Vitis riparia frequently grows into the crowns of trees.

Herbaceous plants of the flood-plain forest are: Symplocarpus foetidus, Caltha palustris, Geum laciniatum, Impatiens biflora, Viola papilionacea, V. sororia, Galium Aparine and G. triflorum.

Bog

Bog: a plant community which grows out over open water at the edge of a stream, pond, or lake and slowly covers the water with a floating mat characterized by Sphagnum and other acid-loving plants. The mat eventually is grounded and supports shrubs and trees.

A typical Sphagnum bog occurs on Greenwood peat on the

south side of McCabe Road near Placeway Road. The floating mat stage is no longer present. The principal phase of development is the shrub stage. Around the edges are found Nemopanthus mucronata, Ilex verticillata, Aronia melanocarpa and Cornus stolonifera. The first three shrubs form dense, almost impenetrable, thickets. Shrubs abruptly give way to a zone of sedges and grasses composed of Carex trisperma, C. comosa, C. intumescens, Glyceria pallida, Sphenopholis intermedia and Alopecurus aequalis. Here is probably the youngest part of the bog. Inside of this zone and continuous to a high mound out in the bog, the shrub stage again dominates. Vaccinium corymbosum is the dominant shrub in this inner zone. Scattered among the dense growth of Blueberry are patches of Chamaedaphne calyculata which is being crowded out. Apparently the bog developed from both the perimeter of the depression and the high mound, the mats meeting where the sedge-grass zone now occurs. The mound in the bog was no doubt surrounded by water at one time. It is roughly 80 to 100 feet across with its highest part at least four feet above the level of the bog, and supports a rather thick stand of oaks.

Running as far back as one-half mile from the Huron River are broad, wet areas of grasses and sedges grown up with Larix laricina and Rhus vernix, which are dominants among the trees and shrubs respectively. Other woody plants in these wet areas are Ulmus americana, Betula pumila, Salix species and Cornus stolonifera. Although Sphagnum and other typical bog plants are lacking in many parts, these

areas are believed to be bogs (Figure 4, page 120). They occupy the wide band of Rifle peat bordering the Huron River, sharing it with flood plains and marshes. Transeau (1905) says that marl and peat are commonly found together in the Huron River Valley. He notes the absence of *Sphagnum* from local bogs, but says it cannot be attributed to the presence of calcium salts. The bogs in the proposed recreation area are best described as senescent.

At the edge of one bog, extending into the river on the west side, there is a floating mat on which was found *Sarracenia purpurea*, an indicator of acidity. The mat is narrow, forming a small depression in the forward edge of the bog.

According to Gates (1942), an association of *Carex lasiocarpa* is required for the development of a floating mat. Its rhizomes do not maintain a certain depth below the lake or stream bottom, but grow out into the water, interlacing and forming a mat. Marshes and wooded swamps, rather than bogs, are likely to follow associations of *Scirpus validus*, *S. americanus* and similar aquatics.

Bog societies are relicts of the northeastern conifer forest which once covered southern Michigan in the wake of the retreating ice. The habitat is essentially boreal in that the water under the mat remains cold throughout the summer months even though surface water may become warm. Swamp societies, on the other hand, are extensions of the southeastern broad-leaved forest, which is now the dominant

forest type in southern Michigan.

A rich growth of Chamaedaphne calyculata is the most favorable cover for Sphagnum. In the Huron River Valley, a Leather leaf-Sphagnum association is typical. Larix laricina, Picea mariana and Pinus strobus are the only trees successfully invading bogs where the Leather leaf-Sphagnum association occurs. Where other trees are choked out by the upward development of the moss, these send out adventitious roots from their stems (Transeau, 1905).

Ballast

Ballast: the filled-in or built-up part of a railroad right-of-way. The Detroit to Grand Rapids track of the Pere Marquette Railroad cuts diagonally across the park for a distance of about three and one-half miles. Collections were made from ballast between the south end of Island Lake and the Huron River.

Ballast plants are mostly weedy annuals, mostly due to the efforts of the railroad company to keep the right-of-way free of plant growth. A common grass along the Pere Marquette track is Setaria lutescens. Poa annua also occurs but is not common. Stipa spartea has established itself in a colony about 40 feet across. Railroads probably are the chief distribution channels of this grass in Michigan which is on the eastern end of its range. Ballast forbs are: Chenopodium album, Sisymbrium altissimum, Alyssum alyssoides, Lespedeza capitata, Euphorbia corollata, Hypericum perforatum, Ambrosia

elatior, Sonchus asper, Lactuca Scariola and L. canadensis.

The above plants are not restricted to the ballast community but invade it from old fields and denuded areas.

Chaenorrhinum minus is an exception in the park since it occurs only in ballast. It is a weed immigrant which is being spread by railroads.

Schrankia Nuttallii, which is native to the southern United States, coming as far north as Virginia, southern Illinois and Iowa (Robinson and Fernald, 1908), is well established on dry, sandy ground about 80 feet from the Pere Marquette track. Schaffner (1928) does not include it in his Field Manual of the Flora of Ohio, nor does Deam (1940) report it from Indiana. This is believed to be the first record of the plant in Michigan.

Roadside

Roadside: the land from the edge of the road to 10 or 20 feet on either side, or back to the fence.

Trees typical of the roadside community are Quercus alba, Q. velutina, Acer Negundo and Prunus virginiana. Rosa carolina and Sambucus canadensis are frequent shrubs. Parthenocissus cinquefolia is a frequent vine on fences and trees. Poa pratensis is abundant, being the dominant grass in many places. On disturbed ground, especially near the edge of the road, Bromus tectorum is common. Later in the season, Digitaria Ischaemum occurs on the same soil.

Roadside forbs are: Amaranthus graecizans, A. albus, Euphorbia supina, Daucus Carota, Cirsium arvense, Sonchus asper and Lactuca Scariola.

Denuded Area

Denuded area: land scraped within the last two seasons for purposes of grading. In the resort section at the north end of Island Lake, several acres of land have been scraped apparently for landscaping prior to real estate development.

Bromus tectorum is abundant in denuded areas where it quickly establishes itself in the spring. Setaria lutescens is common, as is Digitaria Ischaemum. Weeds which rapidly spread over the bare ground are: Polygonum Convolvulus, Mollugo verticillata, Lepidium campestre, Euphorbia maculata and Erigeron canadensis. Rubus flagellaris is successfully invading from old fields. One mode of propagation is by the sending out of horizontal canes which take root. One cane was measured and found to be eight feet long.

Gravel Pit

Gravel pit: a conglomerate of habitats embracing steep, eroded slopes, large piles of subsoil, gravel "dunes", ponds and a lake.

Vegetation in the gravel pit is in the main like that of denuded areas, except for the ponds and lake. Rumex Acetosella, Salsola pestifer and Cirsium vulgare are common on the piles of subsoil. Pioneering on gravel "dunes" are

Silene antirrhina and Polanisia graveolens.

Fallow Field

Fallow field: a field not planted to crops within the last two or three seasons, but not out of use long enough to be called an old field.

Vegetation in fallow fields is again weedy and embraces many of the plants mentioned in connection with ballast and denuded areas.

Old Field

Old field: an abandoned field of low fertility, generally on Fox sandy loam; may be high or somewhat low supporting willows at its lower edge, level or slightly rolling.

Old fields comprise the bulk of the uplands in the park area. That the land was once heavily farmed is evidenced by the abandoned homesites, seven of which were found north of McCabe Road and west of Butcher Road. Of these, five were marked only by cobblestone cellars or shrubbery, indicating that the fields had been out of production for a number of years. Plants occurring in abandoned fields are generally of widespread distribution in North America within the limits of the principal climaxes. With allowances for phytogeographic differences in floras in widely separated areas and differences in regional climates and soil types, old field associations show remarkable uniformity from one part of the country to the other (Drew, 1942).

Poa pratensis is the dominant grass in old fields during the early summer. Associated with it is P. compressa. As the season advances Setaria viridis (Figure 7, page 121), Agrostis hyemalis, Leptoloma cognatum and Panicum huachucae form the major ground cover. Plantago aristata is probably the most common forb. In one field it forms a consociation several acres in extent. It is believed that the soil is so poor that this is the only plant it will support. Depauperate specimens are the rule in the field, whereas normal-sized members of the species are common elsewhere in the park. Drew (1942) found this plant abundant in fields in central Missouri formerly planted to small grains. Other broad-leaved plants of old fields are: Fragaria virginiana, Potentilla recta, which is abundant in several places, P. intermedia, which is more or less restricted in Michigan to Washtenaw and Livingston Counties, Desmodium illinoense, D. canadensis, Oxalis stricta, Euphorbia corollata, Verbascum Thapsus (Figure 7, page 121), Solidago juncea, S. nemoralis, Aster praealtus var. angustior in low places, Antennaria neglecta, A. plantaginifolia and Achillea Millefolium. The most common shrub is Rubus flagellaris. R. allegheniensis is frequent. Rhus typhina and R. glabra frequently form colonies on gently sloping ground.

Oak-hickory Woods

Oak-hickory woods: woods in which the dominant trees are oaks and hickories.

Oak-hickory woods occur on high banks of the Huron River and as scattered woodlots on sandy, upland soil types. The percentage of hickories ranges from almost zero on low ground to nearly 100 in a hickory consociation on the north side of the Huron River west of the dam.

The black oaks are the most abundant trees in the oak-hickory association. Of them, Quercus velutina probably is the most frequent. Collections indicate that the typical form of Q. borealis is more frequent than var. maxima. The common form of white oak is Q. alba f. latiloba. Billington (1943) says Q. prinoides is restricted to the southern half of the lower peninsula where it is infrequent. However, it is a frequent shrub around the edges of upland woods in the park. The two hickories that are co-dominants with the oaks are Carya ovata and C. ovalis. The latter is quite variable, being represented by the typical form, two varieties and one form of a variety. The most common shrub is Hamamelis virginiana. Alnus incana is frequent in woods along the Huron River. Herbaceous plants associated with the oak-hickory woods are: Anemone virginiana, Anemonella thalictroides, which is often found growing with Hepatica americana, Taenidia integerrima, Galium boreale, Aster macrophyllus, A. sagittifolius var. urophyllus and Helianthus divaricatus.

The beech-maple association is absent from the Island Lake State Recreation Area. An explanation for this is to

be found in the sandy character of the upland soil, which does not favor beech-maple ecesis. Quick (1924), making a study in the vicinity of Ann Arbor, found Acer saccharum occurred two to one on clay soils over sand. Fagus grandifolia grows best on clay, but will grow on sand upon which a fair humus layer has developed if water is not insufficient. Clay soils hold enough water for humus to develop quickly. Humus tends to make the soil more mesophytic by holding water in originally dry soils and by aiding in aerating soils that were originally saturated. Sandy soils, being low in organic matter and mineral content, favor a xeric association.

One individual of Fagus grandifolia was observed at the foot of a slope in an oak-hickory woodland. It was the only beech seen in the park. No shrubby or herbaceous elements of the beech-maple association appeared to be peculiar to the area in which the tree was found. Acer saccharum occurs along roadsides and around homesites where it apparently has been planted. An individual standing at the edge of an old field near a flood plain forest is the only one the author can recall that apparently was not planted.

Discussion

Studies by Kenoyer (1934, 1940) support the belief that the edaphic conditions prevailing in the park area are not atypical for southern Michigan. Through the use of the original land surveys, he was able to plot within one-half

mile the boundaries of the forests in the southwest part of the lower peninsula. Along Lake Michigan, the beech-maple association tends to occur on outwash plains and other poor soils. Inland, toward the center of Van Buren County, it occurs on till plains and terminal moraines, and the oak-hickory grows on the outwash plains.

A soil survey by Veatch (1932) run in strips one-half mile wide at irregular intervals over five counties of southern Michigan and covering 528 square miles reveals the following data as to the soil preferences of beech-maple, oak-hickory and oak. Each figure represents the number of forests or woodlots encountered. Figures are given only for soil types occurring in the park.

SOIL	FOREST TYPE		
	Beech-maple	Oak-hickory	Oak
Miami	109	18	20
Bellefontaine Coloma	25	3	71
Fox	3	0	13
Newton	2	0	1

The oak-hickory association is a subclimax due either to edaphic conditions, or to grazing or fire. Although the area was once farmed, it does not seem possible that the absence of the beech-maple association could be attributed to grazing. At the time Greenoak Township was settled by farmers, the production of grains and not dairying was the main industry in Livingston County. No burn scars were

noticed on any of the trees. However, no borings were made in trunks to determine whether fires had taken place and the scars had healed over. It is the author's belief that the general sandiness of the soil with the consequent leaching and low amount of mineral and organic materials is the factor withholding the ecesis of the beech-maple association.

Methods

Trips were made to the Island Lake State Recreation Area on the average of once a week from April 14th to October 11th, 1947. The first trip consisted of a general survey in which the author drove over all roads with a car and made a cover map from observation. All trips from that date were made for the purposes of collecting specimens and photographing habitat groups.

Being without a car for all but a few trips, the author restricted collecting, except when a car was available, to that part of the area north of McCabe Road. It was thought that time spent walking to the south end of the park could be spent better making collections, inasmuch as the general physiography of both north and south parts was the same. Moreover, it is to be noted that none of the land south of McCabe Road is in the possession of the State of Michigan. In many cases, the land is posted against trespassers.

Two or three specimens were taken except in cases of plants that appeared to be rare. Data on the genera Salix and Crataegus are incomplete due to the fact that tags

ties on the stems at flowering time to mark trees for later collection of leaves or fruits disintegrated in most cases, leaving no visible remains. In both genera, collections were made the second time from trees in the same general location. Inasmuch as it was difficult to match leaves with flowering parts in the genus Salix, a fair share of the material could not be identified with any certainty. For this reason, there are no doubt more species of Salix in the park than are included in this paper. In the case of Crataegus, only a few trees were found, and it was not difficult to ascertain with a reasonable degree of certainty which were the trees from which flowers had been collected, except for one tree which could not be found the second time.

As the author was not always sure that a plant had been collected on a previous trip, duplication occurred in many instances resulting in a better representation of the species and more information on the habitat. At this point it might be mentioned that no attempt was made to study the detailed distribution of each species nor to determine its frequency. Such an undertaking would require more than one season of work. Abundance classes appearing with habitat descriptions in the Synoptic List of Plants were arrived at by observation and estimation based on the number of specimens collected and the number of dates on which collected, each date representing a trip to a different part of the park.

The following descriptions of abundance classes are from Deam (1940).

Abundant: occurring in large numbers in various places.

Common: plentiful in all parts.

Frequent: evenly distributed but not plentiful.

Infrequent: occasional.

Before work had progressed very far, it was realized that the limits as to types of the plants to be studied would have to be set. Inasmuch as the study was to be of a taxonomic and ecological nature, the author saw no value in including plants which were obviously recent garden escapes and gave no evidence of having established themselves permanently. Conifers planted by the Civilian Conservation Corps and the Department of Conservation are included because they are maintaining themselves even though they are not spreading. Trees and shrubs, and in some instances, herbs which have persisted and even spread from early plantings are included.

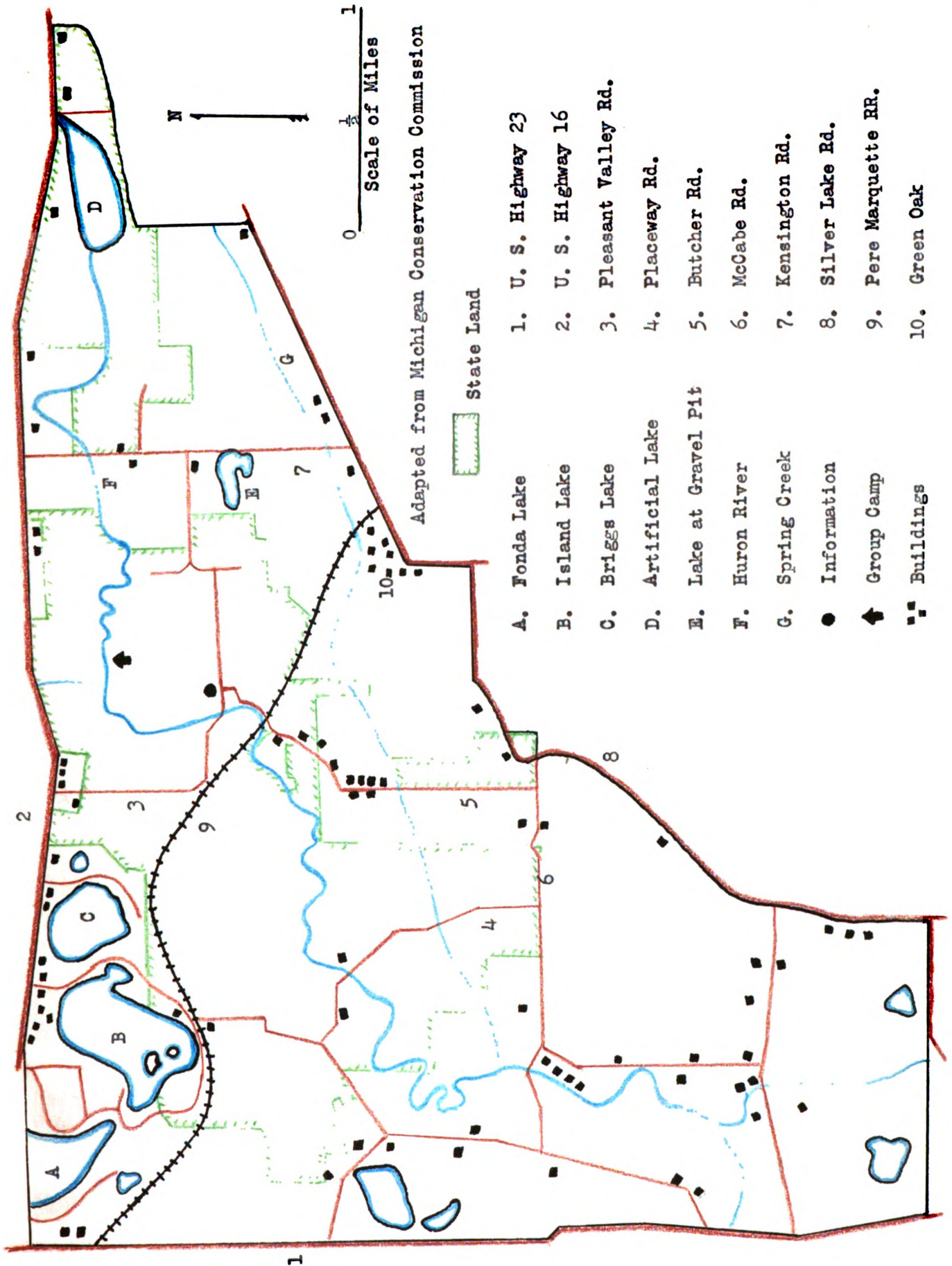
All identifications, except in the case of a few easily recognizable species, were made from material brought to the laboratory. Where identification was made in the field, mention is made with the description of the habitat in the Synoptic List of Plants. Representatives of all species collected will be placed in the Michigan State College Herbarium.

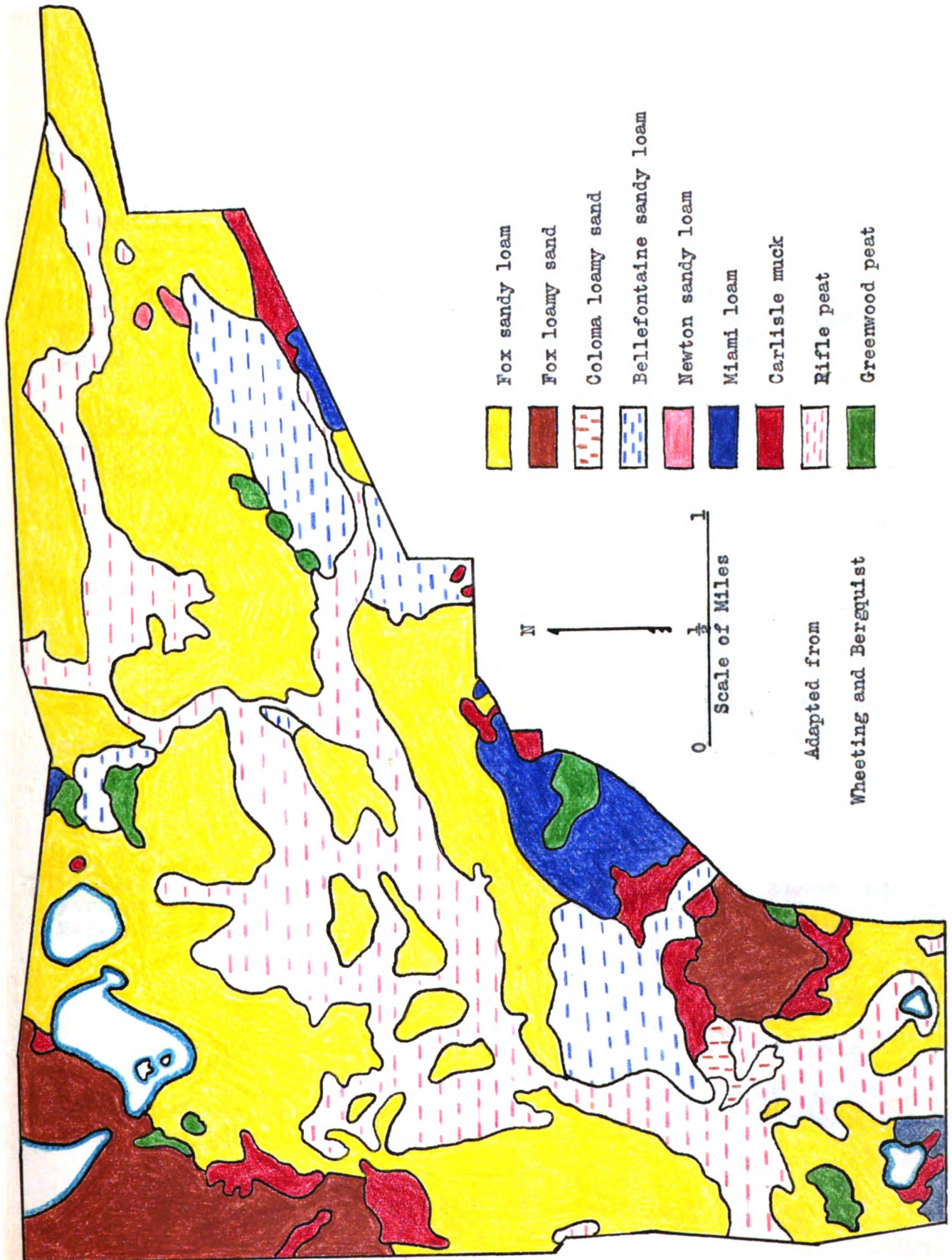
On account of the numerous revisions of genera and re-naming of species since the publication of the 7th edition

of Gray's Manual of Botany by Robinson and Fernald in 1908, it was decided not to use that manual as a basis for identification, except in keying a plant to the family and for cross-checking with other manuals. Deam's Flora of Indiana (1940) was largely used for the identification of herbaceous plants with the exception of the genera: Potamogeton, Carex, Liatris and Erigeron. Determinations in the latter groups were made largely from: The Broad-leaved Species of Potamogeton of North America North of Mexico, Ogden (1943); The Genus Carex in Michigan, Hermann (1941); The Genus Liatris, Gaiser (1946); and Revision of the North American Species of Erigeron North of Mexico, Cronquist (1947). Hitchcock's Manual of the Grasses of the United States (1935) was used with Deam's Flora of Indiana in working out the grasses. Deam was also used for shrubs except in the genus Ribes. Here the author referred to Species of the Genus Ribes Occurring in the Great Lakes Region by Darlington and Culver (1939). Descriptions and illustrations in Billington's Shrubs of Michigan (1943), especially in the genera Salix and Vitis, were found helpful. The basis for identification of trees is Sargent's Manual of the Trees of North America (1933) used in connection with the Flora of Indiana. In nearly every instance, a check on recent nomenclature was made with the Flora of Kalamazoo County by Hanes and Hanes, published in January, 1947. In some cases where Hanes and Hanes differed from Deam or Sargent, the latter authors were followed.

The spermatophytes in the Island Lake State Recreation

Area present a taxonomically diverse flora. Ninety-five families are represented, the largest being the Compositae with 72 species and varieties. The second largest is the Gramineae with 61 species, varieties and forms. Of the 289 genera, the genus Carex is the largest with 24 species and varieties. Salix, Panicum and Solidago are second with 11 each. Altogether 599 species, varieties and forms were determined. Doubtless further study would reveal a greater number. However, it is believed that the plants reported in the Synoptic List of Plants represent the great majority of the spermatophytes in the area.





SYNOPTIC LIST OF PLANTS

PINACEAE Lindl. Pine Family.

Pinus [Tourn.] L. Pine.

Pinus Strobus L. Northern White Pine.
Represented by plantings at the south end of Island Lake.
No naturally occurring trees were found.

Pinus Banksiana Lamb. Gray Pine. Jack Pine.
Planted on a steep slope at the south end of Island Lake.
No seedlings were observed to indicate that this tree is spreading.

Pinus sylvestris L. Scotch Pine. Scotch Fir.
Planted on a well-drained, sandy slope just inside the park fence west of Island Lake. An old tree was found near a cellar on abandoned farmland.

Pinus Laricio Poir. var. *austriaca* Endl. Austrian Pine.
(*P. nigra* Arnold)
Planted in the picnic grounds and adjacent to the camp grounds at the south end of Island Lake.

Larix [Tourn.] Mill. Larch.

Larix laricina (Du Roi.) Koch. American Larch. Tamarack.
The dominant tree in senescent bogs. See Figure 4. Frequently associated with *Rhus vernix*.

Picea Link. Spruce.

Picea Abies (L.) Karst. Norway Spruce.
Planted in farmyards. A large tree stands in an abandoned yard on Pleasant Road one-quarter mile north of the Pere Marquette track.

Juniperus [Tourn.] L. Juniper.

Juniperus communis L. var. *depressa* Pursh. Prostrate Juniper.
A low, spreading shrub on exposed sandy slopes. Grows weakly under white oak and in tamarack bogs. Not as common as *J. virginiana*.

Juniperus virginiana L. Red Cedar.
Frequent to common on grassy, well-drained slopes and along the margins of oak-hickory woods. It also occurs in senescent tamarack bogs.

TYPHACEAE J. St. Hil. Cattail Family.

Typha [Tourn.] L. Cattail

Typha latifolia L. Common Cattail.

Common in very wet situations in marshes and ditches along roads.

Typha angustifolia L. Narrow-leaved Cattail.

Collected at the shallow end of a pond in the gravel pit. Growing with *T. latifolia*.

SPARGANACEAE Agardh. Bur-reed Family.

Sparganium [Tourn.] L. Bur-reed.

Sparganium eurycarpum Engelm. Giant Bur-reed.

Common in situations with water on the surface in senescent tamarack bogs and marshes.

POTAMOGETONACEAE Engl. Pondweed Family.

Potamogeton [Tourn.] L. Pondweed

Potamogeton nodosus Poir.

(*P. americanus* Cham. and Schlecht.)

In sluggish water in the Huron River. "It is found mostly in streams, and less often in lakes...." (Deam, p. 78). Infrequent in Kalamazoo County (Hanes, p. 14).

Potamogeton amplifolius Tuckerm. Large-leaved Pondweed.

Collected at the south end of Island Lake in five feet of water. Frequent locally in Kalamazoo County (Hanes, p. 14).

Potamogeton gramineus L. var. *typicus* Ogden.

Occurs in Island Lake to a depth of at least five feet. Hanes (p. 14) describes the typical form as frequent in Kalamazoo County.

Potamogeton gramineus var. *myriophyllus* Ogden.

Growing in sluggish water in the Huron River. Infrequent in Kalamazoo County (Hanes, p. 15).

Potamogeton illinoensis Morong.

Found in six feet of water in Island Lake. Frequent in lakes and streams in Kalamazoo County (Hanes, p. 15) Infrequent in the lakes throughout the lake area of Indiana. (Deam, p. 79).

Potamogeton pectinatus L.

Collected in Island Lake and in sluggish water in the Huron River. Frequent throughout the state (Beal, p. 41).

NAJADA CEAE Lindl.

Najas L. Naiad.Najas flexilis (Willd.) Rostk. and Schmidt.

Common in shallow, sandy streams, the Huron River, and in Island Lake from a depth of a few inches to at least six feet.

JUNCAGINA CEAE Lindl. Arrow-grass Family.

Triglochin [Riv.] L. Arrow-grass.Triglochin maritima L. Seaside Arrow-grass.

Collected at only one station, in a senescent bog. Walpole (p. 13) reports it from the shores of marl lakes in Washtenaw County. "Infrequent in swamps where marl is near the surface," (Hanes, p. 17).

ALISMA CEAE DC. Water-plantain Family.

Alisma L. Water-plantain.Alisma subcordatum Raf. American Water Plantain.

(A. Plantago-aquatica of Gray's Man., ed. 7.)

Frequent in shallow water in marshes and on reedy shores of Island Lake. It was also found in a drained bog.

Sagittaria L. ArrowheadSagittaria latifolia Willd. Broad-leaved Arrowhead,
Common Arrowhead.

Common in marshes, senescent bogs, and on the muddy banks of streams.

Sagittaria latifolia f. gracilis (Pursh.) Rob.

Same habitat as above, but not as frequent.

HYDROCHARITA CEAE Asch. Frogbit Family.

Anacharis Bab. & Planch. Waterweed.

Anacharis canadensis (Michx.) Planch. Waterweed.
(Elodea canadensis of Gray's Man., ed. 7.)

Collected in five feet of water at the south end of Island Lake and on a muddy bottom in the Huron River. Common throughout the state (Beal, p. 42).

Vallisneria [Micheli] L.

Vallisneria americana Michx. Wild Celery.
(V. spiralis of Gray's Man., ed. 7.)

Common. Occurs in ponds in the gravel pit, in shallow streams and in the Huron River.

GRAMINEAE Juss. Grass Family.

Bromus L. Brome-grass.

Bromus tectorum L. Downy Chess.

An abundant weedy grass in old fields, along roadsides, and in denuded areas.

Bromus inermis Leyss. Smooth Brome.

Collected along the edge of a gravel road, apparently escaping from cultivation. An alfalfa-brome field was found in the vicinity.

Bromus ciliatus L. Fringed Brome.

Frequent in open places in senescent bogs and in marshes.

Bromus ciliatus f. denudatus Wiegand.

A form with glabrous sheaths; regarded by Fernald as the typical form of the species. Collected at only one station, in a senescent bog.

Bromus secalinus L. Chess. Cheat.

Collected in a wheatfield.

Vulpia K. C. Gmelin

Vulpia octoflora (Walt.) Rhydb. var. tenella
(Willd.) Fern. (Festuca octoflora var. tenella
[Willd.] Fern.)

Collected in an alfalfa field, and in an oak woods. A frequent grass in dry sterile soil in Kalamazoo County (Hanes, p. 21).

Festuca L. Fescue Grass.**Festuca ovina L. Sheep Fescue.**

Occasional on sandy slopes in light shade and in denuded areas. Infrequent in pastures and grassy lands in Washtenaw County (Walpole, p. 18).

Glyceria R. Br. Mannagrass**Glyceria striata (Lam.) Hitchc. Fowl Mannagrass.**

(G. nervata [Willd.] Trin. and Panicularia nervata [Willd.] Ktze.)

Common in senescent bogs. It also occurs in elm-maple flood plain forest.

Glyceria canadensis (Michx.) Trin. Canada Mannagrass.

(Panicularia canadensis [Michx.] Ktze.)

Collected in shallow water at the edge of a pond with a muddy bottom. Frequent in Washtenaw County in swales and on riverbanks (Walpole, p. 18).

Glyceria pallida (Torr.) Trin. Pale Mannagrass.

(Panicularia pallida [Torr.] Ktze.)

Growing in the Sphagnum bog on McCabe Rd. Also found floating in a pond. Infrequent in swales and along streams in Washtenaw County (Walpole, p. 18). Rare in wet places in the southern part of the state (Beal, p. 48).

Glyceria septentrionalis Hitchc.

(Panicularia septentrionalis Hitchc. Bickn.)

Growing in water at the edge of a pond. Frequent in wet places in Washtenaw County (Walpole, p. 18).

Poa L. Bluegrass.**Poa annua L. Low Spear Grass.**

Frequent in cultivated fields and railroad ballast.

Poa autumnalis Muhl. Flexuous Spear Grass.

Collected at only one station, in a thicket at the edge of a bog. Deam (p. 105) describes its habitat as slightly acid and in deep shade. All his specimens are from southern Indiana, but it has been reported from Michigan (Beal, p. 48).

Poa compressa L. Canada Bluegrass.

A common grass in old fields and along roadsides. It was also collected in denuded areas and oak-hickory woods.

Poa palustris L. Fowl Bluegrass.

(P. triflora Gilib. of Gray's Man., ed. 7. and Britton and Brown Illus. Flora, ed. 2)

Collected in the sedge-grass stage of a senescent bog. Doubtless this species is more frequent than collections indicate. "Frequent in wet meadows," (Hanes, p. 23).

Poa pratensis L. June Grass. Kentucky Bluegrass.

A very abundant grass in old fields and along roadsides. Occurs also in senescent bogs.

Eragrostis Host. Lovegrass.Eragrostis spectabilis (Pursh) Steud. Purple Lovegrass.

(E. pectinacea of Gray's Man., ed. 7. and Britton and Brown, Illus. Flora, ed. 2.)

Collected in a hickory consocieties in which there was no underbrush due probably to grazing. Infrequent in dry fields in Washtenaw County (Walpole, p. 17).

Eragrostis pectinacea (Michx.) Nees.

(E. Purshii Schrad. and E. caroliniana [Spreng.] Scribn.)

Along roadsides in open, sandy situations. Also in a cultivated field. Walpole (p. 17) describes as infrequent in moist places E. pilosa (L.) Beauv. According to Hermann (1938, p. 18), this reference is to E. pectinacea (Michx.) Nees.

Dactylis L.Dactylis glomerata L. Orchard Grass.

Frequent along roadsides in light shade.

Phragmites Trin.Phragmites communis Trin. var. Berlandieri (Fourn.) Fern. Common Reed.

Occurs in marshes and wet meadows, forming small patches. Spreads mostly by roots, as it rarely produces seeds. The tallest of our native grasses. Culms in the park average about 7 feet. Hanes (p. 25) reports culms 14 feet high from Kalamazoo Co., and prostrate culms measuring 30 feet in length along U. S. Highway 131 east of Sugarloaf Lake.

Agropyron Gaertn. Wheatgrass.Agropyron repens (L.) Beauv. Quackgrass.

A weedy grass in fallow and old fields.

Agropyron repens f. aristatum (Schum.) Holmb.
The awned form of Quackgrass. Collected along a roadside in a low situation, and in the sedge-grass stage of a senescent bog.

Elymus L. Wild-rye.

Elymus virginicus L. Virginia Wild-rye.
In elm-maple flood plain forest, and in marshes in the shrub stage of development.

Elymus virginicus var. intermedius (Vasey) Bush.
(E. virginicus var. hirsutiglumis [Scribn.] Hitchc.
and E. hirsutiglumis Scribn.)
In open places on mucky banks of the Huron River. Also collected on a low, shaded roadside.

Elymus virginicus var. jejunus (Ramaley) Bush
A specimen which keys out to this form in Deam's Flora of Indiana was found in a low, wet field. Deam (p. 118) says: "This rare form is known only from Umbach's specimen collected 'on the sands at Pine,' Lake County, [Indiana] on June 29, 1898."

Hystrix Moench

Hystrix patula Moench. Bottle-brush Grass.
Infrequent. Collected in an oak woods, and under oak on low ground above the edge of a marsh. Frequent on wooded slopes in Washtenaw County (Walpole, p. 19).

Sphenopholis Scribn. Wedgegrass.

Sphenopholis intermedia (Rydb.) Rydb. Slender Wedgegrass.
Frequent in senescent bogs. It also occurs in the sphagnum bog on the south side of McCabe Road.

Calamagrostis Adans. Reedgrass.

Calamagrostis canadensis (Michx.) Beauv. Bluejoint.
Common in senescent bogs where it frequently is the dominant grass in open situations.

Agrostis L. Bentgrass.

Agrostis palustris Huds.
(A. alba L. var. maritima Lam. G. F. W. Mey.,
A. maritima Lam.)
Occasional in senescent tamarack bogs, and on wet ground generally.

Agrostis scabra Willd. Hair Grass. Northern
Ticklegrass.
In open situations in senescent bogs.

Agrostis hyemalis (Walt.) B.S.P. Hair Grass.
Common in old fields.

Cinna L.

Cinna arundinacea L. Wood Reed Grass.
Collected in a marsh, and in an elm-maple flood plain
forest. It also occurs on muddy banks of the Huron River.
Frequent in moist woods in Washtenaw County (Walpole, p. 16).

Alopecurus L. Foxtail.

Alopecurus aequalis Sobol.
(A. geniculatus L. var. aristulatus Torr. of Gray's
Man., ed. 7. and A. aristulatus Michx. of Britton
and Brown, Illus. Flora, ed. 2.)
Collected at the edge of a pond and among sedges in a
Sphagnum bog.

Phleum L.

Phleum pratense L. Timothy
Frequent along roadsides. Also found at the edge of a
pond.

Stipa L. Needlegrass.

Stipa spartea Trin. Porcupine Grass.
A colony about 40 feet across was found in ballast on
nearly level ground. Infrequent in dry, sandy places in
Washtenaw County (Walpole, p. 16). Hanes (p. 32) says it
is scarce in Kalamazoo County and gives the habitat as
roadsides and railways. Michigan is on the eastern end
of the range of this grass (Robinson and Fernald, p. 124
and Deam, p. 138).

Bouteloua Lag. Grama Grass.

Bouteloua curtipendula (Michx.) Torr. Side-oats Grama.
(Antheropogon curtipendulus (Michx.) Fourn.)
Collected in front of a cottage on dry ground under oak.
Not planted. Rare on dry, sandy hillsides in Washtenaw
County (Walpole, p. 17). Rare in Kalamazoo County (Hanes,
p. 33). Beal (p. 47) gives the habitat as dry plains of
southern Michigan.

Phalaris L. Canary Grass.*Phalaris arundinacea* L. Reed Canary Grass.

Common in senescent bogs, seeming to prefer open, mucky situations from the edge of the river back to about 30 feet.

Leersia Sw.*Leersia virginica* Willd. White Grass.

(*Homalocenchrus virginicus* [Willd.] Britt.)

In a flood plain forest of elm, maple and ash. Frequent in swampy woods in Washtenaw County (Walpole, p. 15).

Leersia oryzoides (L.) Sw. Rice Cut Grass.

(*Homalocenchrus oryzoides* [L.] Poll.)

Collected in a marsh. Walpole (p. 15) describes it as frequent in open wet places in Washtenaw County.

Zizania L. Wild Rice.*Zizania aquatica* L. var. *angustifolia* Hitchc.

Northern Wild Rice.

Collected at only one station, in a shady situation at the edge of a stream. Frequent in shallow water in Washtenaw County (Walpole, p. 15).

Digitaria Heist. Crabgrass.*Digitaria Ischaemum* (Schreb.) Muhl. Smooth Crabgrass.

A common weedy grass along roadsides in open places and in sandy denuded areas.

Digitaria sanguinalis (L.) Scop. Large Crab Grass.

Frequent in railroad ballast and in sandy denuded areas.

Leptoloma Chase*Leptoloma cognatum* (Schultes) Chase Fall Witch Grass.

Common in dry old fields.

Panicum L. Panicum.*Panicum dichotomiflorum* Michx. Fall Panicum.

Found in waste ground. Not reported by Bingham (p. 89) from Oakland County, nor by Walpole (p. 15) from Washtenaw County. "Infrequent at present but becoming more common in fields and gardens and along roadsides," (Hanes, p. 35). "...an infrequent to frequent grass in all parts of the state, [Indiana] being much more frequent in the southern part," (Dean, p. 156)

Panicum capillare L. Old Witch Grass.
Frequent along dry, sandy roadsides.

Panicum virgatum L. Switch Grass. Wild Red Top.
Growing in railroad ballast. Frequent in dry or wet soil in Washtenaw County (Walpole, p. 15). Hanes (p. 35) gives the habitat in Kalamazoo County as: "...roadsides, railways, and near sandy lake shores."

Panicum perlongum Nash.
Occasional on gentle slopes in old fields. "This is a prairie grass reaching its eastern limit in Michigan." (Hanes, p. 36)

Panicum linearifolium Scribn. Slender-leaved Panic Grass.
Found in a low field. Infrequent in dry soil in Washtenaw County (Walpole, p. 15). Infrequent in Kalamazoo County (Hanes, p. 36).

Panicum meridionale Ashe. Matted Panic Grass.
Collected in an old field. Frequent in Kalamazoo County (Hanes, p. 36).

Panicum huachucae Ashe. Hairy Panic Grass.
Common in dry, sterile fields. Also found on wet ground in a low field.

Panicum huachucae var. fasciculatum (Torr.) F. T. Hubb.
(P. lanuginosum var. fasciculatum Fern. and P. huachucae var. silvicola Hitchc. and Chase)
Growing in a marsh. Deam (p. 168) doubts whether this is distinct from the typical form.

Panicum villosissimum Nash.
Collected in an old field. Infrequent in Kalamazoo County (Hanes, p. 36).

Panicum Scribnerianum Nash.
(P. oligosanthos Schultes var. Scribnerianum (Nash.) Fern.)
Occasional in old fields. Frequent in light, sandy soil in Washtenaw County (Walpole, p. 15). Frequent in the same habitat throughout the state (Beal, p. 43).

Panicum latifolium L.
Occasional in oak-hickory woods. Frequent in dry woods in Washtenaw County (Walpole, p. 15).

Echinochloa Beauv.

Echinochloa crusgalli (L.) Beauv. Barnyard Grass.
Frequent in sandy denuded areas, along roadsides, and in marshes.

Setaria Beauv.

Setaria lutescens (Wiegel) F. T. Hubb. Yellow Foxtail. Pigeon Grass.

(S. glauca (L.) Beauv.)

Common in denuded areas, ballast, and cultivated ground.

Setaria viridis (L.) Beauv. Green Foxtail.

A common weedy grass in plowed fields, railroad ballast, gardens and old fields. (See Figure 3, p. 119.)

Cenchrus L.

Cenchrus longispinus (Hackel) Fern. Sandbur.

(C. pauciflorus Benth.)

In dry open situations at the edges of dirt roads, and in sandy denuded areas.

Andropogon L.

Andropogon scoparius Michx. Prairie Beard Grass.

Broomsedge.

Not as common as A. Gerardi. Found in old fields in low situations.

Andropogon Gerardi Vitman. Big Bluestem. Blue-joint. Turkey-foot.

(A. furcatus Muhl.)

Scattered throughout old fields, and in open situations along roadsides. Culms up to seven feet tall were collected in the shrub stage of a senescent bog where the ground cover was largely Osmunda regalis.

Sorghastrum Nash

Sorghastrum nutans (L.) Nash Indian Grass.

Collected at only one station, in a low, mucky place along the Huron River. Frequent on dry banks in Washtenaw County (Walpole, p. 14).

CYPERACEAE J. St. Hil. Sedge Family.

Dulichium Pers.

Dulichium arundinaceum (L.) Britt.

Collected in a Sphagnum bog. Common throughout the state on the borders of swamps and ponds (Beal, p. 51).

Cyperus [Tourn.] L.

Cyperus rivularis Kunth. Shining Cyperus.
Found on a sand bar off the smaller island in Island Lake. Frequent in Michigan (Beal, p. 50).

Cyperus filiculmis Vahl. var. *macilentus* Fern.
Frequent in old fields; grows in dry situations.

Cyperus Engelmanni Steud.
Collected in three inches of water on a sand bar off the smaller island at the south end of Island Lake. Walpole (p. 19) does not report it from Washtenaw County, nor Bingham (p. 93) from Oakland County. Rare in Michigan (Beal, p. 50).

Cyperus strigosus L. Straw-colored Cyperus.
Along sandy shores, Island Lake. Common on low ground in central and southern Michigan (Beal, p. 51).

Eriophorum L. Cotton Grass.

Eriophorum viridi-carinatum (Engelm.) Fern.
Collected in a very wet part of a senescent tamarack bog. Walpole (p. 20) describes this Cotton Grass as frequent in bogs and wet meadows in Washtenaw County.

Scirpus [Tourn.] L. Bulrush.

Scirpus americanus Pers. Chairmakers-rush.
Growing in water along sandy shores, Island Lake. Common throughout the state along the borders of ponds (Beal, p. 52).

Scirpus acutus Muhl. Lake Bulrush.
(*S. occidentalis* [Wats.] Chase.)
Common on sandy or mucky bottoms of the Huron River in water one foot deep; also in the reed-sedge stage of senescent bogs.

Scirpus atrovirens Willd. Dark-green Bulrush.
(*S. atrovirens* Muhl.)
In open situations in senescent bogs. Common in wet meadows (Beal, p. 52).

Scirpus lineatus Michx. Reddish Bulrush.
On low, muddy banks of the Huron River. Infrequent in swamps and wet ditches in Washtenaw County (Walpole, p. 20). Infrequent in Kalamazoo County (Hanes, p. 44). The most common bulrush in Indiana (Deam, p. 196).

Scirpus cyperinus (L.) Kunth Wool Grass.

Collected in a Sphagnum bog. Walpole (p. 20) describes this species as common in Washtenaw County in marshes and wet meadows.

Eleocharis R. Br. Spikerush.

Eleocharis intermedia (Muhl.) Schultes. Matted Spikerush.

In muck at the forward edge of a senescent bog along the Huron River.

Eleocharis obtusa (Willd.) Schultes. Blunt Spikerush.

Forming a thick cover over a drained bog. Wet grounds throughout the state (Beal, p. 51).

Eleocharis acicularis (L.) R. and S. var. typica Svenson Needle Spikerush.

Forming dense mats on the south shore of the smaller island in Island Lake. It also occurs on shallow muddy bottoms of the Huron River.

Carex Dill. L. Sedge.

Carex siccata Dewey

Determined by F. J. Hermann. Collected only once, in dry, sandy soil. "Frequent in the southern half of the Lower Peninsula" (Hermann, 1941, p. 7).

Carex convoluta Mack.

In senescent tamarack bogs along the Huron River. Hermann (1941, p. 10) gives the habitat as deciduous woods on generally rich soils. Specimens collected at the park were compared with specimens in the Michigan State College Herbarium annotated by him and were found to agree.

Carex Muhlenbergii Schkuhr.

On a sandy slope at the edge of an oak woods, and in an old field. Common in the southern half of the Lower Peninsula in sandy soils in open places and in dry, open oak woods (Hermann, 1941, p. 10)

Carex vulpinoidea Michx.

Growing at the edge of a pond and in open, wet areas generally. "Very common throughout the state." (Hermann, 1941, p. 12). Deam (p. 225) describes this sedge as one of the most common in swampy places in Indiana.

Carex prairea Dewey

Frequent in senescent tamarack bogs. It also occurs in marshes.

Carex stipitata Muhl.

In senescent tamarack bogs, and in low, wet fields back of the Huron River. A very common sedge in Michigan (Hermann 1941, p. 13).

Carex trisperma Dewey

In the sedge-grass stage of a sphagnum bog. "Common throughout the state in acid soils of swampy woods and bogs." (Hermann 1941, p. 15).

Carex interior Bailey

(C. scirpoides Schkuhr. in part, not C. scirpoides Michx.)

Common in senescent tamarack bogs along the Huron River.

Carex scoparia Schkuhr.

Frequent in marshes; also occurring in wet meadows.

Carex pennsylvanica Lam.

Frequent in oak-hickory woods where it is either scattered or common forming a ground cover. It also occurs on open, sandy slopes in old fields.

Carex aurea Nutt.

Found at only one station, in a low old field. "Common in swamps and bogs, wet woods and thickets, and in low peat meadows; frequent on wet sandy shores." (Hermann 1941, p. 37)

Carex paupercula Michx.

Found only once. Unfortunately the habitat record was lost. Hermann (1941, p. 53) gives the habitat as bogs, mossy borders of pools and conglomerate shores, and says this species is rare in southern Michigan, probably being absent from the counties south of Livingston.

Carex Haleana Olney

(C. granularis Muhl. var. Haleana [Olney] Porter; C. Shriveri Britt., and C. granularis var. Shriveri Britt.)

Collected at only one station, in a wet field back of the Huron River. Reported by Hermann (1941, p. 43) as common in southern Michigan.

Carex viridula Michx. f. intermedia (Dudley) Hermann

(C. Oederi var. prolifera H. B. Lord; C. Oederi f. intermedia Dudley; C. chlorophila Mack.)

Growing in four inches of water on a sand bar off the smaller island at the south end of Island Lake. "Common on wet sandy or marly borders of lakes... infrequent in marshes." (Hermann 1941, p. 49)

Carex flava L.

In senescent tamarack bogs. Frequent to fairly common in the state (Hermann 1941, p. 50).

Carex lasiocarpa Ehrh.(C. filiformis of authors, not L.)

Collected at only one station. Reported by Hermann (1941, p. 52) as fairly common south of Roscommon Co., occurring in bogs, swamps, marshes and wet meadows. It is one of the mat-forming sedges in young bogs.

Carex substricta (Kukenth) Mack.(C. aquatilis of most authors)

Determined by F. J. Hermann. Collected in a senescent tamarack bog. Infrequent in the park. "Fairly common in the eastern part of both the Lower and Upper Peninsulas." (Hermann 1941, p. 56)

Carex stricta Lam. var. strictior (Dewey) Carey(C. strictior Dewey)

Frequent in low fields back of the Huron River and in senescent tamarack bogs.

Carex hystericina Muhl.(C. hystericina var. Dudleyi Bailey)

Occurs in senescent tamarack bogs, in marshes along streams, and in low fields back of the Huron River. "Very common south of Saginaw Bay..." (Hermann 1941, p. 59)

Carex comosa Boott(C. Pseudo-Cyperus L. var. americana Hochst.)

In the Sphagnum bog on the south side of McCabe Road, and in senescent bogs along the Huron River. "Common south of Saginaw Bay..." (Hermann 1941, p. 60)

Carex rostrata Stokes(C. utriculata Boott and C. rostrata var. utriculata [Boott] Bailey)

Frequent in senescent tamarack bogs.

Carex retrorsa Schwein.

Collected at only one station, in a marsh. Frequent in the southern part of the state, becoming fairly common northward. (Hermann 1941, p. 64)

Carex intumescens Rudge

Collected in the sedge-grass stage of a Sphagnum bog. "Frequent to fairly common south of Saginaw Bay...." (Hermann 1941, p. 65)

Carex lupulina Muhl.(C. lupulina var. pedunculata Gray)

Elm-maple flood plain forest, and at the edges of ponds in flood plains. "Fairly common to locally common south of Saginaw Bay...." (Hermann 1941, p. 65)

ARACEAE Neck. Arum Family.

Symplocarpus Salisb.

Symplocarpus foetidus (L.) Nutt. Skunk Cabbage.
(*Spathyema foetida* L. Raf.)

In muck along the edge of the Huron River, and in senescent bogs. It grows abundantly in an elm-maple flood plain forest one-quarter of a mile northeast of the bridge at Placeway Road and the Huron River.

Calla L.

Calla palustris L. Wild Calla.

Frequent where the shrub stage and sedge-grass stage intermingle in a Sphagnum bog on the south side of McCabe Road where it is joined by Butcher Road. Reported by Walpole (p. 23) as frequent in Washtenaw County, by Hanes (p. 62) as rare in Kalamazoo County.

Arisaema Martius

Arisaema triphyllum (L.) Schott. Jack-in-the-Pulpit.
Indian Turnip.

(*A. triphyllum* (L.) Torr.)

Infrequent in elm-maple flood plain forest. At the time this plant was in flower, the author was unaware of the species complex that apparently exists. The spathe of the specimen collected is green both inside and out. Doubtless, plants with a spathe purple on the inside also occur. Both are reduced to *A. triphyllum* in Gray's Manual, 7th ed. Deam (p. 279) reports *A. pulchellum* (Peck.) Nash., which in Indiana is restricted to bogs and has a spathe purplish brown on both sides. This he regards as an extreme form of *A. triphyllum*. Hanes (p. 62) reports *A. atrorubens* (Ait.) Blume. forma *zebrinum* (Sims.) Fern., a form with "long, purple stripes" on the inside of the spathe, and says it is synonymous with *A. triphyllum* of recent authors, not (L.) Schott. *A. atrorubens* forma *viride* (Engler.) Fern. is the name applied by Hanes to the form with the green spathe, or "with only faint stripes."

LEMNACEAE Dumort. Duckweed Family.

Lemna L.

Lemna minor L. Lesser Duckweed.

Common in stagnant water in ponds. It also occurs in Island Lake and about springs.

PONTEDERIA CEAE Dumort. Pickerelweed Family.

Pontederia L.

Pontederia cordata L. Pickerel Weed

Common in the Huron River. One collection might be f. latifolia (Farw.) House. Deam (p. 288) says there is so much integration between f. latifolia and the typical form that it is doubtful whether the former should be maintained. (See Figure 3, p. 119.)

JUNCA CEAE Vent. Rush Family

Juncus [Tourn.] L.Juncus effusus L. var. solutus Fern. and Wieg.

In low, wet open places. Common throughout Kalamazoo County (Hanes, p. 65).

Juncus effusus var. Pylaei (Laharpe) Fern. and Wieg.

Collected in a marsh. Hanes (p. 65) reports it as scarce in Kalamazoo County.

Juncus balticus Willd. var. littoralis Engelm.

Common in shallow water around the islands at the south end of Island Lake.

Juncus macer S. F. Gray f. Williamsii (Fern.) Hermann

In low, shaded situations on Miami soil. No plants were found on other soils.

Juncus Dudleyi Wieg.

In senescent tamarack bogs and wet meadows. Infrequent on damp soil in Washtenaw County (Walpole, p. 24).

Juncus canadensis J. Gay(J. canadensis var. longicaudatus Engelm.)

Collected in a marsh and in water on a sandy shore of Island Lake. Frequent in marshy fields in Washtenaw County (Walpole, p. 25).

Juncus articulatus L. var. obtusatus Engelm.

Occasional in marshes, and in water on sandy shores of Island Lake. Not reported by Bingham (p. 99) nor Hanes (p. 67) as occurring in either Oakland or Kalamazoo Counties. Fassett (p. 180) gives the range from Nova Scotia to New Jersey. Collections agree with specimens determined by F. J. Hermann in the Michigan State College Herbarium.

Luzula DC. Wood Rush.

Luzula multiflora (Retz.) Lejeune
 (L. campestris L. DC. var. multiflora (Ehrh.
 Celak)

In low, old fields; frequent. Common in oak woodlands in Kalamazoo County (Hanes, p. 67). Bingham (p. 99) reports it also from marshes and bogs in Oakland County.

LILIA CEAE Adans. Lily Family.

Tofieldia Huds.

Tofieldia glutinosa (Michx.) Pers. False Asphodel.
 Collected at only one station, in an open spot in a senescent bog. Frequent throughout the state (Beal, p. 60).

Uvularia L.

Uvularia grandiflora J. E. Smith Large-flowered
 Bellwort.

Infrequent or rare. Seen at only two stations, only two plants occurring at one. Both habitats were similar: in light shade, in somewhat moist, sloping soil near a pond or stream. Frequent in rich woods in Washtenaw County (Walpole, p. 26).

Uvularia sessilifolia L. Little Merrybells.
 (Oakesia sessilifolia (L.) Watts.)

Collected in grass along a road on somewhat low ground. Infrequent in moist woods in Washtenaw County (Walpole, p. 26). Reported by Bingham (p. 100) from oak-hickory woods in Oakland County. Not reported from Kalamazoo County by Hanes (p. 68).

Hemerocallis L. Day Lily.

Hemerocallis fulva L. Tawny Day Lily.

Found at abandoned homesites where it has persisted and spread from early plantings.

Allium L.

Allium canadense L. Meadow Garlic.

Found on a shaded sandy stream bank. Frequent in moist meadows in Washtenaw County (Walpole, p. 25). Common in Michigan (Beal, p. 60).

Lilium L. Lily.

Lilium michiganense Farwell Michigan Wild Lily.
Occasional in an elm, maple, birch flood-plain forest,
and in thickets at the edges of marshes.

Asparagus [Tourn.] L.

Asparagus officinalis L. Garden Asparagus.
Infrequent. Occurring along the edges of oak-hickory
woods, and along roadsides.

Smilacina Desf.

Smilacina racemosa (L.) Desf. var. *cylindrata* Fern.
False Solomon's-seal.

(*Vagnera racemosa* [L.] Morong in part)

A variety which grades into *S. racemosa*, which is the
northern form of the species. According to Fernald, as
reported by Hanes, the southern counties of Michigan might
be regarded as a transition belt between the "extreme
northern *Smilacina racemosa* and the more southern variety
cylindrata..." (Hanes, p. 70).

Smilacina stellata (L.) Desf. Starry False Solomon's-
Seal.

(*Vagnera stellata* [L.] Morong)

Collected in a senescent bog. Apparently infrequent in
the park. Common throughout the state on moist banks (Beal,
p. 62).

Maianthemum [Weber in] Wiggers

Maianthemum canadense Desf. var. *interius* Fern. Wild
Lily-of-the-Valley. Two-leaved Solomon's-seal.

(*Unifolium canadense* [Desf.] Greene)

Common in shady situations in senescent bogs and flood-
plain forests. A number of specimens were examined in the
field, but all were pubescent on the under side of the leaves,
a characteristic of the variety.

Polygonatum [Tourn.] Hill

Polygonatum pubescens (Willd.) Pursh. Hairy Solomon's-
seal.

(*P. biflorum* of recent authors)

Collected in a shady situation at the edge of a road.
Common in woods in Kalamazoo County (Hanes, p. 71).

Polygonatum biflorum (Walt.) Ell. Smooth Solomon's-seal.

(P. commutatum Shultes f. A. Dietrich)

Collected at the edge of a road in light shade. Regarded by Deam (p. 320) as a species complex which he divides into "...tall plants with wide leaves usually along roadsides and fences and in open places...the small plants with narrow leaves are generally found in moist woodland." The specimen collected was four feet tall and with broad leaves.

Trillium L.

Trillium grandiflorum (Michx.) Salisb. Large-flowered Trillium. Giant Wake Robin.

Frequent in elm-maple flood-plain forests. Often mentioned in popular literature as becoming rare. Hanes (p. 72) reports it as common throughout Kalamazoo County. Walpole (p. 27) finds it common in Washtenaw. Reported by Deam (p. 323) as frequent in northeastern Indiana.

Smilax [Tourn.] L.

Smilax ecirrhata (Engelm.) Wats. Upright Smilax.

Infrequent on shaded muddy banks of streams. Hanes (p. 73) describes the habitat as "moist places which are subject to flooding."

Smilax rotundifolia L. Round-leaved Greenbrier.

Infrequent. Collected in an oak-hickory woods. Hanes (p. 73) reports it as rare in Kalamazoo County. Reported by Walpole (p. 27) as common in Washtenaw County.

AMARYLLIDACEAE Lindl. Amaryllis Family.

Hypoxis L.

Hypoxis hirsuta (L.) Coville Yellow Star Grass.

One specimen was collected in the marsh along Spring Creek. Apparently infrequent or rare. Hanes (p. 73) reports it as common in Kalamazoo County. Walpole (p. 27) also reports it as common. Giles (p. 32) does not report it from the area within a 10-mile radius of East Lansing.

DIOSCOREACEAE Lindl. Yam Family.

Dioscorea [Plumier] L.

Dioscorea villosa L. Wild Yam-root.

Collected in a thicket at the edge of a marsh. Frequent in central and southern Michigan (Beal, p. 63).

IRIDACEAE Lindl. Iris Family.

Iris [Tourn.] L. Iris.

Iris virginica L. var. Shrevei (Small) E. Anderson
Blue Flag.

(Iris versicolor in part of Gray's Man., ed. 7.)

Infrequent in the park area. Only a few plants were noted. A specimen was collected on a wooded bank at the edge of the Huron River. Walpole (p. 27) reports it as common in Washtenaw County. Giles (p. 32) says it requires open situations and is rarely found in wooded areas.

Sisyrinchium L. Blue-eyed Grass.

Sisyrinchium albidum Raf. White Blue-eyed Grass.

Frequent in old fields and oak-hickory woods. Giles (p. 33) was unable to find it in the East Lansing area, although Beal had reported it there in 1904. Bingham (p. 102) reports it from tamarack bogs in Oakland County. Deam (p. 334) finds it most abundant in Indiana in prairie habitats.

ORCHIDACEAE Lindl. Orchid Family.

Cypripedium L. Lady's-slipper.

Cypripedium reginae Walt. Showy Lady's-slipper.
(C. hirsutum Mill.)

Frequent in senescent tamarack bogs, usually occurring in groups of three to 10 plants. It would be worthwhile to keep a record from year to year on the frequency of this orchid as the park becomes used more and more by the public. Giles (p. 33) did not see it in the East Lansing area. Walpole (p. 28) reports it as frequent in Washtenaw County.

Cypripedium candidum Muhl. White Lady's-slipper.

On marshy ground grown up with shrubs. A single plant with two stems bearing one flower each was found. At first it was regarded as an albino form of Small Yellow Lady's-slipper which grew all around it. However, purple spots on the petals indicated it was C. candidum. A specimen was taken, but it spoiled before it could be pressed. Bingham (p. 102) describes its occurrence in Oakland

County as infrequent in "...wet marly meadows and cedar tamarack bogs." Hanes (p. 75) reports it as infrequent in Kalamazoo County.

Cypripedium Calceolus L. var. parviflorum (Salisb.)
Fern. Small Yellow Lady's-slipper.
(C. parviflorum Salisb.)

Common in a marshy situation grown-up with shrubs on the west side of the Huron River south of Pleasant Valley Road. This is the only locale in which the author found this plant. In 1904, Beal (p. 64) reported it as frequent throughout the state. Giles (p. 33) does not list it as occurring within a 10-mile radius of Michigan State College. Walpole (p. 28) reports it as infrequent in Washtenaw County. Reported by Hanes (p. 74) as rare in Kalamazoo County.

Habenaria Willd.

Habenaria dilatata (Pursh) Gray Tall White Bog Orchis
(Limnorchis dilatata [Pursh] Rydb.)

Collected at only one station, in a senescent tamarack bog. Bingham (p. 102) reports it as not common in Oakland County. Deam (p. 341) regards the northern counties of Indiana bordering on Lake Michigan as the extreme southern limit of its range.

Spiranthes Richard Ladies' Tresses.

Spiranthes cernua (L.) Richard Nodding Ladies' Tresses.
Occasional on wet ground. Common on wet soil in Washtenaw County (Walpole, p. 29).

Calopogon R. Br.

Calopogon pulchellus (Salisb.) R. Br. Grass-pink.
Orchid.

Infrequent to frequent in open situations in senescent bogs.

Corallorrhiza [Haller] Chatelain.

Corallorrhiza maculata Raf. Large or Spotted Coral Root.
Collected at only one station, in light shade under oak. Deam reports it only from oak woods in northern Indiana. Giles (p. 37) found it in beech-maple forest in deep humus in Baker Woodlot, Michigan State College, where Epifagus virginiana was common.

SALICACEAE Lindl. Willow Family.

Populus [Tourn.] L. Poplar.

Populus alba L. Silver-leaved Poplar.
Persisting in deserted farmyards from early plantings.

Populus balsamifera L. var. *virginiana* Sarg.
(*P. deltoides* Marsh. and *P. nigra* β *virginiana*
Castiglione at least in part)

In ravine bottoms around ponds and on low, sandy ground generally.

Populus grandidentata Michx. Large-toothed Aspen.
A frequent to common tree in low, sandy soil in the open and along the edges of woods. Also found as a co-dominant with *Ulmus americana* in a low, wet woods along a stream.

Populus tremuloides Michx. Quaking Aspen. American Aspen.

This is a common tree around the edges of marshes, ponds and bogs. Trees mostly one to two inches D.B.H. form a thicket on a drained bog three-eighths of a mile west of Kensington Road and 600 feet north of the gravel pit. It is frequent along roadsides, on slopes in rolling fields, and in open ravines. It was found also in a tamarack bog with a *Sphagnum* ground cover and along the edges of oak-hickory woodlands.

Salix [Tourn.] L. Willow.

Salix nigra Marsh. Black Willow.

Infrequent. A large tree was found growing at the edge of a marsh in a depression in a sandy field. Along streams throughout the state (Beal, p. 68). No individuals were observed along the Huron River, or in the bogs and marshes bordering it where willows reach their greatest concentration.

Salix serissima (Bailey) Fern. Autumn Willow.

Collected in a senescent bog. Infrequent. Infrequent in swamps in Washtenaw County (Walpole, p. 30). Infrequent in Kalamazoo County (Hanes, p. 81).

Salix lucida Muhl. Shining Willow.

Collected in water near the edge of a pond. Infrequent. Common throughout the state (Billington, p. 57).

Salix alba L. var. vitellina (L.) Stokes. Golden Willow.
Frequent along the Huron River, probably having spread from cultivated trees by branchlets which broke off and floated downstream. Deam (p. 361) believes it is more common in Indiana than the species.

Salix interior Rowlee Sand Bar Willow.
(S. longifolia Muhl.)
Common. Low banks of the Huron River, and around the edges of ponds.

Salix discolor Muhl. Pussy Willow.
A very common willow on low banks of the Huron River.

Salix discolor var. latifolia Anders.
Same habitat as the species but apparently not as common.

Salix humilis Marsh. Prairie Willow.
Infrequent in dry upland soil under scattered oak and in fence rows. Frequent throughout the state (Billington, p. 67).

Salix Bebbiana Sarg. Bebb's Willow.
(S. rostrata Richardson)
Frequent on low banks of the Huron River, in marshes and in senescent bogs.

Salix candida Flugge Sage Willow
Infrequent. Occurs in senescent bogs. Some specimens collected resembled S. candida var. denudata Anders. However, the characters were not definite enough to transfer them to the variety. Deam (p. 364) describes the variety thus: "...leaves...glabrate or glabrescent on both sides, especially above, and sometimes glaucescent beneath." Leaves of the species are pubescent above. Common throughout Michigan (Billington, p. 71).

Salix rigida Muhl. Heartleaf Willow.
(S. cordata Muhl.)
Very common on low banks of the Huron River. Apparently it is hybridizing with other species. Anthers are described by Deam (p. 356-357) as being yellow. Specimens collected showed anthers from red to yellow with varying proportions of red and yellow between. For this reason, crosses would seem to be with S. candida or S. humilis. However, neither of these species was observed in the same habitat. Deam (p. 365) reports Heartleaf Willow crossing with S. nigra and S. sericea.

JUGLANDA CEAE Lindl. Walnut Family.

Juglans L. Walnut.

Juglans cinerea L. Butternut.

Collected in a low, old field. This tree is not as frequent in the park as J. nigra. Deam (p. 366) describes the habitat as "...terraces and banks of streams...ravines and rarely in tamarack bogs." Bingham (p. 105) reports it as "occasional in oak-hickory, but found more often in beech-maple forests."

Juglans nigra L. Black Walnut.

Infrequent where it occurs naturally. It appears to have been planted along some of the roads. Bingham (p. 105) describes the habitat in Oakland County as "birch swamps, dry meadows, and flood plains, mixed hardwood, and beech-maple forests." No collection was made. "Lower Peninsula as far north as Bay City..." (Otis, p. 97).

Carya Nutt. Hickory.Carya ovata (Mill.) K. Koch Shagbark Hickory.

(Hicoria ovata [Mill.] Britt.)
Common in oak-hickory woods.

Carya tomentosa (Lam.) Nutt.

(C. alba [L.] K. Koch and Hicoria alba [L.] Britt.)
This is a doubtful determination, as it is not easily separated from C. ovalis and might be a variety of it. Also, only one tree was found.

Carya ovalis (Wang.) Sarg. Small-fruited Hickory.

(C. microcarpa Nutt. in part)
This species and its varieties are common in oak-hickory woods. They are generally tall, somewhat narrow trees. Frequently they are found in fields where the ground is rolling or sloping and probably never cultivated. Deam reports three varieties and two forms of varieties of this hickory as occurring in Indiana.

Carya ovalis var. odorata (Marsh.) Sarg.

(C. microcarpa Darl. in part; Hicoria microcarpa Britt. in part; H. glabra var. odorata Sarg. in part.)
Distinguished from the species by the resinous odor of the husk. In the same habitat as the typical form.

Carya ovalis var. obcordata (Muhl.) Sarg.

(C. microcarpa Darl. in part; Hicoria microcarpa Britt. in part.)
Apparently the same distribution in the park as the species.

Carya ovalis var. obcordata f. vestita Sarg.

This determination is doubtful, as material was collected from only one tree. However, it agrees with Deam's description (p. 368).

BETULACEAE Agardh. Birch Family.

Carpinus [Tourn.] L.

Carpinus caroliniana Walt. var. virginiana (Marsh) Fern. Blue Beech.

(C. virginiana of authors)

Collected at only one station, at the foot of a north slope covered with Hamamelis virginiana. Deam says this tree "...prefers a moist, rich soil but has a range of habitats in the state [Indiana] from the tamarack bog to the dry, black and white oak slope."

Ostrya [Michx.] Scop.

Ostrya virginiana (Mill.) K. Koch. Hop Hornbeam.

Infrequent on wooded slopes and in low woods. Common in thickets in Washtenaw County (Walpole, p. 31). "Common throughout the entire state." (Otis, p. 113)

Corylus [Tourn.] L.

Corylus americana Walt. American Hazelnut.

Infrequent. At the edges of marshes with Cornus stolonifera, and in low partly shaded situations. Common in thickets in Washtenaw County (Walpole, p. 31).

Betula [Tourn.] L. Birch.

Betula lutea Michx. f. Yellow Birch.

(B. alleghaniensis Britt.)

Found at two stations where it was growing at the edges of flood-plain forest. All material collected of this birch was found to belong to the typical form, no var. macrolepis Fern. was noted. "Throughout the state, but more abundant and of larger size northward." (Otis, p. 121)

Betula pumila L. var. glandulifera Regal. Dwarf Birch.

Frequent in senescent tamarack bogs. Studies of the leaves of several scattered plants revealed resinous dots in varying amounts, characteristic of the variety. Hanes (p. 86) reports the species as common in Kalamazoo County. Billington (p. 75) says that northward in Michigan the variety is more common than the species.

Alnus [Tourn.] Hill. Alder.

Alnus crispa (Ait.) Pursh. Green or Mountain Alder.

One plant was found in a senescent bog in a situation dominated by Poison Sumac. Billington (p. 77) does not report it from counties in the lower peninsula.

Alnus incana (L.) Moench. var. *americana* Regel.

Speckled or Hoary Alder.

(*A. incana* of Gray's Man., ed. 7. and of Britton and Brown Illus. Flora, ed. 2.)

Frequent on wooded slopes along the Huron River. Also forms thickets along roadsides on low, sandy ground.

FAGACEAE Drude Beech Family.

Fagus [Tourn.] L. Beech.

Fagus grandifolia Ehrh. American Beech.

Not collected. One small tree at the foot of a slope in an oak-hickory woods was the only specimen observed.

Quercus [Tourn.] L. Oak.

Quercus alba L. White Oak.

Infrequent to frequent, generally in somewhat low ground.

Quercus alba f. *latiloba* (Sarg.) Palmer and Steyermark

Common. Apparently more abundant than the species in southern Michigan. This is a form with the sinuses indenting less than half way to the midrib.

Quercus prinoides Willd. Dwarf Chinquapin Oak.

Frequent along roadsides and at the edges of oak-hickory woods. Hanes (p. 87) describes it as rare in Michigan. According to Billington, (p. 81) it is restricted to the southern half of the lower peninsula where it is infrequent.

Quercus bicolor Willd. Swamp White Oak.

Collected at the foot of a northwest slope which ran down into a flood-plain forest. Observed on the wooded bank of a stream. Infrequent in the park. Infrequent on moist soil in Washtenaw County (Walpole, p. 31). "Restricted to the southern half of the Lower Peninsula." (Otis, p. 137)

Quercus macrocarpa Michx. Bur Oak. Mossycup Oak.

Frequent on banks of streams, in depressions in old fields and in low situations along roadsides. Acorns were examined to determine whether *Q. macrocarpa* var. *olivaeformis* (Michx. f.) Gray occurred in the park, but no specimens fitting Deam's description were collected. "Common throughout both peninsulas." (Otis, p. 135)

Quercus borealis Michx. f. Red Oak.

In oak-hickory woods and fencerows. From the collections made, it would appear that the species is more common than the variety. Hanes (p. 88) says the reverse probably is the case in Kalamazoo County. Deam (p. 385) does not report the species from Indiana.

Quercus borealis var. maxima Ashe. Red Oak.

(Q. rubra of Gray's Man., ed. 7.)

Sargent (p. 242) mentions variations in the size of the nut and depth of the cup as grading from the species to the variety, thus making it difficult to separate the two. Only one tree bearing the typical large acorns with flat cups typical of the variety was found. However, it was a bad year for acorns, and few from any species were found.

Quercus velutina Lam. Black Oak.

Common in oak-hickory woods and along roadsides. In some instances it probably was confused with Q. ellipsoidalis E. J. Hill, as both have a yellowish inner bark and acorns were scarce. Restricted to the southern half of the Lower Peninsula (Otis, p. 151).

Quercus coccinea Muench. Scarlet Oak.

Collected from a tree standing by itself on somewhat low ground. Often confused with Q. ellipsoidalis, which differs in having a yellow inner bark. Hanes (p. 88) reports Scarlet Oak as very rare, southern Michigan being on the northwest end of its range.

ULMACEAE Mirbel Elm Family.

Ulmus [Tourn.] L. Elm.Ulmus rubra Muhl. Slippery Elm. Red Elm.

(U. fulva Michx.)

Infrequent. Collected on a low, wooded bank of a stream. Frequent throughout the state on rich soil (Beal, p. 70).

Ulmus americana L. American Elm. White Elm.

A common tree in flood-plains and low fields. It also occurs around the edges of marshes and senescent bogs. Fernald now recognizes three forms of this species (Rhodora 47: 132-135. 1945). No attempt was made to distinguish the forms occurring in the park area.

MORACEAE Lindl. Mulberry Family.

Maclura Nutt.

Maclura pomifera (Raf.) Schneider Osage Orange.
(Toxylon pomiferum Raf. of Britton and Brown,
Illus. Flora, ed. 2.)

Planted by early farmers in fence rows where it has persisted.

URTICACEAE Reichenb. Nettle Family.

Urtica [Tourn.] L. Nettle

Urtica procera Muhl. in Willd. Tall Nettle.
(U. gracilis of authors)

Frequent on low, open ground especially along roads.

Laportea Gaud.

Laportea canadensis (L.) Gaud. Canada Nettle.
(Urticastrum divaricatum (L.) Ktze.)

Frequent in elm-maple flood-plain forests.

Boehmeria Jacq.

Boehmeria cylindrica (L.) Sw. False Nettle.

Frequent to common in flood-plain forests, along the edges of marshes, and on wet, shaded ground generally.

Boehmeria cylindrica var. Drummondiana Weddell.
False Nettle.

(B. cylindrica var. scabra Porter of Gray's Man.,
ed. 7.)

Open situations in senescent bogs.

SANTALACEAE R. Sandalwood Family.

Comandra Nutt.

Comandra Richardsoniana Fern. Bastard Toadflax.
(C. umbellata in part of Britton and Brown, Illus.
Flora, ed. 2.)

Rare, sandy open places and oak woods. One specimen was collected in a senescent tamarack bog. Deam (p. 402) reports a plant from a drained tamarack bog in Indiana. As a rule, it is a plant of dry, sandy soil. Common in an open oak woods in Washtenaw County (Hermann 1938, p. 20).

POLYGONACEAE Lindl. Buckwheat Family.

Rumex L. Docks and Sorrels.

Rumex Acetosella L. Field Sorrel.

Very common in old fields. It also occurs on piles of subsoil at the gravel pit and in denuded areas.

Rumex orbiculatus Gray Great Water Dock.

(R. Britannica of Gray's Man., ed. 7.)
Frequent in marshes.

Rumex crispus L. Curly Dock.

A common, weedy plant in shaded situations along roads, in wet soil and on waste ground.

Polygonum [Tourn.] L. Knotweed. Smartweed.Polygonum aviculare L. Doorweed. Knotweed.

Common along roadsides and on waste ground. "The commonest of weeds." (Beal, p. 72).

Polygonum tenue Michx. Slender Knotweed.

Growing in railroad ballast. Frequent in dry soil in Washtenaw County (Walpole, p. 34). Also frequent in the Grand Rapids area (Cole, p. 62).

Polygonum amphibium L. var. stipulaceum Coleman f. fluitans (Eaton) Fern.

(P. natans A. Eaton f. genuinum Stanford)
Frequent in marshes and on lake shores. Plants with stems up to four feet high were collected in a marsh where grasses offered support and also competed heavily for light.

Polygonum punctatum Ell. Water Smartweed.

(P. acre H.B.K., P. acre var. leptostachyum Meisn. and Persicaria punctata (Ell.) Small.)
In marshes and sluggish water in the Huron River. Common in swamps in Washtenaw County (Walpole, p. 34). Frequent in the Lower Peninsula (Beal, p. 72).

Polygonum Persicaria L. Lady's Thumb.

Apparently infrequent in the park. A collection was made on Miami soil at the edge of a thicket. "Very common in cultivated fields and waste ground, especially where the soil is slightly moist." (Darlington, Bessey and Megee, p. 67)

Polygonum arifolium L. var. pubescens (Keller) Fern. Halberd-leaved Tearthumb.

(P. arifolium L. var. lentiforme Fern. and Griseb. and Traecaulon arifolium [L.] Raf.)
Infrequent in elm-maple flood-plain forests. Infrequent in

wet places in Washtenaw County (Walpole, p. 34). Frequent in swamps in Kalamazoo County (Hanes, p. 94). Beal (p. 72) describes this plant as frequent in the Lower Peninsula.

Polygonum convolvulus L. Black Bindweed.
Frequent to common in sterile fields and denuded areas.

CHENOPODIA CEAE Dumort. Goosefoot Family.

Chenopodium Tourn. L. Pigweed. Goosefoot.

Chenopodium album L. Lamb's-quarters. Pigweed.
Goosefoot.

Common in old fields, cultivated fields, railroad ballast and waste ground. Deam (p. 423) says C. Berlandieri ssp. Zschackei (Murr) Zobel. has often been mis-named C. album by collectors.

Chenopodium gigantospermum Aellen Maple-leaved
Goosefoot.

(C. hybridum of American authors not L.)
Found on shaded waste ground. Common in gardens in Kalamazoo County (Hanes, p. 96).

Salsola L. Saltwort. Russian Thistle.

Salsola pestifer A. Nelson Russian Thistle.

(S. Kali L. var. tenuifolia G. F. W. Mey)
Common on piles of subsoil at the gravel pit. It also occurs in railroad ballast.

AMARANTHACEAE J. St. Hil. Amaranth Family.

Amaranthus [Tourn.] L. Amaranth.

Amaranthus graecizans L. Prostrate Amaranth.
(A. blitoides Wats.)
Frequent along dry, sandy roadsides.

Amaranthus albus L. Tumbleweed.
(A. graecizans of authors)
Frequent on waste ground and along dry, sandy roadsides.

NYCTAGINACEAE Lindl. Four-o'clock Family.

Oxybaphus L'Her. Umbrella-wort.

Oxybaphus nyctagineus (Michx.) Sweet. Heart-leaved Umbrella-wort.

(Allionia nyctaginea Michx.)

Infrequent along roadsides and in railroad ballast. Hanes (p. 97) reports this plant from ballast only in Kalamazoo County. Deam (p. 433) has seen it only twice in situations other than ballast, once along a very sandy roadside and once in a very sandy oat field. Giles (p. 46) notes that southern Michigan is near the eastern limit of its range and that its occurrence along railroad tracks would indicate its path of introduction.

AIZOACEAE A. Br. Carpet-weed Family.

Mollugo L.

Mollugo verticillata L. Carpet-weed.
Common in cultivated fields and denuded areas.

PORTULACACEAE Reichenb. Purslane Family.

Claytonia [Gronov.] L. Spring Beauty.

Claytonia virginica L. Spring Beauty.
Collected at only one station, at the edge of an elm-maple flood-plain forest. It is believed that the scarcity of this plant is due to the absence of the beech-maple forest.

Portulaca [Tourn.] L.

Portulaca oleracea L. Common Purslane.
Collected only once, in a cornfield. Doubtless more common in the park than records indicate. Hanes (p. 98) describes it as very common in gardens. Giles (p. 47) describes it as occasional within a 10-mile radius of East Lansing. Deam (pp. 435, 436) says it was once a common weed in gardens and cornfields in Indiana but is now rare. He has no way of accounting for its decline.

CARYOPHYLLACEAE Reichenb. Pink Family.

Stellaria L. Chickweeds and Stitchworts.

Stellaria longifolia Muhl. Long-leaved Stitchwort.
Frequent under tamarack in senescent bogs. Deam (p. 437) reports it as infrequent to rare in Indiana. Giles (p. 48)

suggests that it may be becoming rare in the East Lansing area. He was unable to find it, and the number of specimens collected by earlier botanists would indicate it was once quite common. This might be due to the draining of bogs.

Stellaria media (L.) Cyril. Common Chickweed.

Found in the oak grove inside the entrance to the park north of the bath house. This plant probably is frequent to common in the resort section around cottages.

Cerastium L. Mouse-ear Chickweed.

Cerastium vulgatum L. var. hirsutum Fries. Common Mouse-ear Chickweed.

Collected in the oak woods in the camping ground, and in a low, shady situation. Apparently infrequent. "Abundant in dooryards, fields, and gardens" in Kalamazoo County (Hanes, p. 99).

Arenaria L. Sandwort.

Arenaria serpyllifolia L. Thyme-leaved Sandwort.

Frequent. Collections were made from a lawn, sunny roadbank, oak woods and waste ground.

Silene L. Catchfly.

Silene Cucubalus Wibel. Bladder Catchfly.

(S. latifolia (Mill.) Britton and Rendle)

Occasional in railroad ballast and shady and open situations along roadsides. Giles (p. 50) did not see it in the East Lansing area.

Silene antirrhina L. Sleepy Catchfly.

Infrequent in dry, sandy fields. Plants collected on a gravel "dune" in the gravel pit might be described as pioneering. They were very thinly scattered on its slope, having advanced upward from the water further than any other species. Common in Michigan (Beal, p. 75).

Lychnis [Tourn.] L. Campion.

Lychnis alba Mill. Evening or White Campion.

Common along roadsides, around buildings and in old fields.

Saponaria L.

Saponaria officinalis L. Soapwort. Bouncing Bet.

Frequent along roadsides and in soil that has been disturbed recently.

NYMPHAEACEAE DC. Water Lily Family.

Nymphaea [Tourn.] L. Water Lily.

Nymphaea tuberosa Paine. Magnolia Water Lily.
(Castalia tuberosa (Paine.) Greene.)

As there was no means of getting out onto the river, this plant could not be collected. A specimen from the edge of a senescent bog keys out to N. odorata in Deam, but its leaves are like those of N. tuberosa according to Hanes. As these two species are difficult to separate, N. odorata is not being included. Hanes (p. 102) reports the latter as rare in Kalamazoo County. Giles (p. 51) does not believe it occurs in the East Lansing area. Bingham (p. 110) lists it as having been reported from Oakland County. Walpole (p. 38) does not report it from Washtenaw County.

Nuphar Smith

Nuphar advena Ait. Yellow Spatterdock.
(Nymphaea advena Ait.)

Common along the Huron River at the edges of marshes and bogs.

CERATOPHYLLACEAE Gray

Ceratophyllum L.

Ceratophyllum demersum L. Hornwort.
Common in sluggish water in the Huron River.

RANUNCULACEAE Juss. Crowfoot Family.

Caltha [Rupp.] L. Marsh Marigold.

Caltha palustris L. Marsh Marigold.
In muck along the Huron River and streams. Frequent. Hanes (p. 103) reports it frequently blossoming in the fall, sometimes as late as December.

Coptis Salisb.

Coptis groenlandica (Oeder.) Fern. Goldthread.
(C. trifolia of Gray's Man., ed. 7.)

Growing around the roots of shrubs in a Sphagnum bog in a spot near the edge of a cleared path, just off the edge of a mound of sandy soil covered with oak. Rare in the park. Rare in damp, boggy woods in Washtenaw County (Walpole, p. 38).

Actaea L. Baneberry.

Actaea rubra (Ait.) Willd. Red Baneberry.

Occasional on wooded slopes along the river, generally near the bottom. Hanes (p. 103) reports it as less frequent than *A. pachypoda* Ell. (*A. alba* (L.) Mill.), which was not found. Giles (p. 53) also describes the red species as less frequent than the white

Aquilegia [Tourn.] L.

Aquilegia canadensis L. American Columbine.

Collected and seen at only one station, under a sugar maple at the low edge of an old field. The reason for the scarcity of this plant in the park is not known. Perhaps its association with *Acer saccharum* is significant.

Anemone [Tourn.] L. Anemone.

Anemone cylindrica Gray Long-fruited or Candle Anemone.

Frequent in oak-hickory woods. It also occurs in old fields and low open places.

Anemone virginiana L. Tall Anemone.

Frequent to common in wooded ravines and oak-hickory woods.

Anemonella Spach

Anemonella thalictroides (L.) Spach Rue Anemone.

Frequent on wooded slopes under oak where shrubs and seedling trees are sparse or absent. This plant often is found with *Hepatica americana*.

Hepatica [Rupp.] Hill Hepatica.

Hepatica americana (DC) Ker. Round-leaved Hepatica.
(*H. triloba* of Gray's Man., ed. 7, not Chaix)

On sandy, well-drained slopes under oak. This plant is frequent in the oak-hickory forest along the Huron River.

Ranunculus [Tourn.] L. Buttercup.

Ranunculus abortivus L. Small-flowered Crowfoot.

Collected at only one station, but probably more common than records indicate. Hanes (p. 106) and Bingham (p. 111) describe it as common in Kalamazoo and Oakland Counties respectively. It occurs in flood-plain forests and marshes.

Ranunculus sceleratus L. Cursed Crowfoot.
Apparently infrequent. A specimen was found growing in water in a marsh. Common in swamps and wet ditches in Washtenaw County (Walpole, p. 39).

Ranunculus recurvatus Poir. Hooked Crowfoot.
Collected at only one station, but probably frequent in the area, occurring in low woods. This plant is common in Washtenaw County (Walpole, p. 39).

Ranunculus fascicularis Muhl. Early Crowfoot.
Infrequent to frequent on sandy slopes under oak, generally near the bases. Also found in low, open situations along the Huron River. Giles (p. 57) was unable to find this species within a 10-mile radius of East Lansing, although it was collected in this area in 1939. Beal (p. 79) describes it as infrequent in the southern half of the Lower Peninsula.

Ranunculus pennsylvanicus L. f. Pennsylvania Buttercup.
Bristly Crowfoot.
Collected in a thicket at the edge of a bog, and in a marsh. Bingham reports it as occurring also along roadsides (p. 111). Frequent throughout the state (Beal, p. 79).

Ranunculus hispidus Michx. Bristly or Hispid Buttercup.
This plant is found in low, open situations where it is apparently infrequent. Deam (pp. 471, 472) suggests it may be a species complex, the foliage being highly variable. Frequent in Washtenaw County (Walpole, p. 39).

Thalictrum [Tourn.] L. Meadow Rue.

Thalictrum dioicum L. Early Meadow Rue.
Collected on the side of a ravine in light shade under oak. Apparently infrequent. "Common along river banks." (Beal, p. 79)

Thalictrum dasycarpum Fisch. and Lall. Tall or Purple Meadow Rue.
Frequent to common in senescent tamarack bogs.

BERBERIDACEAE T. and G. Barberry Family.

Podophyllum L. May Apple.

Podophyllum peltatum L. Common May Apple.
Infrequent to rare. Collected at only one station, at the edge of an elm-maple flood-plain forest. The absence of the beech-maple association and the general sandiness of the soil probably is the reason for the scarcity of this plant. It was found associated with Claytonia virginiana, which was seen at only this station.

MENISPERMACEAE DC. Moonseed Family.

Menispermum [Tourn.] L.*Menispermum canadense* L. Moonseed.

Occasional in wet woods. Frequent in woods and moist thickets in Michigan (Beal, p. 80).

LAURACEAE Lindl. Laurel Family.

Sassafras Nees.*Sassafras albidum* (Nutt.) Nees. var. *molle* (Raf.) Fern. *Sassafras*.

Occurs in oak-hickory woods. The lower surface of the leaves is pubescent. The species was not found; however, no particular effort was made to collect it. Hanes (p. 109) reports the species as common in Kalamazoo County and the variety as infrequent. Deam (p. 480) finds the reverse to be the case in Indiana.

Benzoin Fabricius*Benzoin aestivale* (L.) Nees. Spicebush.

(*Lindera Benzoin* [L.] Blume.)

Collected in a flood-plain forest where it was frequent.

CRUCIFERAE B. Juss. Mustard Family.

Lepidium [Tourn.] L.

Lepidium campestre (L.) R. Br. Field Peppergrass.
Common in denuded areas and disturbed soil.

Lepidium virginicum L. var. *typicum* C. L. Hitchc. *Peppergrass*.

Collected in denuded areas and in the oak grove north of the bath house. This plant occurs in the latter area probably because the natural vegetation has been replaced by grass and weeds.

Sisymbrium [Tourn.] L.*Sisymbrium altissimum* L. Tumble Mustard.

(*Norta altissima* L. Britt.)

Common in railroad ballast and denuded areas. "...troublesome along some of the railroad rights-of-way." (Darlington, Bessey and Megee, p. 105)

Brassica [Tourn.] L.

Brassica nigra (L.) Koch. Black Mustard.

Apparently infrequent in the park. Specimens are from a plowed field and an oatfield. Beal (p. 82) describes it as common throughout the state.

Barbarea R. Br.

Barbarea vulgaris R. Br. Yellow Rocket.

(B. stricta Andr. of Gray's Man., ed. 7.)

Collected in an oatfield. Infrequent along roadsides and in waste places in Kalamazoo County (Hanes, p. 112).

Barbarea vulgaris var. arcuata (J. and C. Presl.) Fries.

(B. vulgaris of Gray's Man., ed. 7.)

Occasional in fields and waste places. "Becoming common in fields, along roadsides, and in waste ground." (Darlington, Bessey and Megee, p. 89)

Rorippa Scop.

Rorippa islandica Borbas var. microcarpa (Regel.) Fern. Marsh Cress. Yellow Watercress.

(Radicula palustris [L.] Moench.)

Collected at only one station, in a drained bog. Common in wet places in Washtenaw County (Walpole, p. 41).

Nasturtium R. Br.

Nasturtium officinale R. Br. True Watercress.

(Radicula Nasturtium-aquaticum of Gray's Man., ed. 7.)

This plant occurs on mucky banks of streams. Common in wet ditches in Washtenaw County (Walpole, p. 41).

Cardamine [Tourn.] L. Bittercress.

Cardamine bulbosa (Schreb.) BSP. Bulb Bittercress.

(C. rhomboidea DC.)

Found at only one station, at the edge of a pond. This plant is doubtless more common than collections indicate. Common throughout the state (Beal, p. 82).

Capsella Medic.

Capsella Bursa-pastoris (L.) Medic. Shepherd's Purse.

Collected in the lawn to the north of the bath house. This plant probably is common in dooryards in the resort area. It was not seen in denuded areas or at the gravel pit.

Camelina Crantz

Camelina microcarpa Andrz. Small-fruited False Flax.
Collected in a fallow field planted last to corn, and also in a denuded area. This plant probably is to be found also in railroad ballast. Beal (p. 83) describes it as "becoming naturalized from Europe."

Draba [Dill.] L.

Draba verna L. Vernal Whitlow Grass.
This plant was collected twice. In both cases, the habitat was the sunny bank of a road where the soil was loose and sandy, and there was no sod. Hanes (p. 114) reports it as rare in Kalamazoo County. Reported by Beal (p. 83) as rare in Michigan.

Arabis L.

Arabis hirsuta (L.) Scop. var. adpressipilis (Hopkins) Rollins.

(A. pycnocarpa Hopkins var. adpressipilis Hopkins.)
Collected at the edge of a slope in an oak-hickory woods. Giles (p. 66) was unable to find this species within a 10-mile radius of Michigan State College. Hanes (p. 115) has only one collection from Kalamazoo County, "...in somewhat moist soil..."

Arabis glabra (L.) Bernh. Tower Mustard.
Infrequent to frequent in old fields. It also occurs in denuded areas. Beal (p. 83) describes this plant as infrequent throughout the state.

Alyssum [Tourn.] L.

Alyssum alyssoides L. Yellow Alyssum.
Common in railroad ballast and waste ground.

Berteroa DC.

Berteroa incana (L.) DC. Hoary Alyssum.
Frequent in waste ground and fallow fields. A few years ago this plant overran alfalfa and clover fields near Clarkston and Lake Orion in Oakland County. L. W. Kephart, senior agronomist with the U. S. Department of Agriculture, named as a possible cause of its sudden abundance, the drought in the western states which increased seed production of this weed. The account of this infestation was carried in one of the Detroit papers. The date and name of the paper are missing from the clipping.

CAPPARIDACEAE Lindl. Caper Family.

Polanisia Raf.*Polanisia graveolens* Raf. Clammyweed.

A pioneer on gravel "dunes" in the gravel pit. Individual plants are scattered eight to 20 feet apart. No other vegetation occurs on the "dunes" from which collections were made, except for plants at the base. Rare in Kalamazoo County, occurring in railroad ballast. (Hanes, p. 116). Beal (p. 84) reports it as growing along the shores of the Great Lakes.

SARRACENIACEAE La Pyl. Pitcher-plant Family.

Sarracenia [Tourn.] L.*Sarracenia purpurea* L. Pitcher Plant.

Collected at only one station, in open, mucky soil near the edge of the Huron River in a senescent bog. Bingham (p. 114) describes this species as plentiful in Oakland County.

CRASSULACEAE DC. Orpine Family.

Penthorum L.*Penthorum sedoides* L. Ditch Stonecrop.

Occasional in marshes and the very wet parts of senescent bogs. Common in ditches and swamps in Washtenaw County (Walpole, p. 44). Frequent in the Lower Peninsula (Beal, p. 85).

SAXIFRAGACEAE Dumort. Saxifrage Family.

Saxifraga [Tourn.] L. Saxifrage.*Saxifraga pennsylvanica* L. Swamp Saxifrage.

Infrequent in senescent tamarack bogs. Common in bogs throughout the state (Beal, p. 85).

Heuchera L. Alumroot.*Heuchera Richardsonii* R. Br. var. *Grayana* Rosendahl, Butters, and Lakela Alumroot.

(*H. hispida* of most authors)

Collected on the north slope of a ravine lightly shaded by oak and largely grassy, except at the bottom. It shared

the habitat with Anemonella thalictroides and Hepatica triloba. However, in other localities where these plants were frequent or common, Alumroot was not found. It is not reported by Bingham (p. 115) from Oakland County, nor by Giles (p. 69) from the East Lansing area. Walpole (p. 44) describes H. hispida Pursh. which is probably the same species as "frequent along the hills of the Huron River" in Washtenaw County.

Mitella [Tourn.] L.

Mitella diphylla L. Bishop's-cap.
Infrequent in elm-maple flood-plain forests. Very common throughout the state (Beal, p. 85).

Parnassia [Tourn.] L.

Parnassia glauca Raf. Grass of Parnassus.
(P. caroliniana of Gray's Man., ed. 7.)
Infrequent on marshy ground. Frequent in swamps in Washtenaw County (Walpole, p. 44).

GROSSULARIA CEAE Dumort. Gooseberry Family.

Ribes L. Currant.

Ribes americanum Mill. American Black Currant.
(R. floridum L'Her.)
Infrequent in senescent tamarack bogs. Common throughout the state (Billington, p. 89).

Ribes nigrum L. Black Currant.
Doubtless an escape. This is the cultivated currant.
Infrequent in the park.

Grossularia [Tourn.] Mill. Gooseberry.

Grossularia cynosbati (L.) Mill. Prickly Gooseberry.
(Ribes cynosbati L. of Gray's Man., ed. 7.)
Frequent in flood-plain forests.

Grossularia hirtella (Michx.) Spach. Low Wild Gooseberry.
(Ribes oxycanthoides L., in part, of Gray's Man., ed. 7.)
Frequent in senescent tamarack bogs. Walpole (p. 45) reports this species as rare in Washtenaw County.

HAMAMELIDACEAE Lindl. Witch-hazel Family.

Hamamelis L.*Hamamelis virginiana* L. Witch-hazel.

Frequent to common in the oak-hickory woods on high banks of the Huron River.

PLATANACEAE Lindl. Plane-tree Family.

Platanus [Tourn.] L.*Platanus occidentalis* L. Sycamore. Buttonwood.
American Planetree.

A tree stands on the edge of the bank at the south end of Island Lake. Inasmuch as it is not on property that was ever a lawn or cultivated, it probably was not planted.

ROSACEAE B. Juss. Rose Family.

Physocarpus Maxim.*Physocarpus opulifolius* (L.) Maxim. Ninebark.
Frequent in low edges of fields along the Huron River.*Spiraea* [Tourn.] L. *Spiraea*.*Spiraea alba* Du Roi Meadowsweet. Meadow *Spiraea*.

(*S. salicifolia* L. in part of Gray's Man., ed. 7.)

Frequent to common along the edges of marshes and bogs. This plant also occurs in ditches along roads. Billington (p. 95) describes it as common in Michigan.

Malus Mill. Apple.*Malus coronaria* (L.) Mill. American Crab Apple.

(*Pyrus coronaria* L. of Gray's Man., ed. 7.)

A fair-sized tree, with smaller ones forming a thicket around, it was found on a low, shaded bank of the Huron River. Apparently infrequent. Bingham (p. 116) lists the habitat as flood-plain forests and roadsides. "Southern portion of the Lower Peninsula as far north as Roscommon County." (Otis, p. 177)

Malus pumila L. Common Apple.

Persisting in abandoned orchards. This tree is also occasional along roadsides.

Aronia Medic. Chokeberry.

Aronia melanocarpa (Michx.) Ell. Black Chokeberry.
(Pyrus melanocarpa [Michx.] Willd.)

Collected on a grassy slope above wet ground. Billington (p. 99) describes it as occurring in swamps and low grounds throughout the state.

Aronia prunifolia (Marsh.) Rehder. Purple Chokeberry.
(Pyrus arbutifolia var. atropurpurea Britt. Rob.)

Common in a Sphagnum bog where it was associated with Vaccinium corymbosum.

Amelanchier Medic.

Amelanchier humilis Wieg. Low Juneberry.

Collected at the edge of an oak woods. This plant is doubtless more frequent than records indicate. Deam (p. 523) describes it as growing "...in colonies in very sandy soil in woods and along fencerows and roadsides."

Amelanchier arborea (Michx. f.) Fern. Juneberry.
Service Berry. Shadbush.

(A. canadensis sensu Wieg.)

A small tree under oak and hickory, frequent throughout the park.

Amelanchier laevis Wieg. Shadbush. Service Berry.
Juneberry.

Only one collection was made, and the habitat note was lost. Hanes (p. 122) describes it as common on hillsides in Kalamazoo County. Deam (pp. 532 and 533) reports it from tamarack bogs and the low and high banks of streams.

Crataegus L. Hawthorn.

Crataegus crus-galli L. Cockspur Thorn.

(C. arduennae Sarg., C. attenuata Ashe., C. trahax Ashe.)
Infrequent in old fields. Infrequent in Kalamazoo County, usually occurring in moist places (Hanes, p. 122).

Crataegus punctata Jacq. Dotted Haw. White Thorn.

Infrequent in fields. Infrequent in thickets in Washtenaw County (Walpole, p. 47). Common in the lower part of Michigan (Billington, p. 105).

Crataegus sp.

This collection lies in the group Rotundifoliae Eggl. and probably is C. Margaretta Ashe. (C. chrysocarpa Eggl. and C. Brownei Britt.) The most common Hawthorn in Kalamazoo County, occurring in fencerows, thickets and abandoned fields (Hanes, p. 122).

Crataegus sp.

Several specimens key out to the group Intricatae Sarg. One collection probably is C. intricata Lange (C. meticulosa Sarg.) It was collected on a wooded slope. However, it was a small tree, whereas Deam (p. 543) describes it as a straggling shrub. Hanes (p. 123) says it is rare in Kalamazoo County, occurring in woods.

RUBUS [Tourn.] L. Raspberries and Blackberries.

Rubus pubescens Raf.

(R. triflorus Richards of Gray's Man., ed. 7.)
Frequent in senescent bogs.

Rubus occidentalis L. Black Raspberry.

Frequent to common in low thickets, in fencerows, and in low woods.

Rubus strigosus Michx. Wild Red Raspberry.

(R. idaeus L. var. strigosus Michx. Maxim.)
Frequent in senescent bogs.

Rubus flagellaris Willd. Northern Dewberry.

(R. villosus Ait.)

The most common Rubus in the park, occurring in dry and somewhat moist old fields, denuded areas where a cane eight feet long was found, and in oak-hickory woods.

Rubus allegheniensis Porter. Allegheny Blackberry.

Frequent in old fields. Canes measuring up to nine feet in height were found in a thicket on low, rich soil.

Rubus sp.

This collection lies closest to R. abactus Bailey in Deam's Flora of Indiana, but the characters are not definite enough to warrant placing it there.

Fragaria [Tourn.] L. Strawberry.

Fragaria virginiana Duchesne Wild Strawberry.

Common in old fields where it forms large patches.

Potentilla L. Cinquefoil.

Potentilla fruticosa L. Shrubby Cinquefoil.

A frequent to common shrub around the edges of marshes and senescent bogs.

Potentilla arguta Pursh. Tall or Glandular Cinquefoil.

Occasional in old fields. Infrequent along prairie roadsides in Kalamazoo County (Hanes, p. 158).

Potentilla Anserina L. Silverweed.

On the shore of the smaller island at the south end of Island Lake. "Frequent along the Great Lakes, but rare in the interior." (Beal, p. 87)

Potentilla recta L. Rough-fruited Cinquefoil.

Very common in old, sterile fields. In one such field it was massed in a consociation roughly 100 feet across in any direction.

Potentilla intermedia L.

Frequent to common in sterile, abandoned fields. Hanes (p. 159) does not report it from Kalamazoo County, nor Giles (p. 70) from the East Lansing area. Deam (p. 567) does not report it from Indiana. Beal (p. 88) says: "Well established in Livingston and Washtenaw Counties..." This is an immigrant from Europe which establishes itself only locally.

Potentilla argentea L. Silver Cinquefoil.

Frequent in dry fields and around dooryards where it invades coarse lawns.

Potentilla simplex Michx. var. typica Fern. Common Cinquefoil.

(P. canadensis L. of Gray's Man., ed. 7. and of Britton and Brown Illus. Flora, ed. 2.)

Common in low fields and along the edges of marshes. Deam (p. 568) describes this plant as becoming abundant in old, fallow fields. This character was not observed in the park.

Geum L. Avens.Geum canadense Jacq. White Avens.

Occasional in low woods. Common in the Lower Peninsula (Beal, p. 88).

Geum aleppicum Jacq. var. strictum (Ait.) Fern. Yellow Avens.

(G. strictum Ait.)

Infrequent in the park. Collected at the foot of a wooded slope that ended in a senescent bog. Hanes (p. 159) reports this plant as frequent in Kalamazoo County. Giles (p. 71) saw it only once in the East Lansing area, and that was along the Looking Glass River, where it was occasional. Bingham (p. 118) describes it as the most widespread avens in Oakland County.

Geum laciniatum Murr. var. trichocarpum Fern. Rough Avens.

(G. virginianum L. in part of Gray's Man., ed. 7. and of Britton and Brown Illus. Flora, ed. 2.)

Frequent, occurring in low thickets and woods, marshes, and along low, shaded roadsides.

Agrimonia [Tourn.] L. Agrimony.

Agrimonia gryposepala Wallr. Tall Agrimony.
Infrequent on slopes in oak-hickory woods. Common in thickets in Washtenaw County (Walpole, p. 46)

Agrimonia pubescens Wallr. Soft Agrimony.

(*A. mollis* [T. and G.] Britt.)

Collected at the low edge of a field among shrubs that bordered on a bog. Hanes (p. 160) describes this species as "frequent in dry white oak woods." Deam (p. 573) describes the habitat in Indiana as dry soil in woodlands.

Agrimonia parviflora Ait. Small-flowered Agrimony.

Infrequent in and around low thickets. Common in thickets and ravines in Washtenaw County (Walpole, p. 46). Not plentiful in Oakland County (Bingham, p. 119).

Rosa [Tourn.] L. Rose

Rosa palustris Marsh. Swamp Rose.

(*R. carolina* L. of Gray's Man., ed. 2.)

Occasional in thickets in senescent bogs. Common throughout the state (Billington, p. 127).

Rosa carolina L.

(*R. humilis* Marsh. of Gray's Man., ed. 7. and *R.*

virginiana Mill. of Britton and Brown, Illus. Flora, ed. 2.)

Frequent to common along shaded roadsides, in open oak-hickory woods and railroad ballast.

Rosa suffulta Greene

(*R. pratincola* Greene)

Infrequent in the park. Found at the edge of Kensington Road where it crosses the gravel pit, and on low ground in the gravel pit. Rare in Kalamazoo County (Hanes, p. 162). Not reported by Bingham (p. 120) from Oakland County, nor by Walpole (p. 46) from Washtenaw County.

Prunus [Tourn.] L. Cherries and Plums.

Prunus americana Marsh. Wild Plum.

An infrequent tree along roadsides, in dry soil. All the trees in a dense thicket at one place exhibited the distorted fruit known as plum pockets, caused by *Taphrina pruni* (Fcl.) Tul.

Prunus virginiana L. Choke Cherry.

A common shrub or tree along roadsides and in low, shaded places. It also occurs in senescent bogs.

Prunus institia L. Bullace Plum.

A collection was made from a tree probably growing along a roadside. Unfortunately the record on this species was lost. No mention of its occurrence in Michigan was found in the literature. It is indigenous to Eurasia. Robinson and Fernald (p. 498) describe the habitat and distribution as: "Roadsides and waste places, N.E. and perhaps occasionally in the Middle States."

Prunus serotina Ehrh. Wild Black Cherry.

A common tree on low banks of the Huron River and in low, moist soil. It also occurs in fencerows.

Prunus persica (L.) Stokes. Peach.

An infrequent escape along roads.

LEGUMINOSAE Juss. Pea Family.

Schrankia Willd. Sensitive Brier.Schrankia Nuttallii (DC.) Standley Bashful Brier.
(S. uncinata Willd.)

A well-established colony about 40 feet across was found on dry, sandy soil in an old field about 80 feet from the Pere Marquette track. This is believed to be the first instance of S. Nuttallii being reported from Michigan. "Dry prairies and open woods, Va. to Fla. and Tex.; northwest in Miss. basin to Ia. and Ill." (Robinson and Fernald, p. 504). Deam does not report it from Indiana, nor does Schaffner (p. 319) include it in his keys to Ohio plants.

Gleditsia L. Honey Locust.Gleditsia triacanthos L. Honey Locust.

A few trees were found growing along U. S. Highway No. 16. They probably were planted or grew from seed accidentally dropped on the site.

Lupinus [Tourn.] L.Lupinus perennis L. Wild Lupine.

Infrequent near the edges of oak-hickory woods. Deam (p. 593) describes it as a plant of dry, sandy soil. Frequent in dry, sandy soil in Washtenaw County (Walpole, p. 48).

Medicago [Tourn.] L.Medicago sativa L. Alfalfa.

A frequent escape along roadsides and in waste ground.

Medicago lupulina L. Black Medic.

Collected at only one station, in railroad ballast. Walpole (p. 48) describes this species as infrequent in Washtenaw County.

Medicago lupulina var. glandulosa Neillr.

Collected in a shallow depression in an old field.

Melilotus [Tourn.] L.Melilotus alba Desv. White Sweet Clover.

Frequent in waste places. "By far the more abundant of the two species in the county [Oakland]." (Bingham, p. 121)

Melilotus officinalis (L.) Lam. Yellow Sweet Clover.

Infrequent in the park, occurring in waste places.

Trifolium [Tourn.] L. Clover.Trifolium pratense L. Red Clover.

Frequent in denuded areas and in soil that has been disturbed recently.

Trifolium repens L. White Clover.

Collected in waste ground near cottages. This plant probably is an escape from lawns.

Trifolium procumbens L. Low Hop Clover.

Collected in an open oak woods near the cottages at the south end of Briggs Lake. This is also a plant of ballast, fallow fields and roadsides, although it was not found in these habitats in the park. Infrequent in central and southern Michigan (Beal, p. 92).

Robinia L.Robinia Pseudo-Acacia L. Black Locust.

Common, often forming small groves. This tree has spread from cultivation in Michigan, being indigenous to southern Ohio.

Desmodium Desv.Desmodium nudiflorum (L.) DC. Naked-flowered Tick Trefoil.(Meibomia nudiflora (L.) Ktze.)

Found in an oak woods. One specimen appears to be f. foliolatum (Farw.) Fassett. Common in the central and southern part of the state (Beal, p. 93).

Desmodium glutinosum (Muhl.) Wood Pointed-leaved Tick Trefoil.

(D. acuminatum [Michx.] DC., Meibomia grandiflora [Walt.] Ktze.)

Frequent in oak woods. A specimen was collected near Island Lake in a low, shady spot. Deam (p. 606) reports it as rarely occurring in a moist habitat.

Desmodium illinoense Gray Illinois Tick Trefoil.

(Meibomia illinoensis [Gray] Ktze.)

Common in old fields.

Desmodium canadense (L.) DC. Canada Tickclover.

(Meibomia canadensis [L.] Ktze.)

Common in old fields. It also occurs in low open places and along roadsides in light shade.

Desmodium paniculatum (L.) DC. Panicked Tick Trefoil.

Frequent on low ground in light shade.

Lespedeza Michx. Bushclover.

Lespedeza capitata Michx. Round-headed Bushclover.

Occasional to frequent in old fields and railroad ballast.

Lespedeza capitata var. velutina (Bickn.) Fern.

Same habitat as above. It is not known whether the variety of the typical form is more frequent in the park.

Lespedeza hirta (L.) Hornem. Hairy Bushclover.

Frequent in old fields.

Lespedeza intermedia (Watts.) Britt. Wand-like Bush-clover.

(L. frutescens [L.] Britt.)

Frequent in low, shaded places and along the banks of the Huron River.

Vicia [Tourn.] L. Vetch.

Vicia villosa Roth. Hairy or Winter Vetch.

Infrequent in old fields, having escaped from cultivation or persisted after the fields were abandoned.

Vicia caroliniana Walt. Carolina Vetch.

Collected at only one station, in an oak-hickory woods. Beal (p. 94) describes this species as common on dry soil in the central and southern part of the state.

Vicia americana Muhl. American Vetch.

Collected at only one station. Infrequent in the park. Bingham (p. 122) gives the habitat in Oakland County as: "...dogwood-holly marshes and mixed hardwood and oak-hickory forests where oak is dominant." Hanes (p. 171) describes it as occurring in fencerows and railroad ballast. Deam (p. 617) says it is infrequent in northern Indiana, occurring on low or wet ground.

Lathyrus [Tourn.] L. Pea.Lathyrus venosus Muhl. var. intonsus Butters and St. John Hairy Veiny Pea.

(L. venosus Muhl. in part, of Gray's Man., ed. 7.)

This plant is frequent to common, generally occurring on sloping well drained ground. Specimens were collected near thickets in fields, on steep, eroded slopes in the gravel pit, and in railroad ballast.

Lathyrus palustris L. var. linearifolius Ser. Slender-leaved Marsh Pea.

Frequent in open situations in senescent tamarack bogs. All specimens collected appear to belong to the variety. No doubt the species occurs in the park, as it is reported by both Deam (p. 619) and Hanes (p. 171) as being more common than the variety. Hanes says of the species: "Typical specimens are only occasionally found."

Lathyrus latifolius L. Perennial Pea.

An occasional garden escape which appears to establish itself successfully.

Amphicarpa Ell. Hog Peanut.Amphicarpa bracteata (L.) Fern. Wild Peanut. Hog Peanut.

(A. monoica [L.] Ell. and Falcata comosa [L.] Kuntze)

Found only once, on marshy ground in light shade. Frequent in moist thickets in Washtenaw County (Walpole, p. 50). Frequent in Oakland County (Bingham, p. 122).

Apios [Boerh.] LudwigApios americana Medic. Potato Bean. Ground-nut.

Collected at only one station, in a low field grown up with shrubs. Common in Michigan (Beal, p. 94).

GERANIA CEAE J. St. Hil. Geranium Family.

Geranium [Tourn.] L. Cranesbill.

Geranium maculatum L. Wild Cranesbill.
Infrequent to frequent in oak-hickory woods, and in thickets.

OXALIDACEAE Lindl. Wood Sorrel Family.

Oxalis L. Wood Sorrel.

Oxalis stricta L. Yellow Wood Sorrel.
Common in old fields.

RUTACEAE Juss. Rue Family.

Zanthoxylum L.

Zanthoxylum americanum Mill. Northern Prickly Ash.
Collected at only one station, under tamarack in a senescent bog. Infrequent in the park. Not observed in dry woods, although it is frequently found in them.

SIMARUBACEAE DC. Quassia Family.

Ailanthus Desf.

Ailanthus altissima (Mill.) Swingle Tree-of-Heaven.
(A. glandulosa Desf.)
A collection was made near U. S. Highway 116 from a tree that had either been planted or had escaped from cultivation.

POLYGALACEAE Reichenb. Milkwort Family.

Polygala [Tourn.] L.

Polygala polygama Walt. var. obtusata Chodat. Racemed Milkwort.

Collected on a western sandy slope in an old field, and on an eastern slope which ran down into a bog. Walpole (p. 52) describes this plant as rare in Washtenaw County. Reported by Hanes (pp. 174 and 175) as frequent at several stations in Kalamazoo County. Cole (p. 100) describes it as infrequent in the vicinity of Grand Rapids. Not reported by Giles (p. 82) in the East Lansing area.

Polygala verticillata L. Whorled Milkwort.

(P. Pretzli Pennell)

Collected on marshy ground. Bingham (p. 123) describes the habitat in Oakland County as: "...oak-hickory forests where oak predominates." Infrequent in dry soil in Washtenaw County (Walpole, p. 52). Hanes (p. 175) reports it from semi-moist soil in Kalamazoo County.

Polygala sanguinea L. Field Milkwort. Purple Milkwort.

(P. viridescens L.)

Found in a low field. Beal (p. 96) describes it as: "local, but usually abundant when found at all."

EUPHORBIA CEAE J. St. Hil. Spurge Family.

Acalypha L. Three-seeded Mercury.Acalypha rhomboidea Raf.

(A. virginica of recent authors)

Found in a low field. Common in fields and waste places in Washtenaw County (Walpole, p. 52). Common throughout the state (Beal, p. 96).

Euphorbia L. Spurge.Euphorbia maculata L. Nodding Spurge.

(E. nutans Lag. and E. Preslii [Guss.] Arth.)

Frequent to common in denuded areas and in railroad ballast.

Euphorbia supina Raf.

(E. maculata of authors)

Frequent to common along open, sandy roadsides.

Euphorbia corollata L. Flowering Spurge.

Common in old fields and in ballast along the Pere Marquette tracks. Also occurs in oak-hickory woods.

Euphorbia Cyparissias L. Cypress Spurge.

Spreading through an unkept cemetery on Silver Lake Road. A colony was also seen along U. S. Highway 116 near Kensington Road. This plant spreads mostly by rootstocks. Deam (p. 646) says it rarely produces seeds.

ANACARDIACEAE Dumort. Cashew Family.

Rhus L. Sumac.

Rhus Vernix L. Poison Sumac.

(Toxicodendron Vernix [L.] Kyte.)
Frequently a dominant shrub in senescent tamarack bogs.

Rhus glabra L. Smooth Sumac.

Frequent in dry fields, generally forming colonies on sloping ground.

Rhus typhina L. Staghorn Sumac.

Same habitat as above. No effort was made to determine which was the more common of the two. Billington (p. 141) says: "In Michigan the Smooth Sumac seems to be less common than the Staghorn."

Rhus radicans L. Poison Ivy.

(R. Toxicodendron L.)

Common, generally climbing on trees. The habit of growth is variable depending on the site. Specimens were collected from erect stems covering the bottom of a shallow ravine littered with oak leaves. They may be of var. Rydbergii (Small.) Rehder. As the collection was made before the leaves had come out, a determination could not be made.

Rhus aromatica Ait. Fragrant or Aromatic Sumac.

(R. canadensis Marsh.)

Frequent on thinly wooded slopes under oak.

AQUIFOLIACEAE Lowe. Holly Family.

Ilex L. Holly.Ilex verticillata (L.) Gray. Black Alder. Winterberry.

A common shrub in the Sphagnum bog on the south side of McCabe Road at Butcher Road. It also occurs in senescent tamarack bogs.

Nemopanthus Raf.Nemopanthus mucronata (L.) Trel. Mountain Holly.

Common in the Sphagnum bog on McCabe Road.

CELASTRACEAE Lindl. Staff-tree Family.

Evonymus [Tourn.] L.Evonymus obovatus Nutt. Running Evonymus. Running Strawberry Bush.

Collected at only one station, at the foot of a tree in a flood plain forest dominated by elm. Walpole (p. 53) reports it as common in low woods in Washtenaw County.

Celastrus L.

Celastrus scandens L. American Bittersweet.

Collected at only one station. Doubtless more common than records indicate. Billington (p. 151) describes the habitat as banks of streams and in thickets, and reports it as common throughout the state.

ACERACEAE St. Hil. Maple Family.

Acer [Tourn.] L.

Acer Negundo L. Box Elder. Ash-leaved Maple.

Frequent throughout the park, growing along roadsides, in wooded ravines under oak, and along the edges of marshes.

Acer rubrum L. Red Maple. Scarlet Maple.

A co-dominant with American Elm in flood-plain forests along the Huron River. This tree occurs around the edges of bogs and marshes and on low, sandy ground under oak.

Acer saccharum Marsh. Sugar or Rock Maple.

This tree has been planted along roadsides where individuals attain a large size, but no seedling trees are reproduced. A large tree, which appeared to be growing naturally, was found at the low edge of an old field adjacent to a flood-plain forest.

BALSAMINACEAE Lindl. Touch-me-not Family.

Impatiens [Rivin.] L.

Impatiens biflora Walt. Spotted Touch-me-not. Jewel-weed.

Frequent in flood-plain forests along the Huron River.

RHAMNACEAE Dumort. Buckthorn Family.

Rhamnus [Tourn.] L. Buckthorn.

Rhamnus cathartica L. Common Buckthorn.

Collected at only one station, doubtlessly having escaped from cultivation.

Ceanothus L.

Ceanothus americanus L. New Jersey Tea.

Collected on the east slope of a field being invaded by oak, on low shaded ground, and in railroad ballast. Walpole (p. 54) describes this plant as frequent in dry, open soil in Washtenaw County. Specimens collected by Hanes (p. 181) indicate that southwestern Michigan is in the transition zone between the species and the western form, var. Pitcheri T. and G.

VITACEAE Lindl. Grape Family.

Vitis [Tourn.] L. Grape.

Vitis aestivalis Michx. Pigeon Grape.

Collected in a low woods. Billington (p. 163) says this grape is restricted to the southern part of the Lower Peninsula. Walpole (p. 54) describes it as infrequent in Washtenaw County. Authors usually describe the habit of growth as in thickets and along fences.

Vitis aestivalis var. argentifolia (Munson.) Fern.
(V. bicolor Le Conte.)

Collected in an oak-hickory woods. The under surfaces of the leaves are bluish glaucous, whereas those of the typical form are green. Inasmuch as his specimens show integrading, Deam (p. 663) regards this as merely a form of the species. Billington (p. 162) describes it as infrequent in the central and southern parts of the Lower Peninsula.

Vitis riparia Michx. River-bank Grape.

(V. vulpina L. of Gray's Man., ed. 7.)

Frequent along the Huron River and in low, rich soil. Vines which had climbed into the crowns of trees 30 feet tall were observed at the edge of a flood-plain.

Parthenocissus Planch.

Parthenocissus quinquefolia (L.) Planch. Virginia Creeper. Five-leaf Ivy.

(Psedera quinquefolia [L.] Greene of Gray's Man., ed. 7.)

A frequent vine along roadsides, growing on shrubs, trees and fences. Walpole (p. 54) describes this plant as infrequent in Washtenaw County.

TILIACEAE Juss. Linden Family.

Tilia [Tourn.] L.*Tilia americana* L. American Linden. Basswood.(*T. glabra* Vent.)

A frequent tree in low, moist soil.

MALVACEAE Neck. Mallow Family.

Malva [Tourn.] L. Mallow.*Malva neglecta* Wallr.(*M. rotundifolia* of authors)

Collected in a cornfield. Infrequent to frequent in cultivated fields. Hanes (p. 183) describes it as abundant in gardens in Kalamazoo County.

HYPERICACEAE Lindl. St. John's-wort Family.

Hypericum [Tourn.] L. St. John's-wort.*Hypericum prolificum* L. Shrubby St. John's-wort.

Frequent in a low field back of the Huron River. Infrequent elsewhere in the park. Billington (p. 166) describes the habitat as sandy or rocky soil. Infrequent in swamps in Washtenaw County (Walpole, p. 55).

Hypericum perforatum L. Common St. John's-wort.

Frequent to common in ballast along the Pere Marquette track and in old fields.

Hypericum punctatum Lam. Spotted St. John's-wort.

Occasional in marshes and on marshy shores of lakes. Infrequent in moist soil in Washtenaw County (Walpole, p. 55).

Hypericum canadense L.

Found at only one station, on low, shaded ground at the east side of Island Lake. Giles (p. 86) did not see this plant in the East Lansing area and believes it is rare if present at all. Hanes (p. 184) reports it from only two places, both marshy, in Kalamazoo County. Very rare in Indiana (Deam, p. 676).

CISTACEAE Lindl. Rockrose Family.

Helianthemum [Tourn.] Mill. Rockrose.

Helianthemum canadense (L.) Michx.(Crocianthemum canadense [L.] Britt.)

Collections were made on a sandy slope at the edge of a woods and in an old field. Walpole (p. 55) describes it as common on dry hillsides in Washtenaw County. Giles (p. 87) did not see it in the East Lansing area, although earlier reports indicate it was once frequent.

Lechea [Kalm] L. Pinweed.

Lechea villosa Ell. Hairy Pinweed.

Occasional in old fields. Common in dry soil in Washtenaw County (Walpole, p. 56). A common plant on poor soil in the central and southern part of the state (Beal, p. 101).

VIOLACEAE DC. Violet Family.

Viola [Tourn.] L. Violet.

Viola pedata L. Bird-foot Violet.

A small patch was found in cut-over oak on upland soil. The patch is located one-quarter of a mile east of the group camp on the south side of the Huron River. The plants were dwarfed perhaps due to grazing. Scapes and leaves were only one and one-quarter to two inches long. Burn scars on the trees indicated that the area had been burned over.

Hanes (p. 186) lists only var. lineariloba DC. as occurring in Kalamazoo County. Deam (pp. 686 and 687) describes this as: "A form with all of the leaf-segments linear... with flowers, having all of the petals of the same color." The upper and lower petals of specimens after pressing are of the same color, but not all of the leaf segments are linear. No notes were taken on the color of the petals at the time of collecting.

Viola triloba Schwein. Three-lobed Violet.

Infrequent in oak woods. Hanes (p. 187) describes this plant as occasional in dry oak woods. Deam (p. 687) says: "Rather frequent in the southern part of the state, [Indiana] becoming infrequent or absent in the northern part."

Viola cucullata Ait. Marsh Violet.

Collected under aspen near the landward edge of a senescent bog along the Huron River. The specimens indicate hybridization with V. papilionacea or V. sororia. Hanes (p. 186) describes this violet as common in wet tamarack swamps and springy places. Walpole (p. 56) reports it as frequent in wet woods in Washtenaw County.

Viola papilionacea Pursh. Butterfly Violet.

Frequent in low woods. Walpole (p. 56) describes the habitat as moist fields. Hanes (p. 187) says of this species: "...our common early blue violet."

Viola sororia Willd. Downy Blue Violet.

Frequent in low woods. Giles (p. 88) describes the habitat as fields, woods, roadsides and riverbanks. This violet closely resembles V. papilionacea and frequently is mistaken for it.

Viola pallens (Banks) Brainard. Smooth White Violet.

Growing on hummocks in a wooded swamp of principally Ulmus americana and Populus grandidentata. Plants were frequent at this station. Hanes (p. 188) describes the habitat as tamarack bogs and swamps. However, no plants were observed in the tamarack bogs along the Huron River.

Viola eriocarpa Schwein. Stemmed Yellow Violet.

(V. scabriuscula Schwein.)

Infrequent to frequent in oak-hickory woods. Giles (p. 89) describes this violet as frequent to common in nearly all woodlands within a 10-mile radius of East Lansing where there were sufficient shade and moisture. Walpole (p. 56) describes it as common in wet woods in Washtenaw County. This species is difficult to separate from V. pubescens Ait.

ELEAGNA CEAE Lindl. Oleaster Family.

Eleagnus [Tourn.] L.

Eleagnus angustifolia L. Russian Olive.

A single tree was found on open, sandy ground about 40 feet from U. S. Highway 23. Doubtless an escape from cultivation. "It makes an excellent low windbreak and is useful to bind shifting sand and to prevent erosion..." (Otis, p. 265)

ONAGRA CEAE Dumort. Evening Primrose Family.

Ludwigia L.

Ludwigia palustris (L.) Ell. var. americana (DC.)

Fern. and Grisc. Marsh Purslane.

In marshes along the Huron River. Frequent on muddy flats in Washtenaw County (Walpole, p. 57). Common in the Lower Peninsula (Beal, p. 102).

Epilobium L.

Epilobium coloratum Biehler Purple-leaved Willowherb.
(E. coloratum Muhl.)
Frequent in marshes and elm-maple flood-plain forests.

Oenothera L.

Oenothera pycnocarpa Atkins. and Bartl. Evening Primrose.
(O. biennis L. in part.)
Frequent in old fields. It also occurs in low, open places
and marshes.

Circaea [Tourn.] L.

Circaea quadrisulcata (Maxim.) Franch. and Sav. var.
canadensis (L.) Hara.
(C. latifolia Hill. and C. lutetiana L. of Gray's
Man., ed. 7.)
Occasional in the park. Found in a wooded ravine and on
wet, shaded soil near the east shore of Island Lake. Very
common throughout the state (Beal, p. 103).

HALORAGIDACEAE Klotsch and Garcke. Water-milfoil Family.

Myriophyllum [Vaill.] L. Water-milfoil.

Myriophyllum sp.
Found in six feet of water at the south end of Island Lake.
Because the floral leaves were absent from the specimens col-
lected, a satisfactory determination could not be made.

Proserpinaca L.

Proserpinaca palustris L. var. creba Fern. and Griseb.
Mermaid Weed.
(P. palustris in part of Gray's Man., ed. 7.)
Infrequent in the very wet parts of marshes and senescent
bogs. Infrequent in Washtenaw County (Walpole, p. 58).

UMBELLIFERAE B. Juss. Parsley Family.

Sanicula L. Sanicle.

Sanicula marilandica L. Black Snakeroot.

Frequent at the foot of slopes in oak woods and in wooded ravines. Common in rich woods in Washtenaw County (Walpole, p. 58). Giles (p. 95) describes this species as quite frequent in both beech-maple and oak woods within a 10-mile radius of Michigan State College.

Conium L.

Conium maculatum L. Poison Hemlock.

Only one collection was made, in light shade near the edge of a Sphagnum bog. Walpole (p. 59) reports this plant as common in waste places in Washtenaw County. Hanes (p. 198) reports it as an infrequent escape from cultivation in Kalamazoo County.

Cicuta L.

Cicuta maculata L. Water Hemlock. Spotted Cowbane.

Infrequent to frequent around thickets in senescent bogs and at the edges of marshes. Walpole (p. 59) describes it as common in wet places in Washtenaw County. According to Cole (p. 114), it is also common in the vicinity of Grand Rapids.

Taenidia Drude

Taenidia integerrima (L.) Drude Yellow Pimpernel.

Frequent in oak-hickory woods. Beal (p. 105) reports this plant as occurring throughout the state and says it is very abundant in the Grand-Saginaw Valley. According to Deam (p. 723) it is infrequent to rare in all parts of Indiana.

Daucus [Tourn.] L.

Daucus Carota L. Common Carrot. Queen Anne's-lace.

Frequent to common in fields and along roadsides. "...will rapidly take possession of entire fields... This weed has become widespread throughout the state." (Darlington, Bessey and Megee, p. 139)

CORNACEAE Link. Dogwood Family.

Cornus [Tourn.] L.

Cornus stolonifera Michx. Red-osier Dogwood.

Common in senescent bogs, around the edges of marshes, and along the banks of streams. Billington (p. 181) describes this dogwood as common throughout the state. Deam (p. 781) says it is infrequent to rare in Indiana, occurring mostly in the northern part of the state.

Cornus racemosa Lam.

(C. paniculata L'Her.)

Frequent in marshes, senescent bogs, and at the edges of low woods. A specimen was also collected in a dry field. Billington (p. 181) describes it as one of our most common shrubs, and adds to the habitats already mentioned roadsides and fencerows.

Cornus obliqua Raf. Pale Dogwood.

(C. Amomum of most authors.)

Occasional in low, wet situations along streams and along the edges of marshes.

ERICA CEAE DC. Heath Family.

Chamaedaphne Moench.Chamaedaphne calyculata (L.) Moench. Leatherleaf.

In openings of Vaccinium corymbosum in the Sphagnum bog on the south side of McCabe Road at Butcher Road, and in a drained bog where it is a dominant shrub. Hanes (p. 203) reports var. angustifolia (Ait.) Rehder as the only representative in Kalamazoo County. Doubtless it is the same as what is here called the typical form. Billington (p. 189) says it is common throughout the state.

Gaylussacia HBK.Gaylussacia baccata (Wang.) K. Koch. Huckleberry.

Infrequent to frequent on slopes in oak-hickory woods. Billington (p. 193) describes the habitat as: "rocky woodlands, swamps and bogs." He reports this shrub as common throughout the state.

Vaccinium L. Blueberry and Cranberry.Vaccinium stamineum L. var. neglectum (Small.) Deam

Found only at one station, in a senescent bog. Deam (p. 742) says this is the glabrous form of the species. Billington (p. 197) describes the habitat of the typical form as dry woods and thickets and says it has been reported only from Washtenaw County.

Vaccinium corymbosum L. Northern Highbush Blueberry.

A dominant shrub in the Sphagnum bog on the south side of McCabe Road at Butcher Road. Billington (p. 201) describes it as "...the common blueberry of our swamp areas..." He treats the varieties under the typical form, maintaining that they completely integrate. Hanes (p. 205) apparently adopts the same point of view, because he reports only the species, then mentions the variations covered by it.

Vaccinium vacillans Kalm. ex Torrey Dryland Blueberry.
Late Low Blueberry.

Collected at only one station, in an oak-hickory woods. Probably more frequent than records indicate. Billington (p. 199) describes this blueberry as occurring in dry places throughout the state.

Vaccinium vacillans var. crinitum Fern.

Collected under oak at the foot of a slope which partly rimmed a senescent bog. Deam (p. 743) reports this variety from both northern and southern Indiana, but does not know its general range.

PRIMULACEAE Vent. Primrose Family.

Lysimachia [Tourn.] L.Lysimachia thyrsiflora L. Water Loosestrife.

(Naumbergia thyrsiflora [L.] Duby)

Infrequent in bogs and probably marshes. Collections were made at the edge of a senescent tamarack bog and in a Sphagnum bog. Walpole describes this species as frequent in Washtenaw County. Giles (p. 102) did not find it within a 10-mile radius of East Lansing, although it had been reported previously from that area.

Lysimachia quadrifolia L. Whorled Loosestrife.

Infrequent in low, shaded situations. Specimens were collected at three stations, each on low, wooded slopes. Deam (p. 748) says this species is associated generally with dry soil. He reports it from old fields, but no plants were seen in the fields at the park. Hanes (p. 206) reports it with one exception from the borders of swamps. It was found on high, sandy knolls in a field. Walpole (p. 61) describes it as infrequent in sandy soil in Washtenaw County. Giles (p. 102) found it in only one place within a 10-mile radius of Michigan State College.

Lysimachia terrestris (L.) BSP. Swamp Candle.

Infrequent in senescent tamarack bogs. Frequent in moist thickets in Washtenaw County (Walpole, p. 62). Giles (p. 102) describes it as quite frequent at the edges of streams and marshes in the vicinity of East Lansing. Hanes (p. 206) says

this species has not been found in Kalamazoo County, but reports as rare L. producta (Gray) Fern. which is a fertile hybrid of L. quadrifolia and L. terrestris.

Lysimachia ciliata L. Fringed Loosestrife.

(Steironema ciliatum [L.] Raf.)

Common in low thickets and on moist ground in light shade.

Lysimachia longifolia Pursh. Narrow-leaved Loosestrife.

(Steironema quadriflorum [Sims.] Hitchc.)

Infrequent on low ground. Frequent along streams in Wash-
tenaw County (Walpole, p. 62).

OLEACEAE Lindl. Olive Family.

Fraxinus [Tourn.] L. Ash.

Fraxinus americana L. White Ash.

Frequent at the edges of oak woods, along roadsides and on low, wet soil in flood-plains and around the edges of marshes and bogs. Beal (p. 110) describes it as common throughout the state.

Fraxinus pennsylvanica Marsh. Red Ash.

A frequent tree in low, rich soil at the edges of marshes and also in flood-plain forests. It is also invading a field from the edge of a woods on sandy soil above a flood-plain forest. Bingham (p. 132) says Red Ash is not plentiful in Oakland County. Walpole describes it as infrequent in Wash-tenaw County. Cole (p. 123) reports it as well distributed but not abundant in the Grand Rapids area.

Fraxinus pennsylvanica var. lanceolata (Borkh.) Sarg.
Green Ash.

Collected along a roadside. Apparently infrequent in the park area. Hanes (p. 207) describes it as rare in Kalamazoo County.

Fraxinus nigra Marsh. Black Ash.

Infrequent to frequent in elm-maple flood-plain forests. Reported by Beal (p. 110) as common throughout the state. Deam (p. 754) gives the authorship to Linnaeus and apparently the same species is meant. Marsh is not mentioned as a second author. Sargent and Robinson and Fernald give the authorship to Marsh.

Syringa L. Lilac.

Syringa vulgaris L. Common Lilac.

Persisting in abandoned farmyards and occasionally occurring along roadsides.

GENTIANA CEAE Dumort. Gentian Family.

Gentiana [Tourn.] L. Gentian.

Gentiana procera Holm. Smaller Fringed Gentian.

Found only once, in a senescent bog. Infrequent in wet places in Washtenaw County (Walpole, p. 62)

Gentiana Andrewsii Griseb. Closed Gentian.

Collected in one station where it was plentiful in and around a low thicket; local in the park as a whole. Bingham (p. 133) says the Closed Gentian is very infrequent in Oakland County. Cole (p. 123) says it is frequent around Grand Rapids. Hanes (p. 209) lists it as frequent in Kalamazoo County. According to Deam (p. 758) it is infrequent throughout Indiana.

APOCYNACEAE Lindl. Dogbane Family.

Apocynum L. Indian Hemp. Dogbane.

Apocynum androsaemifolium L. Honey Bloom. Spreading Dogbane.

Frequent along roadsides and in fencerows and low fields. Common throughout the state, (Beal, p. 112). Deam (p. 762) says it is more or less infrequent in northern Indiana, becoming rare to very rare in the south.

Apocynum cannabinum L. var. *glaberrimum* A. DC. Hemp Dogbane.

Collected in a low, old field. Not as frequent as *A. androsaemifolium*. Along roadsides and in railroad ballast in the East Lansing area (Giles, p. 106). Frequent in Kalamazoo County (Hanes, p. 210).

ASCLEPIADACEAE Lindl. Milkweed Family.

Asclepias L. Milkweed.

Asclepias tuberosa L. Butterfly Weed. Pleurisy Root.

Infrequent in dry fields. Hanes (p. 211) recognizes ssp. *tuberosa* Woodson, the eastern form, and ssp. *interior* Woodson, the western form. The leaves of the former are broadest above the middle and cuneate at the base, while those of the latter are broadest below the middle and cordate at the base. Specimens collected at the park belong to ssp. *interior* Woodson, which Hanes describes as common in Kalamazoo County.

Asclepias amplexicaulis J. E. Smith Claspingleaved Milkweed.

Found only once, in ballast along the Pere Marquette track. Infrequent in Oakland County (Eingham, p. 134). Not reported by Walpole (p. 63) from Washtenaw County. Frequent in roughly the western third of Kalamazoo County (Hanes, p. 212).

Asclepias incarnata L. Swamp Milkweed.

Infrequent to frequent along streams and around the shores of lakes. Beal (p. 112) reports it as common throughout the state.

Asclepias syriaca L. Common Milkweed.

Frequent in old fields. Common throughout the state (Beal, p. 112).

CONVOLVULACEAE Vent. Morning-glory Family.

Cuscuta [Tourn.] L. Dodder.

Cuscuta Gronovii Willd. Gronovius Dodder. Common Dodder.

(C. Gronovii var. vulvivaga Engelm.)
Frequent in marshes and low thickets.

Convolvulus [Tourn.] L. Bindweed.

Convolvulus sepium L. var. communis R. M. Tryon. Hedge Bindweed.

(C. sepium L. of Gray's Man., ed. 7.)

In marshes and senescent bogs, apparently infrequent. Its habit of infesting fields and becoming a serious pest was not observed in the park.

Convolvulus arvensis L. Field Bindweed.

Occurring in railroad ballast. Not common in the park, but a troublesome weed in the state.

POLEMONIACEAE DC. Phlox Family.

Phlox L. Phlox.

Phlox pilosa L. Downy or Red Phlox.

Occasional along the borders of oak-hickory woods. Walpole (p. 64) says it is frequent on hillsides along the Huron River in Washtenaw County.

BORAGINACEAE Lindl. Borage Family.

Lappula [Rivin.] Moench.*Lappula echinata* Gilbert European Stickseed.(L. *Lappula* [L.] Karst.)

Infrequent in railroad ballast. Deam (p. 789) reports it also from roadsides, waste places and fallow fields, but it was not found in any of these habitats in the park.

Myosotis [Rupp.] L. Forget-me-not.*Myosotis scorpioides* L. Forget-me-not.

A small colony was found growing in marshy ground at the edge of the Huron River. Probably local in marshes along the river and Spring Creek. Walpole (p. 64) says it is frequent in ditches in Washtenaw County. The few reports in the literature indicate that this plant is established only locally in Michigan.

Myosotis versicolor (Pers.) Sm.

Probably collected in a field. Unfortunately the habitat record was lost. This is an eastern species of Forget-me-not, having immigrated from Europe. Restricted in Gray's Man., ed. 7. (p. 684) to New York and Delaware. No records of its having been collected in Michigan were found in the literature.

Myosotis micrantha Pallas Blue Scorpion Grass.

Found at only one station, in an oak-hickory woods. Probably infrequent in the park. Hanes (p. 215) describes this species as local in Kalamazoo County. Well established near Portage Lake, Washtenaw County (Hermann 1937, p. 93). Gray's Man., ed. 7. (p. 684) says it occurs from Massachusetts to Ontario and Ohio.

Lithospermum [Tourn.] L. Gromwell.*Lithospermum arvense* L. Corn Gromwell. Redroot.

Infrequent to frequent in old fields and in ballast along the Pere Marquette track. Giles (p. 111) describes it as a plant of more or less dry, open places.

Lithospermum canescens (Michx.) Lehm. Puccoon.

Infrequent in open oak-hickory woods. Walpole (p. 65) reports this species as frequent in dry soil in Washtenaw County. According to Cole (p. 127), it is common in the Grand Rapids area.

VERBENACEAE J. St. Hil. Vervain Family.

Verbena [Tourn.] L. Vervain.*Verbena urticaefolia* L. White Vervain.

Along roadsides. Frequent in fields and waste places in Washtenaw County (Walpole, p. 65). Common throughout the state in waste places (Beal, p. 115).

Verbena hastata L. Blue Vervain.

Occasional in marshes and senescent bogs. Common in fields and waste places in Washtenaw County (Walpole, p. 65). Hanes (p. 217) describes it as abundant in marshes in Kalamazoo County.

Verbena stricta Vent. Hoary Vervain.

Infrequent to frequent in abandoned, sterile fields. A collection was also made in a field being invaded by oak. According to Walpole (p. 65), it is rare in Washtenaw County. Infrequent in Kalamazoo County (Hanes, p. 217).

Verbena bracteata Lag. and Rodr. Large-bracted Vervain.(*V. bracteosa* Michx.)

Along dry, sandy roadsides. Infrequent in waste places in Washtenaw County (Walpole, p. 65). Not reported by Bingham (p. 135) from Oakland County. Robinson and Fernald (p. 689) give the range as Virginia to Ohio, westward and southward.

LABIATAE B. Juss. Mint Family.

Teucrium [Tourn.] L. Germander.*Teucrium occidentale* Gray var. *boreale* (Bickn.) Fern.

Collected only at Island Lake, on the marshy shore of the larger island at the south end of the lake and on a low, shaded shore of the lake proper. Infrequent in the park. Hanes (p. 217) describes this mint as frequent at several stations in Kalamazoo County. Bingham (p. 135) does not report it from Oakland County, nor Giles (p. 113) from the East Lansing area. According to Deam (p. 801), it is infrequent to rare in Indiana.

Scutellaria [Rivin.] L. Skullcap.*Scutellaria epilobifolia* A. Hamilton Marsh Skullcap.(*S. galericulata* L.)

Common in grass-sedge areas of senescent bogs and in marshes. A collection was also made on a marshy shore of Island Lake. Beal (p. 115) describes it as common throughout the state.

Scutellaria lateriflora L. Skullcap.

Common in low thickets and in shaded parts of senescent tamarack bogs. According to Beal (p. 115), it is common throughout the state.

Nepeta [Rivin.] L.Nepeta Cataria L. Catnip.

In low, shaded situations and around dumping places on low ground. A large colony was found in a grove of Black Locust. This usually common mint is more or less local in the park.

Prunella L.Prunella vulgaris L. var. lanceolata (Bart.) Fern.
Selfheal.

Infrequent to frequent in low, shaded places. Beal (p. 116) describes P. vulgaris L. as common throughout the state. This is the form introduced from Europe. Inasmuch as Michigan Flora was written before Fernald named the variety, which is native, many of the reports used by Beal should be referred to the variety.

Lamium [Tourn.] L. Dead NettleLamium amplexicaule L. Henbit.

Found in a cultivated field. Probably infrequent in the park. Bingham (p. 135) reports this mint as uncommon in Oakland County. Walpole (p. 66) describes it as infrequent in cultivated soil in Washtenaw County. According to Hanes (p. 219), it is also infrequent in Kalamazoo County.

Leonurus L. Motherwort.Leonurus Cardiaca L. Common Motherwort.

Growing at the edge of a dump. Apparently local in the park. Beal (p. 116) describes it as a common plant on waste ground.

Monarda L. Beebalm.Monarda fistulosa L. var. mollis (L.) Benth. Wild Bergamot.(M. mollis L.)

In occasional colonies in oak-hickory woods and on slopes in fields. Bingham (p. 136) describes this variety as not plentiful in Oakland County. According to Walpole (p. 66), it is frequent in Washtenaw County, occurring in dry soil. Hanes (p. 221) reports it as infrequent in Kalamazoo County.

Hedeoma Pers.

Hedeoma pulegioides (L.) Pers. American Pennyroyal.
Probably infrequent. Collected at only one station, in low, shaded Miami soil. According to Walpole (p. 66) it is rare in Washtenaw County, occurring in dry soil. Hanes (p. 221) reports this mint as infrequent in Kalamazoo County. Deam (p. 817) says it is frequent to common in dry soil in all parts of Indiana.

Hedeoma hispida Pursh Rough Pennyroyal.
Infrequent in sterile, abandoned fields. Walpole (p. 66) reports this species as rare in Washtenaw County.

Pycnanthemum Michx. Mountain Mint.

Pycnanthemum virginianum (L.) Durand and Jackson
Virginia Mountain Mint.
Infrequent to frequent in marshes and low thickets. Walpole (p. 67) reports this species as frequent in Washtenaw County. Giles (p. 116) believes it is occasional in the vicinity of East Lansing. According to Hanes (p. 222), it is common in Kalamazoo County.

Lycopus [Tourn.] L. Bugleweed.

Lycopus uniflorus Michx. Bugleweed.
A frequent to common mint in marshes. Beal (p. 117) describes it as common in the Lower Peninsula.

Lycopus rubellus Moench. Water Horehound.
Found only once, in a marsh. Walpole (p. 67) describes this plant as common in wet ditches in Washtenaw County.

Lycopus americanus Muhl. American Water Horehound.
American Bugleweed.
Infrequent to frequent in marshes. Plants growing in five inches of water were found on a sand bar off the smaller island at the south end of Island Lake.

Lycopus americanus var. Longii Benner
Collected along a low, shaded roadside. According to Deam (p. 823), the variety generally prefers a wetter habitat than the typical form.

Mentha [Tourn.] L. Mint.

Mentha piperata L. Peppermint.
Collected on a low bank of the Huron River. This mint is probably an occasional escape in the park. No mint fields were seen in or near the area.

Mentha arvensis L. Field Mint.

Frequent on low, wet shores of Island Lake, in marshes, and in senescent bogs. It seems to prefer a lightly shaded habitat.

SOLANACEAE Pers. Nightshade Family.

Physalis L. Groundcherry.Physalis subglabrata Mack. and Bush. Smooth Groundcherry.

Infrequent in cultivated fields. Hanes (p. 223) reports it mainly from railroad ballast in Kalamazoo County. The most common Groundcherry in Indiana (Deam, p. 828).

Physalis virginiana Mill. Virginia Groundcherry.

Common in old fields and in ballast along the Pere Marquette track.

Physalis ambigua (Gray) Rydb.

Infrequent in old fields. Also found at the edge of a dump. Frequent along roadsides and in fields in Kalamazoo County (Hanes, p. 224). This species is easily confused with P. heterophylla Nees.

Solanum [Tourn.] L. Nightshade.Solanum carolinense L. Horse Nettle.

Infrequent in fields. Walpole (p. 67) describes this plant as infrequent in dry fields in Washtenaw County. Introduced into Michigan from the southwest (Beal, p. 118). "...a serious weed...especially in the southwestern counties of the Lower Peninsula." (Darlington, Bessey and Megee, p. 155)

Solanum nigrum L. Black Nightshade.

In gardens. Infrequent in the area. A common plant in moist, cultivated fields (Beal, p. 118).

Solanum Dulcamara L. Bitter Nightshade. Bittersweet.

Common in senescent bogs and frequent along low, shaded roadsides.

SCROPHULARIACEAE Lindl. Figwort Family.

Verbascum [Bauhin] L. Mullein.Verbascum Thapsus L. Common Mullein.

Common in old fields. In one field of several acres, it is the dominant broad-leaved plant in late summer. (See Figure 7, page 121.)

Linaria [Bauhin] Mill. Toadflax.

Linaria vulgaris Hill. Common Toadflax. Butter-and-eggs.

Infrequent along roadsides. Not nearly as common as generally reported from Michigan. "A well-known weed of cultivated areas in the eastern part of the United States and Canada..." (Darlington, Bessey and Megee, p. 163)

Chaenorrhinum Reich.

Chaenorrhinum minus (L.) Lange

(Linaria minor [L.] Desf.)

Collected in railroad ballast where it apparently is thinly scattered. This plant is an immigrant, having come into this country from Europe in 1874. It is more or less restricted to railroad ballast and made land in the eastern and middle states (Deam, p. 836; Robinson and Fernald, p. 720).

Chelone [Tourn.] L. Turtlehead.

Chelone glabra L. var. linifolia Coleman. Turtlehead.

Occasional on marshy ground along streams. Giles (p. 124) describes it as more or less frequent in swamps and roadside ditches in the vicinity of East Lansing.

Mimulus L. Monkey Flower.

Mimulus ringens L. Monkey Flower.

Infrequent in marshes. Beal (p. 119) describes it as common throughout the state.

Veronica [Bauhin] L. Speedwell.

Veronica peregrina L. var. xalapensis (HBK.) Pennell.

Collected at only one station. Unfortunately the habitat note was lost. Hanes (p. 228) describes it as a frequent plant in moist fields.

Veronica arvensis L. Corn Speedwell.

Infrequent to frequent in old fields and oak-hickory woods.

Veronicastrum [Heist.] Fabricius

Veronicastrum virginicum (L.) Farw. Culver's Physic.

(Veronica virginica L. and Leptandra L. Nutt.)

Occasional in moist thickets, low oak woods and low fields. "Its moisture requirements vary from those of a marsh to a

dry, wooded slope." (Deam, p. 849) According to Walpole (p. 69), it is common on moist soil in Washtenaw County. Hanes (p. 229) describes its occurrence in Kalamazoo County as generally along highways and railroads, and often in woods.

Aureolaria Raf.

Aureolaria flava (L.) Farw. var. typica Pennell
Smooth False Foxglove.

(Gerardia virginica (L.) BSP. in part, of Gray's Man., ed. 7. and Dasystoma virginica (L.) Brit. in part, of Britton and Brown, Illus. Flora, ed. 2.)

Occasional in oak-hickory woods. Hanes (p. 230) reports this foxglove as frequent in woods and along lake shores in Kalamazoo County. Beal (p. 120) describes it as frequent in oak woods.

Pedicularis [Bauhin] L.

Pedicularis lanceolata Michx. Swamp Wood Betony.
Swamp Lousewort.

Collected at only one place, near the edge of the Huron River in a senescent bog. Apparently infrequent. Giles (p. 126) saw it only once in the area within a 10-mile radius of Michigan State College. According to Walpole (p. 69), it is frequent in swampy situations in Washtenaw County. Frequent in Kalamazoo County (Hanes, p. 231).

LENTIBULARIA CEAE Lindl. Bladderwort Family.

Utricularia L.

Utricularia vulgaris L. Greater Bladderwort.

(U. vulgaris L. var. americana Gray of Gray's Man., ed. 7 and U. macrorhiza Le Conte of Deam's Flora of Indiana)

Frequent in sluggish water in the Huron River.

PLANTAGINACEAE Lindl. Plantain Family.

Plantago [Tourn.] L. Plantain.

Plantago major L. Common Plantain.

In fencerows and in the oak grove at the entrance to the park on the east side of Island Lake. The most frequent Plantain in Oakland County (Bingham, p. 139).

Plantago Rugelii Dcne. var. asperula Farw. Rugel Plantain. Red-stalked Plantain.

Growing in marshy ground. Infrequent in Kalamazoo County (Hanes, p. 234). Doubtless the typical form also occurs in the park.

Plantago aristata Michx. Bracted Plantain.

A very common plant in dry, sterile fields where it frequently affords a thin covering several acres in extent.

Plantago lanceolata L. Buckhorn. English Plantain.

Occasional in old fields. This plant, which generally is a troublesome weed in Michigan, probably is frequent to common in cottage lawns in the northwest corner of the recreation area.

RUBIACEAE B. Juss. Madder Family.

Cephalanthus L. Buttonbush.

Cephalanthus occidentalis L. Common Buttonbush.

Frequent along the east shore of Island Lake and around the edges of marshes.

Mitchella L. Partridgeberry.

Mitchella repens L. Partridgeberry.

Collected in a low oak woods. Infrequent in the park. "Prefers beech and maple, hemlock, or pine woods, and is seldom found under oaks." (Beal, p. 123) He describes it as common throughout the state.

Galium L. Bedstraw.

Galium pilosum Ait. Hairy Bedstraw.

Found at the foot of a wooded slope covered with oak. Bingham (p. 139) gives the habitat in Oakland County as mixed hardwood forests. Infrequent in dry thickets in Washtenaw County (Walpole, p. 71).

Galium boreale L. var. typicum Beck von Man.

Collected in an oak woods. Giles (p. 130) does not report this variety from the East Lansing area, nor does Hanes (p. 236) report it from Kalamazoo County.

Galium boreale var. intermedium DC.

Found in a low thicket and in an unkept cemetery. Infrequent in Oakland County (Bingham, p. 140). Also infrequent in Kalamazoo County (Hanes, p. 236).

Galium boreale var. hyssopifolium (Hoffm.) DC.

In light shade in oak-hickory woods. This is the common form of Northern Bedstraw in Kalamazoo County (Hanes, p. 236). "Most frequently found in oak-hickory forests where oaks are dominant." (Bingham, p. 139)

Galium Aparine L. Cleavers.

Frequent in low woods.

Galium triflorum Michx. Sweet-scented Bedstraw.

Frequent in low woods. It also occurs in senescent tamarack bogs.

Galium obtusum Bigel. Wild Madder.

(G. tinctorium L. of Gray's Man., ed. 7. and Britton and Brown Illus. Flora, ed. 2.)

Occurring in low thickets. Infrequent in damp soil in Washtenaw County (Walpole, p. 72). Infrequent in Kalamazoo County (Hanes, p. 236).

Galium concinnum T. and G. Pretty Bedstraw.

Found only once. Unfortunately the habitat record was lost. Infrequent in dry woods in Washtenaw County (Walpole, p. 72). Not reported by Bingham (p. 140) from Oakland County. Hanes (p. 236) describes it as common in Kalamazoo County.

Galium labradoricum Wieg. Labrador Bedstraw.

Found in a shaded spot in a senescent tamarack bog. "Generally in Sphagnum in tamarack bogs, marshes, and sedge borders of lakes." (Deam, p. 878) Reported from Oakland County (Bingham, p. 140), but not from Washtenaw County (Walpole, p. 72).

Galium tinctorium L. Marsh Bedstraw.

(G. Claytoni Michx.)

Growing in water on a marshy shore on the east side of Island Lake. Not reported by Walpole (p. 72) from Washtenaw County. Frequent, especially about the margins of lakes, in the Grand Rapids area (Cole, p. 140). Frequent in marshes in Kalamazoo County (Hanes, p. 236).

CAPRIFOLIACEAE Vent. Honeysuckle Family.

Sambucus [Tourn.] L. Elder.

Sambucus canadensis L. Common Elder.

Frequent along low roadsides, especially in ditches and at the edges of low woods.

Sambucus pubens Michx.

(S. racemosa L. of Gray's Man., ed. 7 and Britton and Brown, Illus. Flora, ed. 2.)

Collected on low ground under oak. Occasional in the park. Common throughout the state (Billington, p. 232).

Viburnum [Tourn.] L. Viburnum.

Viburnum trilobum Marsh. High-bush Cranberry. Cramp Bark.

(V. Opulus L. var. americana [Mill.] Ait.)

Collected on low ground along a stream. Infrequent. Bingham (p. 141) gives the habitat in Oakland County as: "...tamarack, cedar-tamarack, and spruce-tamarack bogs and flood-plain and oak-hickory forests; along roadsides." According to Billington (p. 217), it is common throughout the state.

Viburnum Lentago L. Nannyberry.

Frequent in senescent tamarack bogs and in low soil along roadsides.

Lonicera L. Honeysuckle.

Lonicera tatarica L. Tartarian Honeysuckle.

An occasional escape along roadsides.

Lonicera oblongifolia (Goldie) Hook. Swamp Fly Honeysuckle.

Infrequent in the park. Collected in open oak woods and on a shrubby slope. The plants found were out of their natural environment, as this is a species of bogs and wet soil generally. Very rare in Kalamazoo County (Hanes, p. 239). Billington (p. 213) describes its distribution in the state as: "...frequent except in the extreme southern counties."

Lonicera dioica L. Limber Honeysuckle.

Occasional in senescent tamarack bogs. Common throughout the state (Billington, p. 217).

Lonicera dioica var. glaucescens (Rydb.) Butters.

(L. glaucescens Rydb.)

Collected in an oak woods near a bog. It probably also occurs in senescent tamarack bogs.

VALERIANACEAE Batsch Valerian Family.

Valeriana [Tourn.] L. Valerian.

Valeriana ciliata T. and G. Edible Valerian.
(V. edulis Nutt. of Gray's Man., ed. 7.)
Frequent in open situations in marshes and senescent bogs.

Valeriana uliginosa (T. and G.) Rydb. Swamp Valerian.
Frequent in marshes and in sedge-grass areas in senescent bogs.

CUCURBITACEAE B. Juss. Gourd Family.

Echinocystis T. and G.

Echinocystis lobata (Michx.) T. and G. Wild Balsam Apple.
(Micrampelis lobata (Michx.) Greene)
Occasional in elm-maple-ash flood-plain forests and in thickets on stream banks. Common along streams in Washtenaw County (Walpole, p. 73).

CAMPANULACEAE Juss. Bellflower Family.

Campanula [Tourn.] L. Bellflower.

Campanula uliginosa Rydb. Blue Marsh Bellflower.
Collected at only one station, in a thicket in a bog.
Frequent in swamps in Kalamazoo County (Hanes, p. 242).
Beal (p. 125) does not list this species as occurring in the state in 1904.

Campanula rotundifolia L. var. intercedens (Witasek) Farw. Harebell.

Collected on an eastern slope in a field being invaded by oak and on a western slope in an open oak-hickory woods. Occasional in the park. Hanes (p. 241) reports this variety as common in Kalamazoo County. Giles (p. 134) did not find it within a 10-mile radius of Michigan State College, although it had been reported there previously. If one follows Deam (p. 895) and Hanes (p. 241), many collections from Michigan described as the typical form should be referred to var. intercedens, as the true species is more or less restricted to the western United States and is rarely inland or in the eastern part.

LOBELIACEAE Dumort. Lobelia Family.

Lobelia [Plumier] L. Lobelia.

Lobelia cardinalis L. Cardinal Flower.

Collected on a muddy bank of the Huron River in a flood-plain forest of elm and ash. Occasional in the park. Walpole (p. 73) reports this species as frequent on moist soil in Washtenaw County. Bingham (p. 142) describes it as uncommon in ditches in Oakland County.

Lobelia siphilitica L. Large Blue Lobelia.

Occasional near the edges of flood-plain forests. Common in moist soil in Washtenaw County (Walpole, p. 73).

Lobelia inflata L. Bladder-pod Lobelia.

Collected at only one station, in a marsh. According to Walpole (p. 73), it is common in fields in Washtenaw County. Bingham (p. 142) reports it from along streams in Oakland County. This plant usually prefers drier situations than marshes and streams according to reports and to Deam's habitat description (pp. 897 and 898): "...poor soils in open woods and fallow fields, and sometimes...in cultivated fields...It is also found in rich soil and in dried-up sloughs."

Lobelia spicata Lam. var. leptostachys (A.DC.) Mack. and Eush.

Occasional on dry slopes in old fields and in low fields. Specimens collected in a low field are not typical of Deam's description (p. 898), but are closer to var. leptostachys than to any other variety in the key.

Lobelia spicata var. originalis McVaugh

Collected in a low, old field. Not reported by Hanes (p. 242) from Kalamazoo County. Deam (p. 898) describes this form of the species as very local in Indiana and gives the habitat as dry, gravelly oak slopes.

COMPOSITAE Adans. Composite Family.

Vernonia Schreb. Ironweed.Vernonia missurica Raf. Ironweed.

(V. illinoensis Gleason and V. altissima Nutt. var. taenotricha Blake.)

Frequent on banks of streams and in low fields partly grown up with shrubs.

Eupatorium [Tourn.] L.

Eupatorium maculatum L. Spotted-stemmed Joe-pye-weed. Frequent to common in wet soil.

Eupatorium perfoliatum L. Boneset. Same as habitat and frequency above.

Kuhnia L.

Kuhnia eupatorioides L. False Boneset.
Collected on a shaded roadside. Infrequent. Frequent in dry soil in the southern and southwestern parts of the state (Wolff, p. 33).

Liatris Schreb. Gay Feather.

Liatris spicata (L.) Willd. var. typica Gaiser
Gay Feather.

(L. spicata [L.] Willd. in part)
Infrequent in moist soil and in low fields grown up with shrubs. "A thick-spiked, marsh-loving plant mostly from the more northern latitudes of the range of the species..." (Gaiser, p. 178)

Liatris aspera Michx. var. typica Gaiser Blazing Star.

(L. sphaeroidea Michx. f. asperifolia Shinnars)
Common in an old field on the north side of the Pere Marquette track and directly south of Briggs Lake.

Solidago L. Goldenrod.

Solidago hispida Muhl. Rough-hairy Goldenrod.

Infrequent to frequent in oak-hickory woods. Infrequent on dry, sandy hillsides in Washtenaw County (Walpole, p. 75). Rare in Kalamazoo County (Hanes, p. 245).

Solidago caesia L. Wreath Goldenrod. Blue-stemmed Goldenrod.

Found in moist, shaded soil on the larger island at the south end of Island Lake. Frequent in rich woods in Washtenaw County (Walpole, p. 75). Common in woods and thickets in the Lower Peninsula and rare or absent in the Upper Peninsula (Wolff, p. 39).

Solidago canadensis L. var. gilvocanescens Rydb.
Canada Goldenrod.

Occasional to frequent in old fields and in marshes.

Solidago juncea Ait. Early Goldenrod.

Common in old fields. It also occurs in oak-hickory woods.

Solidago gigantea Ait. var. leiophylla Fern. Late Goldenrod.

(S. serotina Ait.)

Frequent to common in low fields and on low banks of the Huron River.

Solidago altissima L. Tall Goldenrod.

Common. Specimens were collected along the road through the gravel pit, on the edges of gravel "dunes" in the pit, in low, old fields; and in moist soil under oak and ash on the larger island at the south end of Island Lake.

Solidago nemoralis Ait. Old-field Goldenrod.

Frequent to common in old fields and in thin stands of oak-hickory.

Solidago rugosa Mill. Rough-leaved Goldenrod.

Collected at one station, near the Huron River in a senescent bog. Bingham (p. 143) describes its habitat as: "...dogwood-willow marshes, tamarack and cedar-tamarack bogs, meadows, and oak-hickory, mixed hardwood...forests; along roadsides." Infrequent in Kalamazoo County (Hanes, p. 246). More or less frequent in wet places throughout the East Lansing area (Giles, p. 139).

Solidago speciosa Nutt. Showy Goldenrod.

Collected in railroad ballast. Infrequent. Giles (p. 140) saw this species only once in the East Lansing area. Infrequent in railroad ballast and along roadsides in Kalamazoo County (Hanes, p. 247).

Solidago rigida L. Stiff Goldenrod.

Infrequent in dry fields. Local in Kalamazoo County (Hanes, p. 247). Infrequent in dry, sandy soil in Washtenaw County (Walpole, p. 77). "Confined to the lower half of the Lower Peninsula." (Wolff, p. 45)

Solidago graminifolia (L.) Salisb. var. Nuttallii

(Greene) Fern. Flat-topped Goldenrod.

(S. graminifolia of early authors, S. hirtella (Greene) Bush, and Euthamia hirtella Greene.)

Frequent on banks of streams and along roadsides in low, open situations.

Aster [Tourn.] L. AsterAster macrophyllus L. Large-leaved Aster.

Common in oak-hickory woods.

Aster azureus Lindl. Azure Aster.

Frequent to common at the edges of dry, sterile fields, in oak-hickory woods, and along roadsides.

Aster sagittifolius Wedemeyer ex Willd. Arrow-leaved Aster.

Collected on a south slope in light shade. Infrequent in the park. Hanes (p. 248) reports it as frequent in Kalamazoo County.

Aster sagittifolius var. urophyllus Lindl.
Common in oak-hickory woods. It also occurs in low, open situations.

Aster novae-angliae L. New England Aster.
Occasional in low fields along the Huron River.

Aster laevis L. Smooth Aster.
Frequent to common on slopes in oak-hickory woods.

Aster lucidulus (Gray) Wieg. Glossy-leaved Aster.
(A. puniceus L. var. lucidulus of Gray's Man., ed. 7.)
Occasional to frequent in marshy ground in open places and in moist soil under oak.

Aster praealtus Poir. var. angustior Wieg.
Common in low, old fields. It also occurs on stream banks and in senescent bogs.

Aster puniceus L. Purple-stemmed Aster.
Collected in a senescent tamarack bog. Frequent in swamps in Washtenaw County (Walpole, p. 76). Wolff (p. 53) describes it as common in wet, usually open situations.

Aster umbellatus Mill. Flat-topped Aster.
(Doellingeria umbellata [Mill.] Nees.)
Collected at only one station, in a very wet part of a senescent tamarack bog. Common in moist soil in Washtenaw County (Walpole, p. 77). Billington (p. 145) reports it as also occurring in sedge-willow marshes.

Erigeron L. Fleabane.

Erigeron canadensis L.
(Leptilon canadense [L.] Britt.)
Common in denuded areas, waste ground and old fields. Cronquist (p. 297) refers this species to the genus Conyza.

Erigeron pulchellus Michx. var. typicus Cronquist
Collected at the foot of a wooded slope. Infrequent in the park. This is the variety occurring in Michigan and throughout most of the eastern United States (Cronquist, p. 248). Common on banks and hills in Washtenaw County (Walpole, p. 77).

Erigeron strigosus Muhl. var. typicus Cronquist
Narrow-leaved Fleabane.
(E. ramosus [Walt.] BSP. of authors)
Growing in railroad ballast. Cronquist (p. 266) describes the species, including the varieties as: "A weed over most of the United States and southern Canada..."

Antennaria Gaertn.

Antennaria neglecta Greene Pussytoes.

Very common in old fields where the basal leaves frequently form dense mats.

Antennaria neodioica Greene

Occurring in sandy, sterile fields where it forms dense patches. Common in Kalamazoo County (Hanes, p. 252).

Antennaria plantaginifolia (L.) Richards Plantain-leaved Pussytoes.

Common in old fields and in thin stands of oak and hickory.

Antennaria munda Fern.

(A. occidentalis of authors not Greene)

Found in a low field. Infrequent in Kalamazoo County (Hanes, p. 252). Found near Chelsea, Washtenaw County (Hermann 1937, p. 94).

Gnaphalium L. Cudweed.

Gnaphalium obtusifolium L. Old-field Balsam. Common Everlasting.

(G. polycephalum Michx.)

Common in old fields.

Ambrosia [Tourn.] L. Ragweed.

Ambrosia elatior L. Common Ragweed.

(A. artemisiifolia L. and A. elatior L. var. artemisiifolia [L.] House)

Common in old fields, along roadsides and in railroad ballast.

Rudbeckia L. Coneflower.

Rudbeckia hirta L. Black-eyed Susan.

Occasional in upland and low fields. Deam (p. 965) regards this as a species complex, but he does not attempt to describe any varieties.

Helianthus L. Sunflower.

Helianthus annuus L. Common Sunflower.

Frequent in ballast along the Pere Marquette track.

Helianthus divaricatus L. Rough Sunflower.

Common in oak-hickory woods. Also found on low, shaded soil on the east side of Island Lake.

Helianthus giganteus L. Giant Sunflower.
Frequent in marshes and low, open situations.

Helianthus hirsutus Raf. Stiff-haired Sunflower.
Collected at only one station. Infrequent in dry soil in Washtenaw County (Walpole, p. 78). Rare in dry soil in the southern counties of Michigan (Wolff, p. 77).

Helianthus strumosus L. Pale-leaved Sunflower.
Occasional in light shade along roadsides. Frequent in thickets and dry woods in Michigan (Wolff, p. 76).

Bidens L.

Bidens cernua L. Nodding Bur Marigold.
Collected in wet soil on the shore of Island Lake. Infrequent in the park. Common throughout the state in wet soil, ditches and muddy shores (Wolff, p. 81).

Bidens coronata (L.) Britt. Tickseed Sunflower.
(B. trichosperma [Michx.] Britt.)
Common in marshes and senescent bogs. It also occurs in the Sphagnum bog on the south side of McCabe Road.

Bidens vulgata Greene Common Beggarsticks.
Frequent along roadsides.

Galinsoga R. and P.

Galinsoga ciliata (Raf.) Blake Quickweed.
(G. parviflora Cav. var. hispida DC.)
Occasional around buildings in the picnic grounds. Wolff (p. 83) describes it as growing "in dooryards and waste places, only in towns and cities." This plant is an immigrant from South America.

Helenium L.

Helenium autumnale L. Common Sneezeweed.
Occasional in low fields along the Huron River. Common along banks of streams in Washtenaw County (Walpole, p. 79). Wolff (p. 83) describes it as frequent throughout the state in swamps, wet meadows, and on moist river banks.

Achillea [Vaill.] L.

Achillea Millefolium L. Common Yarrow.
Common in old fields.

Chrysanthemum [Tourn.] L.

Chrysanthemum Leucanthemum L. var. pinnatifidum
Lecoq. and Lamotte. Oxeye Daisy.
Occasional to frequent in fields.

Senecio [Tourn.] L.

Senecio plattensis Nutt. Prairie Ragwort.
Collected in an old field near the Huron River. Infrequent in dry soil in Washtenaw County (Walpole, p. 79).

Senecio aureus L. Golden Ragwort.
Collected in a low, old field. Hanes (p. 262) does not report the typical form from Kalamazoo County.

Senecio aureus var. semicordatus (Mackenzie and Bush) Greenm.
Collected only once. Unfortunately the habitat record was lost. Deam (p. 998) reports this variety from Indiana, but includes it in with the species.

Senecio pauperculus Michx.
A small colony was found in a low field near the Huron River. Wolff (p. 98) describes this species as frequent in the state generally but absent or rare in the southern counties.

Arctium L. Burdock.

Arctium minus (Hill.) Bernh. Common Burdock.
Growing at the edge of a dump.

Cirsium [Tourn.] Mill. Thistle.

Cirsium vulgare (Savi) Airy-Shaw Bull Thistle. Pasture Thistle.
(C. lanceolatum [L.] Hill.)
Frequent along sunny roadsides and on piles of subsoil at the gravel pit.

Cirsium arvense (L.) Scop. Canada Thistle.
Common along open roadsides and in waste ground.

Cirsium muticum Michx. Swamp Thistle.
Occasional in senescent bogs and the Sphagnum bog on the south side of McCabe Road at Butcher Road. Frequent in Washtenaw County (Walpole, p. 80). Hanes (p. 263) describes it as frequent in swamps in Kalamazoo County.

Centaurea L.

Centaurea maculosa Lam. Spotted Knapweed.

Frequent on the shoulder of U. S. Highway 16. Also collected at the foot of a slope covered with oak at the edge of a senescent bog. This plant is an immigrant which is spreading rapidly throughout the state. Bingham (p. 149) says: "A very pernicious weed. In pine-hardwoods, on lake shores and roadsides, in dry meadows, and in cultivated and abandoned fields." Common in Alcona and Clare Counties (Darlington, Bessey and Megee, p. 193). Often abundant in sandy fields and along roadsides (Hanes, p. 264). Walpole (p. 80) found it rare in Washtenaw County in 1924. Wolff (p. 103) describes it as infrequent in the state in 1928. Beal (p. 136) did not report it from the state in 1904.

Cichorium [Tourn.] L.

Cichorium Intybus L. Chicory.

A specimen was collected in the parking lot inside the entrance to the park on the east side of Island Lake. This plant was seen at not more than two other points in the park. Its scarcity in the area perhaps is due to the fact that it is a weed immigrant which is still spreading in the state.

Krigia Schreb.

Krigia biflora (Walt.) Blake.

(K. amplexicaulis Nutt. and Cynthia virginica [L.] D. Don.)

Infrequent on slopes in oak-hickory woods. Frequent on moist hillsides in the Lower Peninsula (Beal, p. 126).

Tragopogon [Tourn.] L.

Tragopogon dubius Scop.

(T. pratensis L. of most authors)

Frequent in old fields and along roads. According to Hanes (p. 265) T. dubius differs from T. pratensis in that the peduncle of the former is fistulous below the head, and with larger flowers and with bracts exceeding the ray flowers.

Taraxacum [Haller] Ludwig Dandelion.

Taraxacum palustre (Lyons) Lam. and DC. var. vulgare (Lam.) Fern. Dandelion.

(T. officinale Weber and Leontidon Taraxacum L.)

Common in low fields, around cottages, and in the camping ground at the south end of Island Lake.

Taraxacum laevigatum (Willd.) DC. Red-seeded Dandelion.
 (T. erythrospermum Andrz. and Leontodon erythrospermum
 [Andrz.] Britt.)

Infrequent in old fields and waste ground. "Generally distributed throughout the state but not as common as the preceding." (Wolff, p. 12)

Sonchus [Tourn.] L. Sow Thistle.

Sonchus asper (L.) Hill. Spiny-leaved Sow Thistle.
 Common along roadsides and in railroad ballast.

Lactuca [Tourn.] L. Lettuce.

Lactuca Scariola L. Prickly Lettuce.
 Common in old fields, railroad ballast, along open roadsides, and on disturbed soil.

Lactuca canadensis L. var. typica Wieg.
 (L. canadensis L. in part.)
 Common in old fields and along the Pere Marquette track.

Lactuca canadensis var. latifolia O. Ktze.
 (L. canadensis L. in part.)
 Collected at only one place, in an old field. Probably infrequent.

Prenanthes [Vaill.] L.

Prenanthes alba L. White Lettuce.
 Frequent in oak-hickory woods.

Prenanthes racemosa Michx. Glauous White Lettuce.
 Rattlesnake-root.
 Infrequent in senescent bogs. Frequent in swampy places in Washtenaw County (Walpole, p. 74).

Hieracium [Tourn.] L. Hawkweed.

Hieracium aurantiacum L. Orange Hawkweed.
 Occasional to frequent in old fields. "Only occasional in Michigan in 1915, but since then becoming a noxious weed, especially in the northern parts of the state." (Darlington, Bessey and Megee, p. 179)

Hieracium canadense Michx. var. fasciculatum (Pursh.)
 Fern. Canada Hawkweed.
 Found in an opening in a low oak woods. Infrequent in the park. Infrequent in dry thickets in Washtenaw County (Walpole,

p. 74). Common in dry woods and thickets throughout the state (Wolff, p. 20).

Hieracium longipilum Torr. Long-bearded Hawkweed.
Collected in an old field. Infrequent in the park.
Not reported from Oakland County (Bingham, p. 150); nor
from Washtenaw County (Walpole, p. 74). Wolff (p. 19)
describes this hawkweed as local in dry soil in the Lower
Peninsula.

F I G U R E S



Fig. 1.

The Huron River.

Flood plain forest
on left bank.



Fig. 2.

Marsh along the Huron
River, with Cornus
stolonifera the dom-
inant shrub in the
foreground.



Fig. 3.

The Huron River; an old
field in the background,
marsh on the opposite
side of the river, and
Pontederia cordata in
the foreground.



Fig. 4.

Senescent bog extending about one-half mile back from the Huron River. Sedge-grass area in foreground with Larix laricina in the back.

Fig. 5.

Marsh along Spring Creek, showing the creek as a dark line through the center.



Fig. 6.

A pond coated with duckweed.

Fig. 7.

Verbascum Thapsus and
Setaria viridis in an old field.



Fig. 8.

An oak-hickory woods.

Fig. 9.

A family of hickory growing
in an old field on a gentle
slope.





Fig. 10.

Artificial lake in
the gravel pit.

Fig. 11.

View of the gravel pit
showing piled subsoil and
eroded slopes in the back-
ground with a pond and
washed gravel in the fore-
ground.



Fig. 12.

Willow invading a
gravel "dune".



I N D E X T O P L A N T S

A

Acalypha	84	AIZOACEAE	64
rhomboidea	84	Alisma	35
Acer	86	subcordatum	35
Negundo	86	ALISMACEAE	35
rubrum	86	Allium	50
saccharum	86	canadense	50
ACARACEAE	86	Alnus	59
Achillea	114	crispa	59
Millefolium	114	incana	59
Actaea	67	Alopecurus	40
rubra	67	aequalis	40
Agrimonia	78	Alyssum	71
gryposepala	78	alyssoides	71
parviflora	78	Amaranthus	63
pubescens	78	albus	63
Agropyron	38	graecizans	63
repens	38	AMARANTHACEAE	63
repens f. aristatum ..	38	AMARYLLIDACEAE	52
Agrostis	39	Ambrosia	113
hyemalis	40	elatioer	113
palustris	39	Amelanchier	75
scabra	40	arborea	75
Ailanthus	83	humilis	75
altissima	83	laevis	75

Amphicarpa	82	Aquilegia	67
bracteata	82	canadensis	67
ANACARDIACEAE	84	Arabis	71
Anacharis	35	glabra	71
canadensis	36	hirsuta var.	
Andropogon	43	adpressipilis	71
Gerardi	43	ARA CEAE	48
scoparius	43	Arctium	115
Anemone	67	minus	115
cylindrica	67	Arenaria	65
virginiana	67	serpyllifolia	65
Anemonella	67	Arisaema	48
thalictroides	67	triphyllum	48
Antennaria	113	Aronia	75
munda	113	melanocarpa	75
neglecta	113	prunifolia	75
neodioica	113	Asclepias	96
plantaginifolia	113	amplexicaulis	97
Apios	82	incarnata	97
americana	82	syriaca	97
APOCYNACEAE	96	tuberosa	96
Apocynum	96	ASCLEPIADACEAE	96
androsaemifolium	96	Asparagus	51
cannabinum var.		officinalis	51
glaberrimum	96	Aster	111
AQUIFOLIACEAE	85	azureus	111

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<i>Caltha palustris</i>	66	<i>pennsylvanica</i>	46
<i>Camelina</i>	71	<i>prairea</i>	45
<i>microcarpa</i>	71	<i>retrorsa</i>	47
<i>Campanula</i>	108	<i>rostrata</i>	47
<i>rotundifolia</i>		<i>scoparia</i>	46
var. <i>intercedens</i>	108	<i>siccata</i>	45
<i>uliginosa</i>	108	<i>stipitata</i>	46
CAMPANULACEAE	108	<i>stricta</i> var. <i>strictior</i>	47
CAPPARIDACEAE	72	<i>substricta</i>	47
CAPRIFOLIAEAE	106	<i>trisperma</i>	46
<i>Capsella</i>	70	<i>viridula</i> f. <i>intermedia</i>	46
<i>Bursa-pastoris</i>	70	<i>vulpinoidea</i>	45
<i>Cardamine</i>	70	<i>Carpinus</i>	58
<i>bulbosa</i>	70	<i>caroliniana</i>	
<i>Carex</i>	45	var. <i>virginiana</i>	58
<i>aurea</i>	46	<i>Carya</i>	57
<i>comosa</i>	47	<i>ovalis</i>	57
<i>convoluta</i>	45	<i>ovalis</i> var. <i>obcordata</i>	57
<i>flava</i>	46	<i>ovalis</i> var. <i>obcordata</i>	
<i>Haleana</i>	46	f. <i>vestita</i>	58
<i>hystericina</i>	47	<i>ovalis</i> var. <i>odorata</i> ..	57
<i>interior</i>	46	<i>ovata</i>	57
<i>intumescens</i>	47	<i>tomentosa</i>	57
<i>lasiocarpa</i>	47	CARYOPHYLLACEAE	64
<i>lupulina</i>	47	<i>Ceanothus</i>	87
<i>Muhlenbergii</i>	45	<i>americanus</i>	87
<i>paupercula</i>	46	<i>Celastrus</i>	86

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Celastrus scandens	86	Cichorium	116
CELASTRACEAE	85	Intybus	116
Cenchrus	43	Cicuta	92
longispinus	43	maculata	92
Centaurea	116	Cinna	40
maculosa	116	arundinacea	40
Cephalanthus	105	Circaea	91
occidentalis	105	quadrifidula	
Cerastium	65	var. canadensis	91
vulgatum var. hirsutum	65	Cirsium	115
Ceratophyllum	66	arvense	115
demersum	66	muticum	115
CERATOPHYLLACEAE	66	vulgare	115
Chaenorrhinum	103	CISTACEAE	88
minus	103	Claytonia	64
Chamaedaphne	93	virginica	64
calyculata	93	Comandra	61
Chelone	103	Richardsoniana	61
glabra		COMPOSITAE	109
var. linifolia	103	Conium	92
CHENOPODIACEAE	63	maculatum	92
Chenopodium	63	Convolvulus	97
album	63	arvensis	97
gigantospermum	63	sepium var. communis .	97
Chrysanthemum	115	CONVOLVULACEAE	97
Leucanthemum		Coptis	66
var. pinnatifidum	115	groenlandica	66

Corallorrhiza	54	Cypripedium candidum	53
maculata	54	reginae	53
CORNACEAE	92		
Cornus	92		
obliqua	93	Dactylis	38
racemosa	93	glomerata	38
stolonifera	93	Daucus	92
Corylus	58	Carota	92
americana	58	Desmodium	80
CRASSULACEAE	72	canadense	81
Crataegus	75	glutinosum	81
crus-galli	75	illinoense	81
punctata	75	nudiflorum	80
CRUCIFERAE	69	paniculatum	81
CUCURBITACEAE	108	Digitaria	41
Cuscuta	97	Ischaemum	41
Gronovii	97	sanguinalis	41
CYPERACEAE	43	Dioscorea	52
Cyperus	44	villosa	53
Engelmanni	44	DIOSCOREACEAE	52
filiculmis		Draba	71
var. macilentus	44	verna	71
rivularis	44	Dulichium	43
strigosus	44	arundinaceum	43
Cypripedium	53		
Calceolus			
var. parviflorum	54	Echinochloa	42

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G

Galinsoga	114	Geum aleppicum	
ciliata	114	var strictum	77
Galium	105	canadense	77
Aparine	106	laciniatum	
boreale		var. trichocarpum	77
var. hyssopifolium ...	106	Gleditsia	79
boreale		triacanthos	79
var. intermedium	106	Glyceria	37
boreale		canadensis	37
var. typicum	106	pallida	37
concinnum	106	septentrionalis	37
labradoricum	106	striata	37
obtusum	106	Gnaphalium	113
pilosum	105	obtusifolium	113
tinctorium	106	GRAMINEAE	36
triflorum	106	Grossularia	73
Gaylussacia	93	Cynosbati	73
baccata	93	hirtella	73
Gentiana	96	GROSSULARIA CEAE	73
Andrewsii	96		
procera	96		
GENTIANA CEAE	96		
Geranium	83		
maculatum	83		
GERANIA CEAE	82		
Geum	77		

H

Habenaria	54
dilatata	54
HALORAGIDA CEAE	91
HAMAMELIDA CEAE	74
Hamamelis	74

Hamamelis virginiana	74	HYPERICA CEAE	88
Hedeoma	101	Hypericum	88
hispida	101	canadense	88
pulegioides	101	perforatum	88
Helenium	114	prolificum	88
autumnale	114	punctatum	88
Helianthemum	88	Hypoxis	52
canadense	89	hirsuta	52
Helianthus	113	Hystrix	39
annuus	113	patula	39
divaricatus	113		
giganteus	114	I	
hirsutus	114	Ilex	85
strumosus	114	verticillata	85
Hemerocallis	50	Impatiens	86
fulva	50	biflora	86
Hepatica	67	IRIDA CEAE	53
americana	67	Iris	53
Heuchera	72	virginica	
Richardsonii		var. Shrevei	53
var. Grayana	72		
Hieracium	117	J	
aurantiacum	117	JUGLANDA CEAE	56
canadense	117	Juglans	56
longipilum	118	cinerea	57
HYDROCHARITA CEAE	35	nigra	57

M

Maclura pomifera	61	Mitchella	105
Maianthemum	51	repens	105
canadense		Mitella	73
var. interius	51	diphylla	73
Malus	74	Mollugo	64
coronaria	74	verticillata	64
pumila	74	Monarda	100
Malva	88	fistulosa var. mollis	100
neglecta	88	MORACEAE	60
Malvaceae	88	Myosotis	98
Medicago	79	micrantha	98
lupulina	80	scorpioides	98
lupulina		versicolor	98
var. glandulosa	80	Myriophyllum	91
sativa	79		
Melilotus	80	N	
alba	80	NAJADACEAE	35
officinalis	80	Najas	35
MENISPERMACEAE	69	flexilis	35
Menispermum	69	Nasturtium	70
canadense	69	officinale	70
Mentha	101	Nemopanthus	85
arvensis	102	mucronata	85
piperata	101	Nepeta	100
Mimulus	103	Cataria	100
ringens	103	Nuphar	66

Nuphar advena	66
NYCTAGINA CEAE	63
Nymphaea	66
tuberosa	66
NYMPHAEA CEAE	66

O

Cenothera	91
pyncocarpa	91
OLEA CEAE	95
ONAGRA CEAE	90
ORCHIDA CEAE	53
Ostrya	58
virginiana	58
OXALIDA CEAE	83
Oxalis	83
stricta	83
Oxybaphus	63
nyctagineus	64

P

Panicum	41
capillare	42
dichotomiflorum	41
huachucae	42
huachucae	
var. fasciculatum	42

Panicum latifolium	42
linearifolium	42
meridionale	42
perlongum	42
Scribnerianum	42
villosissimum	42
virgatum	42
Parnassia	73
glaucæ	73
Parthenocissus	87
quinquefolia	87
Pedicularis	104
lanceolata	104
Penthorum	72
sedoides	72
Phalaris	41
arundinacea	41
Phleum	40
pratense	40
Phlox	97
pilosa	97
Phragmites	38
communis	
var. Berlandieri	38
Physalis	102
ambigua	102
subglabrata	102

<i>Physalis virginiana</i>	102	<i>Podophyllum</i>	68
<i>Physocarpus</i>	74	<i>peltatum</i>	68
<i>opulifolius</i>	74	<i>Polanisia</i>	72
<i>Picea</i>	33	<i>graveolens</i>	72
<i>Abies</i>	33	POLEMONIACEAE	97
FINACEAE	33	<i>Polygala</i>	83
<i>Pinus</i>	33	<i>polygama</i> var. <i>obtusata</i>	83
<i>Banksiana</i>	33	<i>sanguinea</i>	84
<i>Laricio</i>		<i>verticillata</i>	84
var. <i>austriaca</i>	33	POLYGALACEAE	83
<i>Strobus</i>	33	POLYGONACEAE	62
<i>sylvestris</i>	33	<i>Polygonatum</i>	51
PLANTAGINACEAE	104	<i>biflorum</i>	52
<i>Plantago</i>	104	<i>pubescens</i>	51
<i>aristata</i>	105	<i>Polygonum</i>	62
<i>lanceolata</i>	105	<i>amphibium</i>	
<i>major</i>	105	var. <i>stipulaceum</i>	
<i>Rugelii</i> var. <i>asperula</i>	105	<i>f. fluitans</i>	62
PLATANACEAE	74	<i>arifolium</i>	
<i>Platanus</i>	74	var. <i>pubescens</i>	62
<i>occidentalis</i>	74	<i>aviculare</i>	62
<i>Poa</i>	37	<i>Convolvulus</i>	63
<i>annua</i>	37	<i>Persicaria</i>	62
<i>autumnalis</i>	37	<i>punctatum</i>	62
<i>compressa</i>	37	<i>tenue</i>	62
<i>palustris</i>	38	<i>Pontederia</i>	49
<i>pratensis</i>	38	<i>cordata</i>	49

PONTEDERIA CEAE	49	Potentilla simplex	
Populus	55	var. typica	77
alba	55	Prenanthes	117
balsamifera		alba	117
var. virginiana	55	racemosa	117
grandidentata	55	PRIMULA CEAE	94
tremuloides	55	Proserpinaca	91
Portulaca	64	palustris var. creba .	91
oleracea	64	Prunella	100
POTULACA CEAE	64	vulgaris	
Potamogeton	34	var. lanceolata	100
amplifolius	34	Prunus	78
gramineus		americana	78
var. typicus	34	institia	79
gramineus		persica	79
var. myriophyllus	34	serotina	79
illinoensis	34	virginiana	78
nodosus	34	Pycnanthemum	101
pectinatus	35	virginianum	101
POTAMOGETONACEAE	34	Quercus	59
Potentilla	76	alba	59
Anserina	77	alba f. latiloba	59
argentea	77	bicolor	59
arguta	76	borealis	60
fruticosa	76	borealis	
intermedia	77	var. maxima	60
recta	77	coccinea	60

Quercus macrocarpa	59	Rorippa	70
prinoides	59	islandica	
velutina	60	var. microcarpa	70
		Rosa	78
		carolina	78
		palustris	78
		suffulta	78
		ROSACEAE	74
RANUNCULACEAE	66	RUBIAEAE	105
Ranunculus	67	Rubus	76
abortivus	67	allegheniensis	76
fascicularis	68	flagellaris	76
hispidus	68	occidentalis	76
pennsylvanicus	68	pubescens	76
recurvatus	68	strigosus	76
sceleratus	68	Rudbeckia	113
RHAMNACEAE	86	hirta	113
Rhamnus	86	Rumex	62
cathartica	86	Acetosella	62
Rhus	84	crispus	62
aromatica	85	orbiculatus	62
glabra	85	RUTACEAE	83
radicans	85		
typhina	85		
Vernix	85		
Ribes	73		
americanum	73		
nigrum	73		
Robinia	80		
Pseudo-Acacia	80		

S

Sagittaria	35
latifolia	35
latifolia f. gracilis	35

SALICACEAE	55	SARRACENIACEAE	72
Salix	55	Sassafras	69
alba		albidum var. molle ...	69
var. vitellina	56	Saxifraga	72
Bebbiana	56	pennsylvanica	72
candida	56	SAXIFRAGACEAE	72
discolor	56	Schrankia	79
discolor		Nuttallii	79
var. latifolia	56	Scirpus	44
humilis	56	acutus	44
interior	56	americanus	44
lucida	55	atrovirens	44
nigra	55	cyperinus	45
rigida	56	lineatus	44
serissima	55	SCROPHULARIACEAE	102
Salsola	63	Scutellaria	99
pestifer	63	epilobifolia	99
Sambucus	106	lateriflora	100
canadensis	106	Senecio	115
pubens	107	aureus	115
Sanicula	91	aureus	
marilandica	92	var. semicordatus	115
SANTALACEAE	61	pauperculus	115
Saponaria	65	plattensis	115
officinalis	65	Setaria	43
Sarracenia	72	lutescens	43
purpurea	72	viridis	43

Silene	65	graminifolia	111
antirrhina	65	hispida	110
Cucubalus	65	junceae	110
SIMARUBACEAE	83	nemoralis	111
Sisymbrium	69	rigida	111
altissimum	69	rugosa	111
Sisyrinchium	53	speciosa	111
albidum	53	Sonchus	117
Smilacina	51	asper	117
racemosa		Sorghastrum	43
var. cylindrata	51	nutans	43
stellata	51	SPARGANIA CEAE	34
Smilax	52	Sparganium	34
ecirrhata	52	eurycarpum	34
rotundifolia	52	Sphenopholis	39
SOLANACEAE	102	intermedia	39
Solanum	102	Spiraea	74
carolinense	102	alba	74
Dulcamara	102	Spiranthes	54
nigrum	102	cernua	54
Solidago	110	Stellaria	64
altissima	111	longifolia	64
caesia	110	media	65
canadensis var.		Stipa	40
gilvocanescens	110	spartea	40
gigantea		Symplocarpus	48
var. leiophylla	110	foetidus	48

Syringa	95	Triglochin	35
vulgaris	95	maritima	35
T		Trillium	52
		grandiflorum	52
Taenidia	92	Typha	34
integerrima	92	angustifolia	34
Taraxacum	116	latifolia	34
laevigatum	117	TYPHACEAE	34
palustre		U	
var. vulgare	116		
Teucrium	99	ULMACEAE	60
occidentale		Ulmus	60
var. boreale	99	americana	60
Thalictrum	68	rubra	60
dasycarpum	68	UMBELLIFERAE	91
dioicum	68	Urtica	61
Tilia	88	procera	61
americana	88	URTICACEAE	61
TILIACEAE	88	Utricularia	104
Tofieldia	50	vulgaris	104
glutinosa	50	Uvularia	50
Tragopogon	116	grandiflora	50
dubius	116	sessilifolia	50
Trifolium	80	V	
pratense	80		
procumbens	80	Vaccinium	93
repens	80	corymbosum	94

Vaccinium	stamineum		Viburnum	trilobum	107
var.	neglectum	93	Vicia		81
	vacillans	94	americana		82
	vacillans		caroliniana		81
var.	crinitum	94	villosa		81
Valeriana		107	Viola		89
ciliata		108	cucullata		89
uliginosa		108	eriocarpa		90
VALERIANACEAE		107	pallens		90
Vallisneria		36	papilionacea		90
americana		36	pedata		89
Verbascum		102	sororia		90
Thapsus		102	triloba		89
Verbena		99	VIOLACEAE		89
bracteata		99	VITACEAE		87
hastata		99	Vitis		87
stricta		99	aestivalis		87
urticaefolia		99	aestivalis		
VERBENACEAE		99	var argentifolia		87
Vernonia		109	riparia		87
missurica		109	Vulpia		36
Veronica		103	octoflora		36
arvensis		103			
peregrina		103			
Veronicastrum		103			
virginicum		103	Zanthoxylum		83
Viburnum		107	americanum		83
Lentago		107	Zizania		41
			aquatica		
			var. angustifolia		41

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