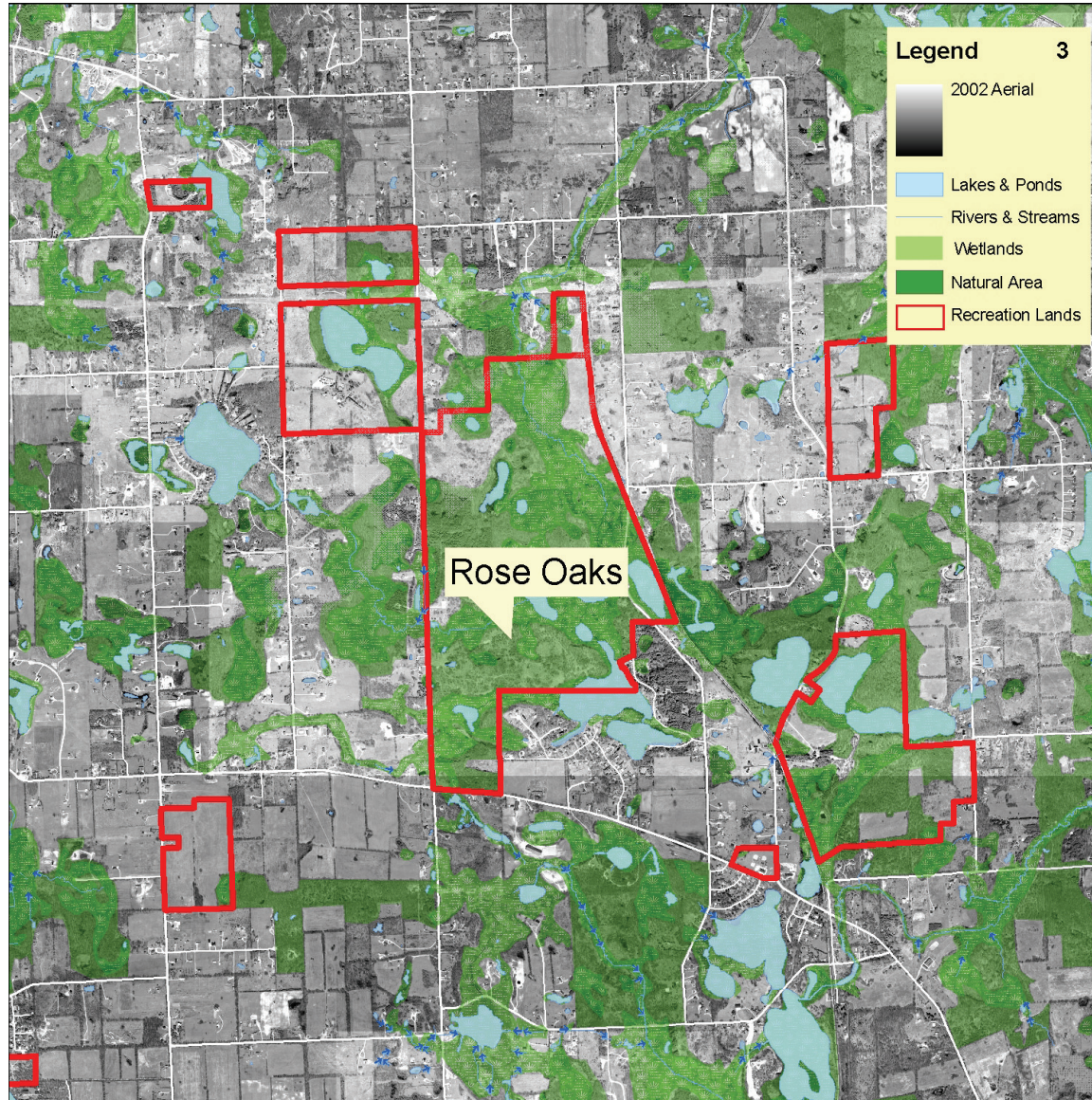


**APPENDIX A**

**POTENTIAL ECOLOGICAL CONNECTIVITY**

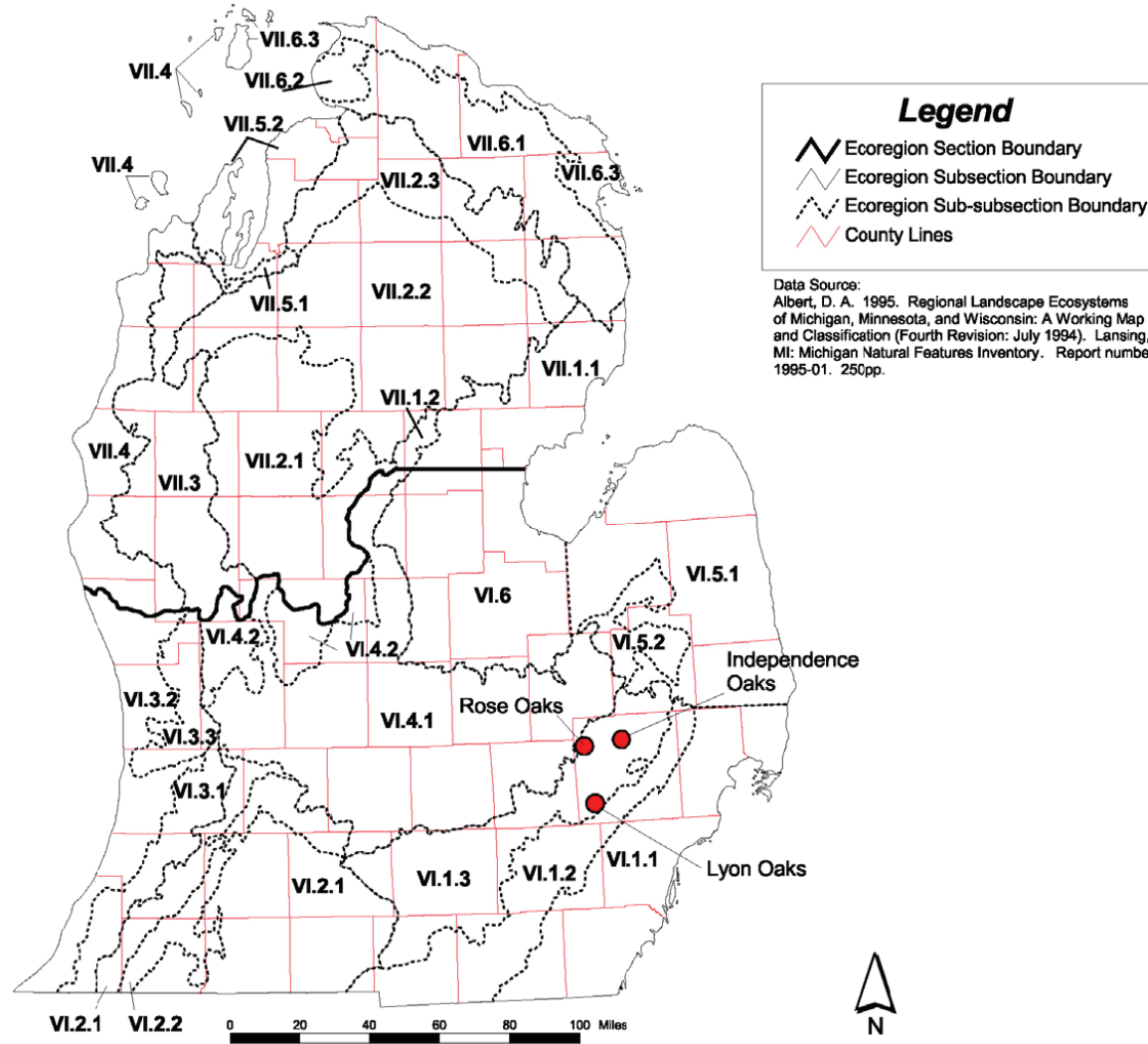


Source: Oakland County Planning and Economic Development Services



APPENDIX B

ECOREGIONS OF NORTHERN MICHIGAN<sup>1</sup>



<sup>1</sup> Source: *Natural Features Inventory and Management Recommendations for Independence Oaks, Lyon Oaks and Rose Oaks, Oakland County Parks (MNFI)*





## APPENDIX C

### SITE SOIL SERIES DESCRIPTIONS

Refer to Figure 6 in Section II for locations of each of the soil series.

**10 B, C, D, and E: Marlette Sandy Loam** – Moderately well drained on knolls, ridges and side slopes. Best suited for pasture and woodland vegetation. One of the primary site soils. Most of the site soils are slightly to moderately sloping with an occasional steeply sloping ridge. The highest elevations of the site contain these soils. They occur extensively north and west of Richardson Lake, around the Fish Lake Road parking area, and in the southwest corner of the site.

**11B: Capac Sandy Loam** – Moderately to poorly drained soils found in scattered lower elevations of the site. Suited for pasture and woodland vegetation. They occur on three small areas of the site south of Richardson Lake and along the railroad tracks on the east side of the site.

**12: Brookstone and Colewood Loams** – Flat, poorly drained soils with high water table and found in low elevations. They occur in four small areas on the north, central and south end of the site and are contiguous to and part of the extensive site wetland system.

**13 C, E: Oshtemo-Boyer Loam Sand** – Well drained soils found on gently to steeply sloping areas. They are best suited for woodland vegetation due to erosion potential. They occur mid-way between the highest and lowest areas of the site; they can be found in five locations. The largest area is the open field northeast of Buckhorn Creek. Smaller areas can be found along the south and west sides of the site.

**18 B, C: Fox Sandy Loam** – Well drained soils found on flat to moderately sloping areas at mid to low elevations. Best suited for pasture and woodlands vegetation. They occur in the center of the site in five locations and typically in close proximity to the Marlette Sandy Loam and Fox-Riddle Sandy Loam series.

**19: Sebewa Loam** – Flat, poorly drained soils with high water table and found in low elevations. They occur on two small areas situated on the northeast side of the site and are contiguous to and part of the extensive site wetland system.

**27: Houghton and Adrian Mucks** – Flat, poorly drained soils consisting of bogs and other types of wetlands. They are the most prevalent site soil and represent a substantial portion of the site's wetlands. The most unique wetland plant communities of the site occur within these soils. The sometimes very thick muck layer provides engineering difficulties for boardwalk and footbridge platforms.

**44 C: Riddle Sandy Loam** – Well drained soils found on moderately sloping areas at mid to low elevations. Best suited for pasture and woodlands vegetation. Occurrence on site is limited to the existing parking area on Buckhorn Lake Road and the wooded upland area immediately to the south of this parking area.

**45 B: Arkport Loamy Fine Sand** – Well drained soils found on flat to gently sloping areas at low elevations. They are best suited for pasture and woodlands vegetation. They occur on one small area contiguous to wetlands in the center of the site.

**46 A: Dixboro Loamy Fine Sand** – Well drained soils found on flat to gently sloping areas at low elevations. Best suited for pasture and woodlands vegetation. Occurrence on site is limited to one small area contiguous to wetlands adjacent to the intersection of Buckhorn Lake Road and Davisburg Road.

**47 C: Fox-Riddle Sandy Loam** – Very similar to and found in association with the Marlette Sandy Loam series; this well drained moderately sloping soil is best suited for pasture and woodland vegetation. They occur in the highest elevations of the site in one large area on the northwest side of Big School Lot Lake.

**67 B, C: Ormas Loamy Sand** – Very similar to and found in association with the Marlette Sandy Loam series; this well drained mostly flat soil is best suited for pasture and woodland vegetation. They occur in the highest elevations of the site on the west side of Richardson Lake and at the existing parking lot area.





## APPENDIX D

### SITE SUMMARIES AND MANAGEMENT RECOMMENDATIONS<sup>1</sup>

#### Rose Oaks Wet-Mesic Prairie (Site Code: O)

Rose Oaks Wet-mesic Prairie is an exemplary natural community, so well-preserved that it has been added to the MNFI database of high quality natural communities. It occurs east of Richardson Lake and along the west side of the creek that flows north/south through the park and feeds Big School Lot Lake. This site is part of a wetland complex that dominates the eastern side of the park and is comprised of southern wet meadow (e.g., sedge meadow), emergent marsh, shrub-carr, and southern swamp. Wet-mesic prairie is a groundwater-influenced, fire-dependent community type that is dominated by prairie and wetland species, many of which also occur in prairie fens. The community is considered imperiled, both globally and within Michigan, where only nine other occurrences have been identified statewide.

Mineral soils are an important defining characteristic of wet-mesic prairie and what differentiates this community type from prairie fen, although the two share many species in common. Soils at this site are mapped as Brookston and Colwood loams, which are distinct from surrounding soils and unique within the park. This map unit is defined as being nearly level and having poorly drained soils in broad, flat areas, subject to frequent ponding. Due to the high water table, these soils are not suitable for development or recreation. Soil samples taken by MNFI biologists revealed calcareous, sandy clay loams with a pH in the range of 7.0 to 8.0. Approximately 14 inches of grayish black loam with iron concretions overlies grayish-brown, coarse-textured sand, below which, at 24 inches, occurs gleyed clay with iron concretions.

Rose Oaks Wet-Mesic Prairie is dominated by various sedge species, most notably *Carex pellita* and *Carex stricta*. In all, 66 plant species were noted, of which 56 are native. Commonly observed species include shrubby cinquefoil (*Potentilla fruticosa*), stout blue-eyed grass (*Sisyrinchium angustifolium*), side-flowering aster (*Aster*

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<sup>1</sup> Excerpt from the *Natural Features Inventory and Management Recommendations for Independence Oaks, Lyon Oaks and Rose Oaks, Oakland County Parks* (MNFI)

*lateriflorus*), common mountain mint (*Pycnanthemum virginianum*), Riddell's goldenrod (*Solidago riddellii*), grass-leaved goldenrod (*Euthamia graminifolia*), Dudley's rush (*Juncus dudleyi*), meadowsweet (*Spiraea alba*), and whorled loosestrife (*Lysimachia quadriflora*). While occasional patches of Indian grass (*Sorghastrum nutans*) and broom sedge (*Andropogon virginicus*) were observed, the overall paucity of deep-rooting prairie grasses, which typically dominate wet-mesic prairie communities, indicates that the site was likely plowed in the past. Evidence of channelization of a nearby stream also supports the theory that this site previously supported agriculture.

Rose Oaks Wet-Mesic Prairie is a site of statewide significance and should be managed as such. Activities that would benefit the site include aggressive invasive species eradication and the introduction of fire. Prescribed fire will promote the growth and establishment of native grasses and forbs and help reduce encroachment by trees and shrubs. Non-native species noted during our site visits included smooth brome (*Bromus inermis*), autumn-olive (*Elaeagnus umbellata*), and Scotch pine (*Pinus sylvestris*). If left unchecked, these species will likely dominate the site in the future and precipitate a loss of species diversity. Cutting accompanied by application of an herbicide approved for wetlands is the most effective way of controlling woody species. In addition, prescribed fire will be an important component of any long-term management plan for this site. The few Scotch pines growing on the site should be removed; however hawthorns (*Crataegus* spp.) are native and should be left to provide food and cover for wildlife.

#### **Buckhorn Road Sedge Meadow (Site Code: P)**

This site is a southern wet meadow, an open, groundwater-influenced, sedge-dominated wetland (Kost 2001b). Water levels fluctuate seasonally, reaching their peak in spring and lows in summer. This community occurs southwest of the intersection of Buckhorn Road and the railroad tracks, and its hydrology is influenced by the unnamed stream that flows north/south into Big School Lot Lake. The sedge meadow occurs in combination with other wetland communities to form a large wetland complex occupying the eastern third of the park. Many examples of southern wet meadow occur throughout Rose Oaks County Park. This is the highest-quality example, but it is still affected, to some extent, by problems typical of many wetlands in southern Michigan:

invasion by nonnatives, such as purple loosestrife (*Lythrum salicaria*) and reed canary grass (*Phalaris arundinacea*), or past diking or stream channelization that may still be affecting hydrology.

The dominant species at this site is the sedge *Carex stricta*, with local dominance in places by *Carex lacustris*, sensitive fern (*Onoclea sensibilis*), and cat-tail (*Typha latifolia*). Large hummocks formed from the roots of *Carex stricta* contribute to diverse microtopography and support a diversity of additional species such as spotted touch-me-not (*Impatiens capensis*), water smartweed (*Polygonum amphibium*), blue-joint grass (*Calamagrostis canadensis*), smooth swamp aster (*Aster firmus*), cut grass (*Leersia oryzoides*), Joe-pye-weed (*Eupatorium maculatum*), and nodding burmarigold (*Bidens cernuus*).

The highest priority management goal for this wet meadow is the eradication of purple loosestrife (*Lythrum salicaria*) before it becomes prevalent throughout wetlands at Rose Oaks. The spread of purple loosestrife can be manually controlled by applying wetland-appropriate herbicides to flowering plants. Some success in controlling purple loosestrife has been achieved with the application of biological control agents, *Galerucella* beetles, which are native to purple loosestrife's European habitat (Hight and Drea 1991, Blossey 1992). Management should also include a reduction in shrub and tree cover, especially along the western edge of this site, through cutting and the application of herbicide. Reducing tree and shrub cover will help maintain the open conditions required by most of the plant and animal species found here.

Evidence from wetland peat cores and pre-settlement maps indicate that southern wet meadow is a fire-dependent natural community (Curtis 1959, Davis 1979). By reducing leaf litter and allowing light to reach the soil surface and stimulate seed germination, fire can play an important role in maintaining southern wet meadow seed banks (Warners 1997, Kost and De Steven 2000) while also reducing shrub cover. Prescribed fires should be conducted in the sedge meadow and allowed to spread to the adjacent Rose Oaks Wet-Mesic Prairie (above) and Esler Lake Woodland (described below) when feasible. Similarly, prescribed fire conducted in the adjacent wet-mesic prairie and oak forest should be allowed to carry east into the sedge meadow. Buckhorn Road can serve as an effective firebreak along the east side of the sedge meadow, and the unnamed stream can be used as a

firebreak along the west side. In the absence of fire or flooding, wet meadows typically convert to shrub-carr and then to swamp forest. Shrub-carr is a common, transitional community type that should not be a goal of park management. Rather, the sedge meadow community should be perpetuated through prescribed fire or flooding by beaver, should it occur. Furthermore, protecting the hydrology of this site is imperative for its continued existence.

#### **Esler Lake Woodland (Site Code: Q)**

A dry-mesic southern forest occurs north of Esler Lake and continues north to Richardson Lake Swamp. The forest is bisected by an old, abandoned fence, which demarcates a significant change in the quality of the forest and past land use practices. South of the fence line, the forest is dominated by large white oak and appears less disturbed and more mature. North of the fence line, the forest is dominated by black oak and black cherry and appears younger, denser, and more recently impacted by grazing and other land use practices. The dry-mesic forest occurs on rolling, coarse-textured moraine and borders swamp forest to the north, pine plantation to the west, and transitions into shrub-carr to the east and south. Several small wetlands and vernal pools occur throughout the forest and provide critical habitat and breeding grounds for reptiles and amphibians.

The forest canopy is dominated by oak species, primarily white oak (*Quercus alba*) and black oak (*Q. velutina*), with lesser amounts of red oak (*Q. rubra*), several hickories (*Carya* spp.) and black cherry (*Prunus serotina*). Red maple (*Acer rubrum*) is prevalent in the understory, a result of fire suppression. Diameters of the overstory trees range from 10 to 76 cm (4 to 30 inches) and support a closed canopy. This likely differs from the historic character of this site, which almost certainly was more open and contained more widely scattered trees than presently occupy the forest. The past open character of the site is also suggested by the presence of savanna and prairie indicator species, such as common juniper (*Juniperus communis*), yellow pimpernel (*Taenidia integerrima*) and poverty oats grass (*Danthonia spicata*). The current well-developed shrub layer includes gray dogwood (*Cornus foemina*), black raspberry (*Rubus occidentalis*), blueberry (*Vaccinium angustifolium*), wild gooseberry (*Ribes cynosbati*), downy arrowwood (*Viburnum rafinesquianum*), and hazelnut (*Corylus americana*).



Due to fire suppression and shading from the closed canopy, the ground flora is relatively sparse. Species observed in the ground layer included the following: poison ivy (*Toxicodendron radicans*), various sedges (*Carex gracillima*, *C. cephalophora*, *C. radiata*), Virginia creeper (*Parthenocissus quinquefolia*), early meadow rue (*Thalictrum dioicum*), riverbank grape (*Vitis riparia*), white avens (*Geum canadense*), enchanter's nightshade (*Circaea lutetiana*), Canada mayflower (*Maianthemum canadense*), and fragrant bedstraw (*Galium triflorum*).

Oak forests are fire-dependent natural communities that degrade in the absence of a regular fire regime. Fire thins the understory and shrub layer, which allows more light to reach the forest floor and stimulate oak seedlings and other savanna species. It can also help reduce competition from thin-barked, shade-tolerant invaders such as red maple, which can colonize the understory of oak forests, and create dense shade. In addition to fire, cutting and/or girdling can also be used to control red maple. Another factor that threatens to erode biodiversity at this site is the presence of invasive species, which include Japanese barberry (*Berberis thunbergii*), autumn-olive (*Elaeagnus umbellata*), black locust (*Robinia pseudoacacia*), multiflora rose (*Rosa multiflora*), and white swallow-wort (*Vincetoxicum rossicum*). Because these woody species have the potential to rapidly spread and out-compete native vegetation, they should be cut and their stems treated with herbicide to prevent resprouting. Conducting prescribed burns at this site will help reduce the prevalence of woody invasives while also increasing nutrient cycling, reducing leaf litter, stimulating the soil seed bank, and bolstering flowering and seed production.

#### **Esler Lake Wetlands (Site Code: R)**

Several wetland community types intermingle within the low-lying area that encompasses Esler Lake, its western output channel, and the unnamed pond east of Esler Lake. Southern wet meadow, shrub-carr, and relict conifer swamp all combine to create an assemblage that represents the various stages of succession from open wet meadow to swamp forest. Soils are Houghton-Adrian mucks throughout. Wetland complexes of this nature are common throughout the Midwest, and, when intact, contain a diversity of habitats and flora beneficial to native wildlife.

The most prevalent community type across the site is shrub-carr, which is also abundant throughout the eastern one-third of the park. Shrub-carr is a shrub-dominated community type successional intermediate between wet meadow and swamp forest, and is characterized by fluctuating water levels and poor drainage conditions. Dominant at this site are red-osier dogwood (*Cornus stolonifera*) and sedge (*Carex stricta*), accompanied by gray dogwood (*Cornus foemina*), silky dogwood (*Cornus amomum*), blue-joint grass (*Calamagrostis canadensis*), poison sumac (*Toxicodendron vernix*), meadowsweet (*Spiraea alba*), swamp milkweed (*Asclepias incarnata*), and Joe-pye-weed (*Eupatorium maculatum*). The warbler, Common Yellowthroat (*Geothlypis trichas*), was observed using this habitat.

Interspersed among the shrub-carr are pockets of southern wet meadow, a sedge- and grass-dominated wetland community. Wet meadow probably dominated this site prior to invasion by shrubs, but small pockets are all that remain of what was once the primary cover type. The sedge, *Carex stricta*, is dominant, and interspersed among its hummocks are blue-joint grass (*Calamagrostis canadensis*), Joe-pye-weed (*Eupatorium maculatum*), shrubby cinquefoil (*Potentilla fruticosa*), marsh fern (*Thelypteris palustris*), fowl manna grass (*Glyceria striata*), and sedge (*Carex sartwellii*).

Where tamaracks (*Larix laricina*) have colonized and formed a partially-closed canopy, small areas of a community type known as relict conifer swamp occur. Relict conifer swamp is a minerotrophic (e.g. groundwater-fed), tamarack-dominated, forested wetland that occurs on deep organic soils.

The western lakeshore of Esler Lake is dominated by marsh fern (*Thelypteris palustris*) and sedge (*Carex stricta*), in addition to the other typical lakeshore species, which include swamp loosestrife (*Decodon verticillatus*), pickerel weed (*Pontederia cordata*), arrow-arum (*Peltandra virginica*), swamp betony (*Pedicularis lanceolata*), sweet-scented waterlily (*Nymphaea odorata*), numerous sedges (*Carex vulpinoidea*, *C. comosa*, *C. stipata*), coontail (*Ceratophyllum demersum*), jack-in-the-pulpit (*Arisaema triphyllum*), purple meadow rue (*Thalictrum dasycarpum*), buttonbush (*Cephalanthus occidentalis*), common water horehound (*Lycopus americanus*), and golden-seeded spike rush (*Eleocharis elliptica*).

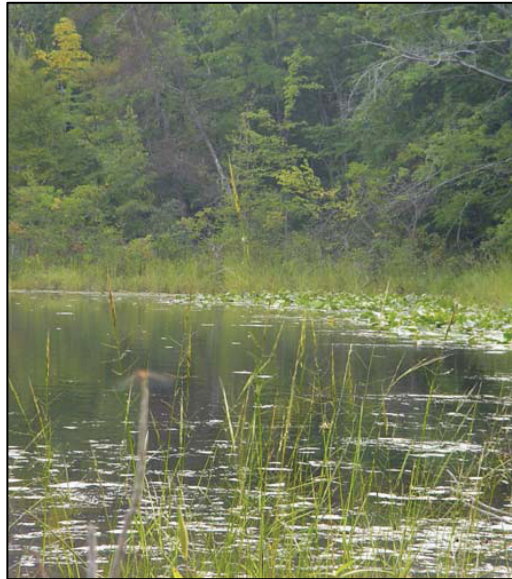
A hiking trail crosses this site east of Esler Lake, between trail reference points two and three, so this wetland complex is frequently visited and highly visible. Thus, it is an excellent site for stewardship and interpretation activities. Stewardship efforts should aim to reduce shrub cover in order to restore the formerly dominant open wetlands. Shrub-carr is a native community and important habitat, but due to fire suppression, it now dominates many formerly open wet meadows and prairie fens across the Midwest. Consequently, these open wetland communities are now rare. Reducing shrub cover will require cutting shrubs and treating the stumps with a wetland-approved herbicide to discourage resprouting. Shrub removal can occur from July through early March; in wet sites such as this, however, cutting can be more easily accomplished in winter when the ground is frozen and leaves are off. Spot herbicide application to regrowth is essential to any removal effort. Prescribed fire is also an effective tool for reducing woody species and restoring the wet meadow. Evidence from wetland peat cores and pre-settlement maps indicate that southern wet meadow is a fire-dependent natural community (Curtis 1959, Davis 1979). By reducing leaf litter and allowing light to reach the soil surface and stimulate seed germination, fire can play an important role in maintaining southern wet meadow seed banks (Warners 1997, Kost and De Steven 2000).

**Wild Rice Pond (Site Code: S)**

The Wild Rice Pond is a closed-canopy forested wetland community comprised of the southern swamp community type, surrounding a small pond. According to 1937 and 1978 aerial photographs, it is one of the only terrestrial sites within the park that has remained largely structurally unchanged over time. This site occurs east of Richardson Lake and occupies a depression of approximately 16 acres, situated over coarse-textured glacial till. It is surrounded on the south by upland forest and on the north by sedge meadow, shrub-carr, and emergent marsh, diverse wetlands common throughout the Midwest. Wild Rice Pond supports young, small-diameter (10 to 25 cm, 4 to 10 inch dbh), deciduous tree species dominated by black ash (*Fraxinus nigra*). Yellow birch (*Betula alleghaniensis*) is also abundant throughout the swamp, and large, fallen, decomposing trunks of this species add structural diversity and moist, exposed, nutrient-rich substrates for seedlings of various species. An additional structural component is present in the numerous soft-bottomed, seasonally flooded depressions, which are dominated by red maple (*Acer rubrum*), American elm (*Ulmus americana*), and black ash. These forested vernal

pools provide critical breeding habitat for amphibians as well as an insect-rich food resource for migrating songbirds in the spring.

Wild Rice Pond harbors diverse understory and ground floras. Shrubs commonly found here include spicebush (*Lindera benzoin*), highbush blueberry (*Vaccinium corymbosum*), and Michigan holly (*Ilex verticillata*). Common ground-flora species include skunk cabbage (*Symplocarpus foetidus*), Jack-in-the-pulpit (*Arisaema triphyllum*),



Wild-rice (*Zizania aquatica*), as shown here growing on the edge of Wild Rice Pond (Site S) at Rose Oaks, was an important food source for Native Americans; the Anishinaabe or Ojibwe word for it, “manonin,” translates into “good berry.” This grass species is sensitive to disturbance—especially damming, dredging, or any other activity that impairs natural hydrologic regimes—and should be protected from overharvesting.

side-flowering aster (*Aster lateriflorus*), fowl manna grass (*Glyceria striata*), wood nettle (*Laportea canadensis*), common horsetail (*Equisetum arvense*), sensitive fern (*Onoclea sensibilis*), and marsh fern (*Thelypteris palustris*). Soils throughout the site are black Houghton-Adrian muck, poorly drained, and have a high water table (at or above the surface) from November to May. The soil is sapric peat at the surface, including partially decomposed



chunks of wood, with a pH of 7.0. At two feet, gray, calcareous gravelly sand with a pH of 7.5 occurs. This marl layer may indicate that this site was historically an open, grassy, prairie fen that eventually converted to conifers and then hardwoods. A sparse ring of tamarack (*Larix laricina*) still exists around the small, unnamed pond situated in the western portion of the swamp. Between the pond and the tamaracks remains a narrow zone of prairie fen, which atop a quaking mat with a pH of 7.5. Common species observed within the fen include poison sumac (*Toxicodendron vernix*), marsh cinquefoil (*Potentilla palustris*), sedge (*Carex lasiocarpa*), softstem bulrush (*Schoenoplectus tabernaemontani*), wild-rice (*Zizania palustris*), tall swamp marigold (*Bidens coronatus*), smooth highbush blueberry (*Vaccinium corymbosum*), meadowsweet (*Spiraea alba*), and sphagnum moss.

Management of Wild Rice Pond should focus on maintaining the current hydrology and the forest community. This wetland complex is important to many species, particularly reptiles and amphibians, and is important to the overall biodiversity of the park. Wood frogs were plentiful during our survey, and rare species such as Blanding's turtles may also be utilizing this site. Non-native species are present in manageable numbers; their removal should be a high-priority goal before they become well established. Invasive species observed include autumn-olive (*Elaeagnus umbellata*) and Japanese barberry (*Berberis thunbergii*) in the swamp forest northwest of the pond, and Oriental bittersweet (*Celastrus orbiculata*) east of the pond. Oriental bittersweet poses the most imminent threat due to its ability to rapidly colonize new areas and dominate all vegetative strata (e.g. ground layer, shrub layer, and tree canopy). This vine and the invasive woody shrubs should be cut and their stumps treated with a wetland-approved herbicide to prevent resprouting. If the emerald ash borer should colonize this site, dead ash trees should be left standing and/or fallen to contribute to structural diversity of the forest and provide wildlife habitat.

#### **Richardson Lake East Shore (Site Code: T)**

The northeast shore of Richardson Lake supports an assemblage of upland communities situated on Fox sandy loam, a well-drained soil found on side slopes, knolls, and ridges. Southern wet meadow (sedge meadow) occurs in the wetter areas adjacent to the lake, overlying Houghton-Adrian muck, and transitions to a small patch of wet-mesic prairie at a slightly higher elevation. South of this point, between the lake and the hiking trail, is a

combination of old field and degraded oak barrens. All of these communities combine to create excellent breeding habitat for turtles that utilize Richardson Lake. For many native turtle species, pregnant females leave open-water ponds or lakes and traverse the sedge meadow or fen wetland edge to lay their eggs in the adjacent, open and semi-open savanna uplands. When the uplands adjacent to the pond succeed from open prairie and savanna communities to closed canopy forest, turtles must travel greater distances to find suitable nesting sites. The reduction of open habitat creates greater risk of egg predation on the sites that remain and many female turtles are killed attempting to cross roads to reach open, sunny nesting sites. Maintaining a scattered canopy of oaks or prairie habitat along the eastern shore of Richardson Lake, through a combination of prescribed fire and woody plant removal, will facilitate turtle egg-laying and decrease egg predation and mortality rates for adult, female turtles.

While small in size, the area of wet-mesic prairie contains many species commonly associated with high quality wetland communities, including Riddell's goldenrod (*Solidago riddellii*), whorled loosestrife (*Lysimachia quadriflora*), a sedge (*Carex stricta*), Ohio goldenrod (*Solidago ohioensis*), swamp thistle (*Cirsium muticum*), common juniper (*Juniperus communis*), and shrubby cinquefoil (*Potentilla fruticosa*).

Restoration of the wet-mesic prairie and remnant oak barrens should be the goal of management efforts, as these areas harbor species with a direct, genetic link to the past fauna and flora of the site. At present, shrubs and small trees are encroaching upon these small openings and should be removed. Combining shrub and tree removal with prescribed burning will stimulate native species, and over time, help reduce the prevalence of non-native grasses and forbs. Maintaining an open habitat along the eastern shore of Richardson Lake will also benefit turtles inhabiting the lake. Invasive species that should be eradicated include Scotch pine (*Pinus sylvestris*), autumn-olive (*Elaeagnus umbellata*), spotted knapweed (*Centaurea maculosa*), and Oriental bittersweet (*Celastrus orbiculatus*).

### **Golden Pond Swamp (Site Code: U)**

The Golden Pond Swamp is a forested wetland community dominated by deciduous tree species and is therefore classified as southern swamp (MNFI 2003). At its center is a scenic pond. It occurs northwest of Richardson Lake on coarse-textured glacial outwash and is surrounded on all sides by old field. This southern swamp is a mature and dynamic system, which maintains a good representation of tree size-classes, structural diversity, and floral composition, despite being small and poorly buffered. Due to annual and semi-permanent inundation, it likely escaped large-scale logging in the past; 1937 and 1978 photos indicate it was forested at those times. The average diameter of trees within the swamp is 30 to 35 cm (12 to 14 inches), with some individuals attaining diameters greater than 80 cm (31 inches) and one silver maple (*Acer saccharinum*) with a diameter of 92 cm (36 inches). Dominant tree species are red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanica*), with lesser numbers of silver maple (*Acer saccharinum*), American elm (*Ulmus americana*), white oak (*Quercus alba*), yellow birch (*Betula alleghaniensis*), basswood (*Tilia americana*), and swamp white oak (*Quercus bicolor*). A well-developed shrub layer includes spicebush (*Lindera benzoin*), bluebeech (*Carpinus caroliniana*), Michigan holly (*Ilex verticillata*), hazelnut (*Corylus americana*) and serviceberry (*Amelanchier* sp.). An uneven terrain prevails across the forest floor, the product of numerous depressions, pit and mound topography, and grassy, raised hummocks that have formed around the buttressed roots of trees.

Floral composition reflects this diverse microtopography and a unique species assemblage occupies each microhabitat. Thus, no clear dominants were present, though richness and diversity are high. Areas that were recently inundated, and which remain so throughout most of the year, were largely barren.

Natural forest dynamics are driving the ecology of this site, and provide structural diversity. Trees that have naturally senesced and fallen create a patchy canopy cover, allowing sunlight to reach gaps on the forest floor and encouraging the growth of a diverse assemblage of species and tree age classes. Fallen logs also benefit wildlife and can serve as important microsites for seedling establishment, especially in wetlands. Soils throughout Golden Pond Southern Swamp are black Houghton-Adrian muck, poorly drained, and have a high water table at

or above the surface from approximately November to May. The soil at the surface is sapric peat, with an average pH of 7.0 and contains many pieces of partially decomposed wood.

Management of this site should focus on monitoring for and removing invasive species. A natural buffer of native species should be allowed to develop surrounding this site and invasive species controlled via methods appropriate to each species and the wetland setting. Woody invasive species should be cut and stumps treated with a wetland-approved herbicide.

#### **Fish Lake Road Bog (Site Code: V)**

Adjacent to Fish Lake Road and immediately north of the pine plantation is a small (three-acre) bog, a community type defined as an ombrotrophic (fed by precipitation, as opposed to groundwater) peatland characterized by a sedge-*Sphagnum* floating mat (MNFI 2003). Nutrient-poor and acidic, bogs are peat-accumulating wetlands comprised of acidophilic vegetation, particularly *Sphagnum* mosses and Ericaceous shrubs (of the heath family, Ericaceae). Although bogs are water saturated, they have virtually no inflow or outflow of mineral-bearing water. Isolated from the groundwater table by a build up of peat, their only source of nutrients is precipitation. In addition to low levels of nutrients, the prevalence of sphagnum mosses creates an acidic environment. Only a select group of plants can tolerate the harsh growing conditions of the bog environment. Excess rainwater runs to the edge of the bog's slightly domed *Sphagnum* mat, often creating a "moat" of standing water that encompasses the bog.

Fish Lake Road Bog occurs in a depression in glacial outwash. The soil is comprised of fibric peat, which overlies calcareous glacial drift and developed over thousands of years as plant debris accumulated within continuously saturated conditions. This site is comprised of a floating sphagnum mat surrounded by a moat with 1 to 2 feet of standing water. The moat supports a community type known as inundated shrub swamp or buttonbush depression, which is a shrub-dominated community successional intermediate between emergent marsh and forested swamp or bog. Due to extremely slow rates of plant decomposition, the current bog will gradually increase in size as dead organic matter accumulates and is engulfed by the sphagnum mat. As the peat layer



thickens, the vegetative surface becomes raised above the water table and will eventually encompass the inundated shrub swamp. The inundated shrub swamp is dominated by a nearly impenetrable thicket of buttonbush (*Cephalanthus occidentalis*), Michigan holly (*Ilex verticillata*), willows (*Salix* spp.), dogwoods (*Cornus foemina* and *C. stolonifera*), and meadowsweet (*Spiraea alba*). A stand of invasive reed canary grass (*Phalaris arundinacea*) occurs in the northern portion of the swamp. Numerous, dead, small diameter elms (*Ulmus americana*) are also present, their mortality likely due to Dutch elm disease. Standing snags (i.e., dead trees) should remain undisturbed as they provide valuable wildlife habitat.

The bog is dominated by *Sphagnum* mosses upon which grows an open-canopy stand of scattered tamarack (*Larix laricina*) and lesser amounts of red maple (*Acer rubrum*); both species have diameters ranging from 10 to 15 cm (4 to 6 inches). Dominant under the tamaracks is a meadow of *Carex oligosperma* interspersed with shrubs such as leatherleaf (*Chamaedaphne calyculata*), blueberry (*Vaccinium angustifolium*), and small cranberry (*Vaccinium oxycoccos*). Herbs noted during a fall survey include pitcher plant (*Sarracenia purpurea*), wool-grass (*Scirpus cyperinus*), and cinnamon willow-herb (*Epilobium coloratum*).

Stewardship recommendations for this site include removing invasive plants, most notably the reed canary grass invading the northern portion of the inundated shrub swamp, red maple, and Scotch pine (*Pinus sylvestris*). Control of reed canary grass can be accomplished by applying a wetland-approved herbicide when the plant is in flower and monitoring for regrowth throughout the year and in successive years. Red maples should be cut and their stumps treated with a wetland approved herbicide to prevent it from resprouting. Removing the Scotch pine (*Pinus sylvestris*) planted to the south of the bog will improve the surrounding landscape context of the community.

#### **Fish Lake Road Tamaracks (Site Code: W)**

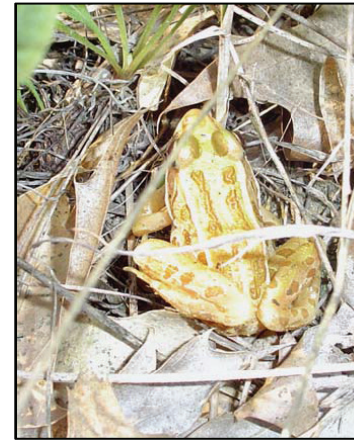
A small tamarack swamp occurs along Fish Lake Road, immediately north of the entrance to the main parking lot. Tamarack swamps, classified as relict conifer swamp communities (Kost 2001), are groundwater-influenced, forested wetland communities dominated by tamarack (*Larix laricina*) and occurring on deep organic soils (peat

and muck). Their hydrology is maintained by calcareous groundwater that permeates the muck and peat soils. Historically, tamarack swamps were the most common type of conifer swamp in southern Michigan but they have been reduced to less than 1% of their *circa* 1800 cover. These swamps were frequently drained and logged, and subsequently used for agriculture, mined for peat, or abandoned and converted to wet meadow, shrub-carr, or hardwood conifer swamp (Kost 2001a, b, and c).

Tamaracks at this site form a savanna structure (with an open canopy and low density of trees) interspersed with large clones of gray dogwood (*Cornus foemina*). Sharing the canopy, though in much lesser numbers, is American elm (*Ulmus americana*). Numerous dead standing elm, presumably killed by Dutch elm disease, provide habitat for cavity-nesting birds and numerous insects. The open branching and spire-shaped canopy of tamarack allows a significant amount of light to reach the shrub layer, increasing diversity and richness at this level. The most common shrubs present here are silky dogwood (*Cornus amomum*), poison sumac (*Toxicodendron vernix*), and meadowsweet (*Spiraea alba*). The high amount of sunlight that reaches the forest floor, in addition to various microhabitats created by the buttressed roots of the tamaracks results in a diverse ground flora, which includes the following species: horsetail (*Equisetum arvense*), skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), spotted touch-me-not (*Impatiens capensis*), sedges (*Carex stricta*, *C. lacustris*, and *C. leptalea*), fowl manna grass (*Glyceria striata*), thistle (*Cirsium muticum*), marsh fern (*Thelypteris palustris*), and side-flowering aster (*Aster lateriflorus*). Numerous ant mounds and characteristic species of fen indicate that this site may have been more open in the past and was likely a prairie fen community that was encroached upon by tamarack and eventually converted to forest as a result of fire suppression in surrounding uplands.

Management for this site should concentrate on removing invasive plants. The invasives noted include glossy buckthorn (*Rhamnus frangula*), reed canary grass (*Phalaris arundinacea*), and reed (*Phragmites australis*). Each of these species can negatively influence species richness and alter community structure, and therefore, should be addressed immediately. Glossy buckthorn, in particular, is the greatest threat to relict conifer swamps because it can completely dominate the shrub and ground layers. Wetland-approved herbicides can be effective

against each of these species. Another threat, invasion by red maple (*Acer rubrum*), can cause a relict conifer swamp to shift to hardwood domination. Once red maple reaches the overstory, its broad canopy effectively reduces the amount of light available to the understory and results in a significant reduction in tamarack and shrub-layer cover and species richness, as well as a loss of many shade intolerant ground-layer species (Kost 2001a). Significantly reducing red maple cover through selective girdling will help ensure that characteristic natural disturbance events, such as windthrow and insect outbreaks, result in tamarack regeneration.



Indian grass, *Sorghastrum nutans* (left), a deep-rooting tallgrass prairie native, grows in Rose Oaks Wet-Mesic prairie, Site O. Due to fire suppression, shrubs and small trees are colonizing formerly open areas, and gradually shading out sun-loving prairie natives. Prescribed burns can be used to reduce the cover and competitiveness of woody species, and promote the growth and reproduction of prairie species. Dividing a large area into smaller burn units that can be burned in alternate years or seasons can protect populations of slow-moving amphibian and reptile species, such as the leopard frog, *Rana pipiens* (right), found nearby.

#### **Beaver Dam Wet-Mesic Prairie (Site Code: X)**

Beaver Dam Wet-Mesic Prairie occurs on a narrow peninsula of land bisecting an emergent marsh located in the southernmost section of the park. Wet-mesic prairie is a groundwater-influenced, fire-dependent community type dominated by prairie and wetland species, many of which also occur in prairie fens. Though small and degraded, this site supports a good diversity of native plants and is worthy of management and protection.

Mineral soil is an important defining characteristic of wet-mesic prairie and is also what differentiates this community type from prairie fen. Peat accumulation and subsequent organic soil formation have not occurred here because the surface is not inundated for long periods. The soils are calcareous, coarse-textured sand and gravel with pH ranging from 7.5 to 8.0. Slight changes in elevation, coupled with close proximity to water, support variation in composition and texture from sand to marl to clay to fibric sedge peat in lower layers. In all, 73 plants (68 native) were noted, including bluejoint grass (*Calamagrostis canadensis*), spikerush (*Eleocharis rostellata*), side-flowering aster (*Aster lateriflorus*), a bulrush (*Scirpus pendulus*), common mountain mint (*Pycnanthemum virginianum*), Joe-pye-weed (*Eupatorium maculatum*), grass-leaved goldenrod (*Euthamia graminifolia*), marsh fern (*Thelypteris palustris*), Dudley's rush (*Juncus dudleyi*), fringed brome (*Bromus ciliatus*), big bluestem (*Andropogon gerardii*), thimbleweed (*Anemone virginiana*), and purple meadow rue (*Thalictrum dasycarpum*).

The history of this site as a natural community is somewhat questionable. The presence of gravel below the surface suggests that this area may have been filled in the past to procure access to the "marsh hay" available in the surrounding wetlands.

Management activities that would benefit Beaver Dam Wet-Mesic Prairie include aggressive non-native species eradication and the introduction of fire to promote native grasses and forbs and to reduce encroachment of shrubs. Invasive species noted during our site visit were autumn-olive (*Elaeagnus umbellata*) and glossy buckthorn (*Rhamnus frangula*). If left unchecked, these species will likely dominate the site in the future and precipitate a loss of species diversity. Controlling woody species invasion through cutting followed by the application of a wetland-approved herbicide would be most effective. Additionally, this site, and the adjacent oak upland along Fish Lake Road, should be managed with prescribed fire to stimulate prairie species and further discourage resprouting of invasive shrubs.

#### **Beaver Pond Wet Meadow (Site Code: Y)**

A southern wet meadow community occurs southeast of the large, unnamed pond in the southwest corner of the park. It is situated in the low-lying area between two forested uplands, and is similar in composition to the other

wet meadows in the park. Southern wet meadow is an open, groundwater-influenced, sedge-dominated wetland. Water levels fluctuate seasonally, reaching their peak in spring and lows in summer (Costello 1936, Curtis 1959, Warners 1997). The sedges *Carex stricta*, *C. lacustris*, and *Carex lasiocarpa* dominate this site. Numerous other forbs and graminoids are present, including common mountain mint (*Pycnanthemum virginianum*), fringed brome (*Bromus ciliatus*), red-osier dogwood (*Cornus stolonifera*), Joe-pye-weed (*Eupatorium maculatum*), marsh fern (*Thelypteris palustris*), bog goldenrod (*Solidago uliginosa*), smooth swamp aster (*Aster firmus*), and blue-joint grass (*Calamagrostis canadensis*). A small stand of tamarack occurs in the eastern section of this site, and hosts a species assemblage similar to that of prairie fen and relict conifer swamp.

Management recommendations for this site include monitoring for and removing invasive species when found, reducing shrub and tree cover, and using prescribed fire to maintain diversity. The small grove of tamaracks and native shrubs near the center of the wetland should be left intact to provide structural diversity and protect the unique species assemblage of this area. Shrub and tree encroachment into the open sedge meadow can be controlled by cutting shrubs and applying a wetland-approved herbicide directly to the cut stumps. Reducing shrub and tree cover will help maintain the open conditions required by most of the plant and animal species found here. Prescribed fire, which will also help maintain open conditions and bolster species diversity, should be used regularly as a management tool in this community. The oak knoll (described below) directly north of the wet meadow will also benefit from prescribed fire and should be burned along with the wet meadow. The only invasive species noted at this site was bittersweet nightshade (*Solanum dulcamara*), a relatively innocuous species that is easily pulled and does not currently pose a serious threat to biodiversity.

#### **White Oak Knoll (Site Code: Z)**

An oak-dominated knoll is situated east of the large, unnamed pond in the southwest corner of the park, and rises conspicuously from the surrounding wetlands. The open-grown, spreading habit of the large, old white oaks present here indicates that this site was historically oak barrens. Diameters of the largest trees averaged 76 cm (30 inches). Oak forests with an open canopy typically have a rich ground flora due to the abundance of sunlight reaching the ground. However, the ground flora at this site was conspicuously sparse, with only four species

noted, sedges (*Carex pensylvanica* and *C. cephalophora*), May apple (*Podophyllum peltatum*), and poison ivy (*Toxicodendron radicans*). The low floristic diversity is likely related to past land use practices such as grazing and the presence of a closed canopy, which blocks sunlight from reaching the forest floor. In addition, a thick layer of dried leaves covers the ground, which can reduce seed germination and seedling survival. Historically, open-canopy oak barrens experienced frequent surface fires, which perpetuated the conditions that support the community's ecology (Cohen, 2001a). With the advent of fire suppression, oak barrens quickly converted to closed-canopy oak forests that lack many of the attributes of their earlier successional stages. The primary management needed at this site is the introduction of routine prescribed fire to reduce the forest understory and shrub layer, increase nutrient cycling, reduce leaf litter, stimulate the soil seed bank, and bolster flowering and seed production.

South of this site and north of the Beaver Pond Wet Meadow (Site Code Y) is another stand of dry-mesic forest, adjacent to Rose Center Road. This forest is highly degraded and is discussed here primarily because it supports a population of the pernicious invasive species, garlic mustard (*Alliaria petiolata*), which was seldom observed during the surveys. Control efforts should be undertaken to eliminate this species now before it spreads throughout the park. Annual monitoring and removal of small populations of non-native species requires relatively little time and effort and is more cost effective than managing large, widely dispersed populations after they have become well established. Winter application of herbicide to the basal rosettes of garlic mustard is an effective control measure. By killing seedlings, prescribed fires conducted annually during the spring can also reduce the prevalence of garlic mustard. In addition, flowering garlic mustard plants can be pulled and removed before releasing seed in May and June. Removing the plants from the site after pulling is necessary because of its ability to continue to mature and release seed even after being removed from the ground. Monitoring of the area every spring should follow any treatment.





Southern blue flag (*Iris virginica*) grows in a southern swamp notch (Golden Pond Swamp, Site U) and in the adjacent complex of wetlands, including Rose Oaks Wet-Mesic Prairie (Site O), Buckhorn Road Sedge Meadow (Site P), and Esler Lake Wetlands (Site R) at Rose Oaks. Many open wetland communities are fire-dependent, and will succeed to closed-canopy shrub-carr or swamp forest when fire is suppressed.





## APPENDIX E

### PLANT SPECIES OBSERVED AT ROSE OAKS COUNTY PARK<sup>1</sup>

"X" indicates the species occurred within the site. "-" indicates species was not observed at the site. Capitalized scientific and common names indicate non-native species. Life form acronyms are as follows: Nt, native; P, perennial; Ad, adventive; B, biannual; A, annual. "C" is the Coefficient of Conservation for each species (Herman et al. 2001). \* Sites are listed in Table 1, p. 13, along with their abbreviations and site codes.

Note: Species listed under "old fields†" were not associated with a specific site, but were found in wide-ranging surveys of all areas characterized as old fields in the 2000 land cover map (Figure 6, p. 10), which show up as light gray areas on the aerial photo (Figure 9, p. 13). [Refer to the source document, *Natural Features Inventory and Management Recommendations for Independence Oaks, Lyon Oaks and Rose Oaks, Oakland County Parks* (MNFI), for referenced tables and figures.]

Scientific Name	Common Name	Site/Site Code* Life Form	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
			C	O	P	Q	R	S	T	U	V	W	X	Y	Z
<i>Acer nigrum</i>	black maple	Nt Tree	4	-	-	-	-	x	-	-	-	-	-	-	-
<i>Acer rubrum</i>	red maple	Nt Tree	1	-	-	x	-	x	x	x	-	x	-	-	-
<i>Acer saccharinum</i>	silver maple	Nt Tree	2	-	-	-	-	-	x	-	-	-	-	-	-
<i>Acer saccharum</i>	sugar maple	Nt Tree	5	-	-	-	-	-	x	-	-	-	-	x	-
<i>Achillea millefolium</i>	yarrow	Nt P-Forb	1	-	-	x	-	-	-	-	-	-	-	-	x
<i>Actaea pachypoda</i>	doll's eyes	Nt P-Forb	7	-	-	x	-	-	-	-	-	-	-	-	-
<i>Agalinis purpurea</i>	purple gerardia	Nt A-Forb	7	-	-	-	-	x	-	-	-	x	-	-	-
<i>Agrimonia gryposepala</i>	tall agrimony	Nt P-Forb	2	-	-	x	-	-	-	-	-	-	-	-	-
AGROSTIS GIGANTEA	REDTOP	Ad P-Grass	0	-	-	-	-	-	x	-	-	-	-	-	-
<i>Alisma plantago-aquatica</i>	water plantain	Nt P-Forb	1	-	-	-	-	-	-	-	-	x	-	-	-
<i>Alnus rugosa</i>	tag alder	Nt Shrub	5	-	-	-	-	x	-	x	x	-	-	-	-
<i>Amelanchier arborea</i>	juneberry	Nt Tree	4	-	-	x	-	-	x	-	-	-	-	x	-
<i>Amphicarpaea bracteata</i>	hog peanut	Nt A-Forb	5	-	-	x	-	x	-	x	-	x	-	-	-
<i>Andropogon gerardii</i>	big bluestem	Nt P-Grass	5	-	-	-	-	-	-	-	-	x	-	-	x
<i>Andropogon virginicus</i>	broom sedge	Nt P-Grass	4	x	-	-	-	-	-	-	-	-	-	-	-
<i>Anemone cylindrica</i>	thimbleweed	Nt P-Forb	6	x	-	-	-	-	-	-	-	-	-	-	x
<i>Anemone virginiana</i>	thimbleweed	Nt P-Forb	3	-	-	-	-	-	x	-	-	-	x	-	-
<i>Anemonella thalictroides</i>	rue anemone	Nt P-Forb	8	-	-	x	-	-	-	-	-	-	-	-	-
<i>Antennaria howellii</i>	small pussytoes	Nt P-Forb	2	-	-	-	-	-	-	-	-	x	-	-	-
<i>Antennaria parlinii</i>	smooth pussytoes	Nt P-Forb	2	-	-	x	-	-	-	-	-	-	-	-	-
<i>Apios americana</i>	groundnut	Nt P-Forb	3	-	x	-	x	-	-	-	-	x	-	-	-
<i>Apocynum androsaemifolium</i>	spreading dogbane	Nt P-Forb	3	-	-	x	-	-	-	-	-	-	-	-	-
<i>Apocynum cannabinum</i>	Indian hemp	Nt P-Forb	3	x	-	x	x	-	x	-	-	-	-	-	x

\* Listed in Table 1, p.13.

<sup>1</sup> Excerpt from the *Natural Features Inventory and Management Recommendations for Independence Oaks, Lyon Oaks and Rose Oaks, Oakland County Parks* (MNFI)

Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Aralia nudicaulis	wild sarsaparilla	Nt P-Forb	5	-	-	-	-	X	-	-	-	-	-	-	-
Aralia racemosa	spikenard	Nt P-Forb	8	-	-	-	-	-	X	-	-	-	-	-	-
ARCTIUM MINUS	COMMON BURDOCK	Ad B-Forb	0	-	-	X	-	-	-	-	-	-	-	-	-
Arisaema triphyllum	jack-in-the-pulpit	Nt P-Forb	5	-	-	X	X	X	-	X	-	-	-	-	-
Asclepias incarnata	swamp milkweed	Nt P-Forb	6	X	X	-	X	X	-	-	X	-	-	X	-
Asclepias syriaca	common milkweed	Nt P-Forb	1	-	-	-	-	-	-	-	-	-	X	-	X
Asclepias tuberosa	butterfly weed	Nt P-Forb	5	X	-	-	-	-	-	-	-	-	-	-	X
Asplenium platyneuron	ebony spleenwort	Nt Fern	2	-	-	X	-	-	-	-	-	-	-	-	-
Aster borealis	northern bog aster	Nt P-Forb	9	-	-	-	-	X	-	-	-	-	X	X	-
Aster cordifolius	heart-leaved aster	Nt P-Forb	4	-	-	X	-	-	-	-	-	-	-	-	-
Aster firmus	smooth swamp aster	Nt P-Forb	4	-	X	-	X	X	X	-	-	X	-	X	-
Aster laevis	smooth aster	Nt P-Forb	5	X	-	-	-	-	-	-	-	-	-	-	-
Aster lateriflorus	side-flowering aster	Nt P-Forb	2	X	-	-	X	X	X	-	X	X	X	-	-
Aster macrophyllus	big-leaved aster	Nt P-Forb	4	-	-	X	-	-	-	-	-	-	-	-	-
Aster novae-angliae	New England aster	Nt P-Forb	3	X	-	-	-	-	X	-	-	-	X	-	-
Aster pilosus	hairy aster	Nt P-Forb	1	-	-	-	-	-	X	-	-	-	-	-	X
Aster puniceus	swamp aster	Nt P-Forb	5	-	-	-	-	X	-	-	-	-	X	-	-
Aster sagittifolius	arrow-leaved aster	Nt P-Forb	2	X	-	X	X	-	X	-	-	-	X	-	X
Aster umbellatus	tall flat-top white aster	Nt P-Forb	5	-	-	-	-	X	-	-	-	X	-	-	X
Athyrium filix-femina	lady fern	Nt Fern	4	-	-	-	-	X	-	-	-	-	-	-	-
BERBERIS THUNBERGII	JAPANESE BARBERRY	Ad Shrub	0	-	-	X	-	X	-	-	-	X	-	-	-
BERTEROA INCANA	HOARY ALYSSUM	Ad A-Forb	0	-	-	-	-	-	-	-	-	-	-	-	X
Betula alleghaniensis	yellow birch	Nt Tree	7	-	-	-	-	X	-	X	X	X	-	-	-
Betula pumila	bog birch	Nt Shrub	8	-	-	-	-	-	-	-	-	X	-	-	-
Bidens cernuus	nodding bur marigold	Nt A-Forb	3	-	X	-	X	X	-	-	-	X	-	-	-
Bidens coronatus	tall swamp marigold	Nt A-Forb	7	X	X	-	-	X	-	-	-	-	X	X	-
Boehmeria cylindrica	false nettle	Nt P-Forb	5	-	-	-	-	X	-	X	-	X	-	X	-
Botrychium virginianum	rattlesnake fern	Nt Fern	5	-	-	-	-	X	-	-	-	-	-	-	-
Bromus ciliatus	fringed brome	Nt P-Grass	6	-	-	-	-	-	-	-	-	X	X	X	-
BROMUS INERMIS	SMOOTH BROME	Ad P-Grass	0	X	-	-	-	-	-	-	-	-	-	-	X

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Bromus pubescens	Canada brome	Nt P-Grass	5	-	-	x	-	-	-	-	-	-	-	-	-
Calamagrostis canadensis	blue-joint grass	Nt P-Grass	3	-	x	-	x	x	-	x	x	x	x	-	-
Caltha palustris	marsh marigold	Nt P-Forb	6	-	-	-	x	x	-	x	-	-	-	-	-
Calystegia sepium	hedge bindweed	Nt P-Forb	2	-	-	-	x	-	-	-	-	x	-	-	-
Campanula aparinoides	marsh bellflower	Nt P-Forb	7	-	-	-	-	x	-	-	-	-	x	-	-
Cardamine pratensis	cuckoo flower	Nt P-Forb	10	-	-	-	-	-	x	x	-	-	-	-	-
Carex aurea	sedge	Nt P-Sedge	3	-	-	-	-	-	-	-	-	-	-	-	x
Carex bebbii	sedge	Nt P-Sedge	4	x	-	x	-	-	-	-	-	-	-	-	-
Carex blanda	sedge	Nt P-Sedge	1	-	-	x	-	-	x	-	-	-	-	-	-
Carex bromoides	sedge	Nt P-Sedge	6	-	-	-	-	x	-	x	-	-	-	-	-
Carex buxbaumii	sedge	Nt P-Sedge	10	x	-	-	-	-	-	-	-	x	-	-	-
Carex cephalophora	sedge	Nt P-Sedge	3	-	-	x	-	-	-	-	-	-	-	x	-
Carex comosa	sedge	Nt P-Sedge	5	-	-	-	x	x	-	x	-	-	x	-	-
Carex crawei	sedge	Nt P-Sedge	10	-	-	-	-	-	-	-	-	x	-	-	-
Carex crinita	sedge	Nt P-Sedge	4	-	-	-	-	-	-	x	-	-	-	-	-
Carex cristatella	sedge	Nt P-Sedge	3	x	-	-	x	-	-	-	-	-	-	-	-
Carex diandra	sedge	Nt P-Sedge	8	-	-	-	x	-	-	-	-	-	-	-	-
Carex gracillima	sedge	Nt P-Sedge	4	-	-	x	-	x	-	x	-	-	-	-	-
Carex granularis	sedge	Nt P-Sedge	2	-	-	-	-	-	-	-	-	x	-	-	x
Carex hystericina	sedge	Nt P-Sedge	2	-	-	-	-	-	-	x	-	-	-	-	-
Carex lacustris	sedge	Nt P-Sedge	6	-	x	-	x	x	-	x	-	x	-	x	-
Carex lasiocarpa	sedge	Nt P-Sedge	8	-	-	-	x	x	-	-	-	-	x	-	-
Carex leptalea	sedge	Nt P-Sedge	5	-	-	-	-	x	-	-	x	-	-	-	-
Carex lupulina	sedge	Nt P-Sedge	4	-	-	x	-	x	-	x	x	-	-	-	-
Carex oligosperma	sedge	Nt P-Sedge	10	-	-	-	-	-	-	x	-	-	-	-	-
Carex pellita	sedge	Nt P-Sedge	2	x	-	-	x	x	-	-	-	x	-	-	-
Carex pensylvanica	sedge	Nt P-Sedge	4	-	-	x	-	-	-	-	-	-	-	x	-
Carex prairea	sedge	Nt P-Sedge	10	x	-	-	x	-	-	-	-	-	-	-	-
Carex pseudo-cyperus	sedge	Nt P-Sedge	5	-	-	-	x	x	-	-	-	-	-	-	-
Carex radiata	straight-styled wood sedge	Nt P-Sedge	2	-	-	x	-	-	-	-	-	-	-	-	-
Carex retroflexa	sedge	Nt P-Sedge	1	-	-	-	-	-	-	-	-	-	-	-	x

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Carex rosea	curly-styled wood sedge	Nt P-Sedge	2	-	-	-	-	-	-	x	-	-	-	-	-
Carex sartwellii	sedge	Nt P-Sedge	5	x	-	-	x	-	-	-	-	-	x	-	-
Carex sparganioides	sedge	Nt P-Sedge	5	-	-	-	-	-	x	-	-	-	-	-	-
Carex sterilis	sedge	Nt P-Sedge	10	-	-	-	-	-	-	-	-	-	x	-	-
Carex stipata	sedge	Nt P-Sedge	1	-	-	-	x	x	-	x	-	x	-	-	-
Carex stricta	sedge	Nt P-Sedge	4	x	-	-	x	x	x	-	-	x	-	x	-
Carex tetanica	sedge	Nt P-Sedge	9	x	-	-	-	-	-	-	-	-	x	-	-
Carex tribuloides	sedge	Nt P-Sedge	3	-	-	-	-	-	-	-	x	-	-	-	-
Carex vulpinoidea	sedge	Nt P-Sedge	1	-	-	-	x	x	-	-	-	-	-	-	-
Carpinus caroliniana	blue-beech	Nt Tree	6	-	-	x	-	x	-	x	-	x	-	-	-
Carya cordiformis	bitternut hickory	Nt Tree	5	-	-	x	-	-	-	-	-	-	-	-	-
Carya glabra	pignut hickory	Nt Tree	5	-	-	x	-	-	-	-	-	-	-	-	-
Carya ovata	shagbark hickory	Nt Tree	5	-	-	x	-	-	-	x	-	-	-	-	x
CELASTRUS ORBICULATA	ORIENTAL BITTERSWEET	Ad W-Vine	0	-	-	x	-	x	-	-	x	-	-	-	-
CENTAUREA MACULOSA	SPOTTED BLUET	Ad B-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Cephalanthus occidentalis	buttonbush	Nt Shrub	7	-	-	-	x	-	-	-	x	-	-	-	-
CERASTIUM FONTANUM	MOUSE-EAR CHICKWEED	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Ceratophyllum demersum	coontail	Nt P-Forb	1	-	-	-	x	-	-	-	-	-	-	-	-
Cercis canadensis	redbud	Nt Tree	8	-	-	x	-	-	-	-	-	-	-	-	-
Chamaedaphne calyculata	leatherleaf	Nt Shrub	8	-	-	-	-	-	-	-	x	-	-	-	-
Chelone glabra	turtlehead	Nt P-Forb	7	-	x	-	-	x	x	-	-	x	-	x	-
CHRYSANTHEMUM LEUCANTHEMUM	OX-EYE DAISY	Ad P-Forb	0	x	-	x	-	-	-	-	-	-	-	-	x
Cicuta bulbifera	water hemlock	Nt P-Forb	5	-	x	-	-	-	-	-	-	x	-	x	-
Cicuta maculata	water hemlock	Nt B-Forb	4	x	-	-	-	x	x	x	-	-	-	-	-
Cinna arundinacea	wood reedgrass	Nt P-Grass	7	-	-	-	-	x	-	-	-	-	-	-	-
Circaea lutetiana	enchanter's nightshade	Nt P-Forb	2	-	-	x	-	x	-	x	-	-	-	-	-
CIRSIIUM ARVENSE	CANADIAN THISTLE	Ad P-Forb	0	-	-	-	x	-	-	-	-	-	-	-	-
Cirsium muticum	swamp thistle	Nt B-Forb	6	x	-	-	-	x	x	-	-	x	x	-	-
Clematis virginiana	virgin's bower	Nt W-Vine	4	-	-	-	-	x	-	-	-	-	-	-	-

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Scientific Name	Common Name	Site/Site Code* Life Form	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
			C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Collinsonia canadensis	richweed	Nt P-Forb	8	-	-	-	-	x	-	x	-	-	-	-	-
CONVALLARIA MAJALIS	LILY-OF-THE-VALLEY	Ad P-Forb	0	-	-	x	-	-	-	-	-	-	-	-	-
Coptis trifolia	goldthread	Nt P-Forb	5	-	-	-	-	-	-	x	-	-	-	-	-
Cornus alternifolia	alternate-leaved dogwood	Nt Tree	5	-	-	x	-	-	-	-	-	-	-	-	-
Cornus amomum	silky dogwood	Nt Shrub	2	-	-	-	x	x	-	-	-	x	-	x	-
Cornus foemina	gray dogwood	Nt Shrub	1	x	x	x	x	x	x	-	x	x	x	-	-
Cornus stolonifera	red-osier dogwood	Nt Shrub	2	-	-	-	x	-	-	-	x	x	-	x	-
Corylus americana	hazelnut	Nt Shrub	5	-	-	x	-	x	-	x	-	x	-	-	-
Cypripedium calceolus var. parviflorum	small yellow lady's-slipper	Nt P-Forb	7	-	-	-	-	x	-	-	-	-	-	-	-
Cypripedium reginae	showy or queen's lady's- slipper	Nt P-Forb	9	-	-	-	-	x	-	-	-	-	-	-	-
DACTYLIS GLOMERATA	ORCHARD GRASS	Ad P-Grass	0	-	-	x	-	-	-	-	-	-	-	-	-
Danthonia spicata	poverty grass; oatgrass	Nt P-Grass	4	-	-	x	-	-	-	-	-	-	-	-	-
DAUCUS CAROTA	QUEEN-ANNE'S-LACE	Ad B-Forb	0	x	-	-	-	-	x	-	-	-	-	-	-
Decodon verticillatus	whorled or swamp loosestrife	Nt Shrub	7	-	-	-	x	-	-	-	-	x	-	-	-
Desmodium canadense	showy tick-trefoil	Nt P-Forb	3	-	-	-	-	-	-	-	-	-	x	-	-
Desmodium glutinosum	clustered-leaved tick- trefoil	Nt P-Forb	5	-	-	x	-	-	-	-	-	-	-	-	-
Desmodium marilandicum	small-leaved tick-trefoil	Nt P-Forb	7	-	-	-	-	-	-	-	-	-	x	-	-
DIANTHUS ARMERIA	DEPTFORD PINK	Ad A-Forb	0	-	-	-	-	-	-	-	-	-	-	-	-
Dioscorea villosa	wild yam	Nt P-Forb	4	-	-	-	-	x	-	x	-	-	-	-	-
Dryopteris carthusiana	spinulose woodfern	Nt Fern	5	-	-	-	-	-	-	x	-	-	-	-	-
Dryopteris intermedia	evergreen woodfern	Nt Fern	5	-	-	-	-	x	-	-	-	-	-	-	-
ELAEAGNUS UMBELLATA	AUTUMN-OLIVE	Ad Shrub	0	x	-	x	-	x	-	-	-	-	x	-	-
Eleocharis elliptica	golden-seeded spike rush	Nt P-Sedge	6	x	-	-	x	-	-	-	-	-	x	-	-
Eleocharis rostellata	spike rush	Nt P-Sedge	10	-	-	-	-	-	-	-	-	-	x	-	-
Elymus virginicus	Virginia wild rye	Nt P-Grass	4	-	-	-	x	-	-	-	-	-	-	-	-
Epilobium coloratum	cinnamon willow-herb	Nt P-Forb	3	-	x	-	-	-	-	-	x	x	-	-	-
Epilobium leptophyllum	fen willow-herb	Nt P-Forb	6	-	-	-	-	-	-	-	-	-	-	x	-

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Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old	
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z	Fields†
Equisetum arvense	common horsetail	Nt Fern Ally	0	-	-	x	-	x	-	-	-	x	-	-	-	x
Equisetum fluviatile	water horsetail	Nt Fern Ally	7	-	-	-	x	x	-	-	-	-	-	-	-	-
Erigeron philadelphicus	marsh fleabane	Nt P-Forb	2	-	-	-	-	-	-	-	-	x	-	-	-	-
Eupatorium maculatum	Joe-Pye weed	Nt P-Forb	4	x	x	-	x	x	-	-	-	x	x	x	-	-
Eupatorium perfoliatum	common boneset	Nt P-Forb	4	x	x	-	x	x	-	-	-	x	x	x	-	-
Eupatorium rugosum	white snakeroot	Nt P-Forb	4	-	-	-	-	-	-	-	-	x	-	-	-	-
Euphorbia corollata	flowering spurge	Nt P-Forb	4	-	-	-	-	-	-	-	-	-	-	-	-	x
Euthamia graminifolia	grass-leaved goldenrod	Nt P-Forb	3	x	-	-	x	-	-	-	-	-	x	-	-	x
FESTUCA ARUNDINACEA	TALL FESCUE	Ad P-Grass	0	-	-	-	-	-	-	-	-	-	-	-	-	x
Festuca subverticillata	nodding fescue	Nt P-Grass	5	-	-	x	-	-	-	-	-	-	-	-	-	-
Fragaria vesca	woodland strawberry	Nt P-Forb	2	-	-	x	-	-	-	-	-	-	-	-	-	-
Fragaria virginiana	wild strawberry	Nt P-Forb	2	x	-	-	-	-	x	-	-	-	-	-	-	-
Fraxinus americana	white ash	Nt Tree	5	-	-	x	-	x	x	x	-	-	-	-	-	-
Fraxinus nigra	black ash	Nt Tree	6	-	x	x	-	x	-	-	x	x	-	-	-	-
Fraxinus pennsylvanica	red ash	Nt Tree	2	-	-	-	-	-	-	x	-	-	-	-	-	-
Galium aparine	annual bedstraw	Nt A-Forb	0	-	-	x	-	-	-	-	-	-	-	-	-	-
Galium asprellum	rough bedstraw	Nt P-Forb	5	-	-	-	x	-	-	x	-	x	-	-	-	-
Galium boreale	northern bedstraw	Nt P-Forb	3	-	-	x	-	x	-	-	-	-	-	-	-	-
Galium circaezans	white wild licorice	Nt P-Forb	4	-	-	x	-	-	-	-	-	-	-	-	-	-
Galium palustre	marsh bedstraw	Nt P-Forb	3	-	-	-	-	-	-	-	-	-	x	x	-	-
Galium triflorum	fragrant bedstraw	Nt P-Forb	4	-	-	x	-	x	-	-	-	x	-	-	-	-
Gaylussacia baccata	huckleberry	Nt Shrub	7	-	-	-	-	-	-	-	x	-	-	-	-	-
Gentianopsis procera	small fringed gentian	Nt A-Forb	8	-	-	-	-	-	-	-	-	-	x	-	-	-
Geranium maculatum	wild geranium	Nt P-Forb	4	-	-	x	-	x	-	x	-	-	-	-	-	-
Geum canadense	white avens	Nt P-Forb	1	-	-	x	-	-	-	-	-	-	-	-	-	-
Glyceria striata	fowl manna grass	Nt P-Grass	4	-	-	x	x	x	-	x	-	x	-	-	-	-
Hamamelis virginiana	witch-hazel	Nt Shrub	5	-	-	x	-	-	-	-	-	-	-	-	-	-
Helianthus giganteus	tall sunflower	Nt P-Forb	5	-	-	-	-	-	-	-	-	x	x	-	-	-
Hepatica americana	round-lobed hepatica	Nt P-Forb	6	-	-	x	-	-	-	x	-	-	-	-	-	-

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Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
HIERACIUM AURANTIACUM	ORANGE HAWKWEED	Ad P-Forb	0	-	-	x	-	-	-	-	-	-	-	-	x
HIERACIUM PILOSELLOIDES	GLAUCOUS KING-DEVIL	Ad P-Forb	0	x	-	x	-	-	-	-	-	x	-	-	-
HYPERICUM PERFORATUM	COMMON ST. JOHN'S-WORT	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Hypericum punctatum	spotted St. John's-wort	Nt P-Forb	4	-	-	-	-	x	-	-	-	-	-	-	-
Hypoxis hirsuta	star grass	Nt P-Forb	10	-	-	-	-	-	-	-	-	x	-	-	-
Ilex verticillata	Michigan holly	Nt Shrub	5	-	x	x	-	x	-	x	x	x	-	x	-
Impatiens capensis	spotted touch-me-not	Nt A-Forb	2	-	x	-	-	x	-	-	-	x	-	-	-
Iris virginica	southern blue flag	Nt P-Forb	5	x	-	-	-	x	-	-	-	-	-	-	-
Juglans nigra	black walnut	Nt Tree	5	-	-	x	-	-	-	-	-	-	-	-	-
Juncus brachycephalus	rush	Nt P-Forb	7	-	-	-	-	-	-	-	-	x	-	-	-
Juncus dudleyi	Dudley's rush	Nt P-Forb	1	x	-	-	-	-	-	-	-	x	-	-	-
Juncus nodosus	joint rush	Nt P-Forb	5	-	-	-	-	-	-	-	-	x	-	-	-
Juniperus communis	common or ground juniper	Nt Shrub	4	x	-	x	-	x	x	-	x	-	x	-	-
Laportea canadensis	wood nettle	Nt P-Forb	4	-	-	-	-	x	-	-	-	-	-	-	-
Larix laricina	tamarack	Nt Tree	5	x	-	-	x	x	x	-	x	x	x	-	-
Lathyrus palustris	marsh pea	Nt P-Forb	7	x	-	-	x	x	-	-	-	x	x	-	-
Leersia oryzoides	cut grass	Nt P-Grass	3	-	x	-	-	-	-	-	x	-	-	-	-
Lemna minor	small duckweed	Nt A-Forb	5	-	-	-	-	-	-	x	x	-	-	-	-
Lespedeza capitata	round-headed bush clover	Nt P-Forb	5	-	-	-	-	-	-	-	-	-	-	-	x
Lilium michiganense	Michigan lily	Nt P-Forb	5	-	-	-	-	x	-	-	-	-	-	-	-
LINARIA VULGARIS	BUTTER-AND-EGGS	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Lindera benzoin	spicebush	Nt Shrub	7	-	-	-	-	x	-	x	-	x	-	-	-
Lobelia kalmii	bog lobelia	Nt P-Forb	10	-	-	-	-	-	-	-	-	x	-	-	-
Lobelia siphilitica	great blue lobelia	Nt P-Forb	4	-	-	-	-	-	x	-	-	-	-	-	-
Lobelia spicata	pale spiked lobelia	Nt P-Forb	4	x	-	-	-	-	-	-	-	-	-	-	-
LONICERA MAACKII	AMUR HONEYSUCKLE	Ad Shrub	0	-	-	x	-	-	-	-	-	-	-	-	-
LONICERA MORROWII	MORROW HONEYSUCKLE	Ad Shrub	0	-	-	-	-	-	x	-	-	-	-	-	-
Luzula multiflora	common wood rush	Nt P-Forb	5	-	-	x	-	-	-	-	-	-	-	-	-
Lycopus americanus	common water horehound	Nt P-Forb	2	x	-	-	x	x	-	-	-	-	x	-	-

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			C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Lycopus sp.	water horehound	Nt Forb	0	-	-	-	-	-	-	X	-	-	-	-	-
Lycopus uniflorus	northern bugle weed	Nt P-Forb	2	-	-	-	-	X	-	-	X	-	X	-	-
Lysimachia ciliata	fringed loosestrife	Nt P-Forb	4	-	-	-	X	X	-	-	-	-	-	-	-
Lysimachia quadriflora	whorled loosestrife	Nt P-Forb	10	X	-	-	-	-	X	-	-	X	-	-	-
LYTHRUM SALICARIA	purple loosestrife	Ad P-Forb	0	-	X	-	X	-	-	-	-	-	-	-	-
Maianthemum canadense	canada mayflower	Nt P-Forb	4	-	-	X	-	X	-	X	-	-	-	-	-
MEDICAGO LUPULINA	BLACK MEDICK	Ad A-Forb	0	X	-	-	-	-	-	-	-	-	-	-	X
MEDICAGO SATIVA	ALFALFA	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	X
MELILOTUS OFFICINALIS	YELLOW SWEET-CLOVER	Ad B-Forb	0	-	-	-	-	-	-	-	-	-	-	-	X
Mentha arvensis	wild mint	Nt P-Forb	3	-	-	-	X	-	-	-	-	-	-	-	-
MENTHA PIPERITA	PEPPERMINT	Ad P-Forb	0	-	-	-	-	X	-	-	-	-	-	-	-
Mitella diphylla	bishop's cap	Nt P-Forb	8	-	-	X	-	X	-	X	-	-	-	-	-
Mitella nuda	naked miterwort	Nt P-Forb	8	-	-	-	-	X	-	-	-	-	-	-	-
Monarda fistulosa	wild bergamot	Nt P-Forb	2	X	-	-	-	-	X	-	-	X	-	-	X
MORUS ALBA	WHITE MULBERRY	Ad Tree	0	-	-	-	-	-	-	X	-	-	-	-	-
Muhlenbergia glomerata	marsh wild-timothy	Nt P-Grass	10	-	-	-	-	X	-	-	-	X	-	-	-
Muhlenbergia mexicana	leafy satin grass	Nt P-Grass	3	-	-	-	-	-	-	-	-	-	X	-	-
Myriophyllum sp.	water-milfoil	Forb	0	-	-	-	X	-	-	-	-	-	-	-	-
Nymphaea odorata	sweet scented waterlily	Nt P-Forb	6	-	-	-	X	-	-	-	-	-	-	-	-
Onoclea sensibilis	sensitive fern	Nt Fern	2	-	X	X	X	X	X	X	X	-	-	-	-
Osmunda cinnamomea	cinnamon fern	Nt Fern	5	-	-	-	-	X	-	X	-	-	-	-	-
Osmunda claytoniana	interrupted fern	Nt Fern	6	-	-	-	-	X	-	-	-	-	-	-	-
Osmunda regalis	royal fern	Nt Fern	5	-	-	X	-	X	-	X	X	-	-	-	-
Ostrya virginiana	ironwood; hop hornbeam	Nt Tree	5	-	-	X	-	-	-	-	-	-	-	-	-
Panicum oligosanthos	panic grass	Nt P-Grass	5	-	-	-	-	-	-	-	-	-	-	-	X
Parnassia glauca	grass-of-parmassus	Nt P-Forb	8	-	-	-	-	-	-	-	-	X	-	-	-
Parthenocissus quinquefolia	Virginia creeper	Nt W-Vine	5	-	-	X	-	X	X	X	-	X	-	-	-
Pedicularis lanceolata	swamp betony	Nt P-Forb	8	-	-	-	X	-	-	-	-	X	-	-	-
Peltandra virginica	arrow-arum	Nt P-Forb	6	-	-	-	X	-	-	-	-	-	-	-	-
Phalaris arundinacea	reed canary grass	Nt P-Grass	0	-	X	-	-	-	-	-	X	X	-	-	-

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		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
PHLEUM PRATENSE	TIMOTHY	Ad P-Grass	0	x	-	x	-	-	-	-	-	x	-	-	x
Phragmites australis	reed	Nt P-Grass	0	-	-	-	-	-	-	-	x	-	-	-	-
Pinus strobus	white pine	Nt Tree	3	-	-	-	-	-	-	-	x	-	-	-	-
PINUS SYLVESTRIS	SCOTCH PINE	Ad Tree	0	x	-	-	-	-	x	-	-	-	-	x	-
PLANTAGO LANCEOLATA	ENGLISH PLANTAIN	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
POA COMPRESSA	CANADA BLUEGRASS	Ad P-Grass	0	-	-	x	-	-	x	-	-	-	-	-	x
POA PRATENSIS	KENTUCKY BLUEGRASS	Ad P-Grass	0	x	-	x	x	-	-	-	-	x	-	-	-
Podophyllum peltatum	May apple	Nt P-Forb	3	-	-	x	-	x	-	x	-	-	-	x	-
Polygala polygama	racemed milkwort	Nt B-Forb	9	-	-	-	-	-	-	-	-	x	-	-	-
Polygonatum pubescens	downy Solomon-seal	Nt P-Forb	5	-	-	x	-	x	-	x	-	-	-	-	-
Polygonum amphibium	water smartweed	Nt P-Forb	6	-	x	-	-	-	-	-	-	-	x	-	-
Polygonum cuspidatum	Japanese knotweed	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Polygonum hydropiperoides	water pepper	Nt P-Forb	5	-	-	-	-	-	-	-	-	-	x	-	-
Polygonum sagittatum	arrow-leaved tear-thumb	Nt A-Forb	5	-	-	-	-	-	-	-	-	x	-	-	-
Pontederia cordata	pickerel weed	Nt P-Forb	8	-	-	-	x	-	-	x	-	-	-	-	-
Populus deltoides	cottonwood	Nt Tree	1	-	-	x	x	x	-	-	-	-	-	-	-
Populus tremuloides	quaking aspen	Nt Tree	1	-	-	-	-	-	-	-	x	x	-	-	-
Potentilla fruticosa	shrubby cinquefoil	Nt Shrub	10	x	-	-	x	-	x	-	-	x	x	-	-
Potentilla palustris	marsh cinquefoil	Nt P-Forb	7	-	-	-	x	x	-	-	-	-	-	-	-
POTENTILLA RECTA	ROUGH-FRUITED CINQUEFOIL	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Potentilla simplex	old-field cinquefoil	Nt P-Forb	2	x	-	x	-	-	-	-	-	-	-	-	-
Prenanthes altissima	tall white lettuce	Nt P-Forb	5	-	-	-	-	-	-	-	x	-	-	-	-
PRUNELLA VULGARIS	LAWN PRUNELLA	Nt P-Forb	0	x	-	x	-	x	x	-	-	x	-	-	-
Prunus serotina	wild black cherry	Nt Tree	2	-	-	x	-	x	-	x	-	-	-	x	-
Pteridium aquilinum	bracken fern	Nt Fern	0	-	-	x	-	-	-	-	-	-	-	-	-
Pycnanthemum virginianum	common mountain mint	Nt P-Forb	5	x	-	-	-	-	x	-	-	x	x	x	-
Pyrola elliptica	large-leaved shinleaf	Nt P-Forb	6	-	-	x	-	-	-	-	-	-	-	-	-
Quercus alba	white oak	Nt Tree	5	-	-	x	-	x	-	x	-	-	-	x	-

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code* Life Form	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old	
			C	O	P	Q	R	S	T	U	V	W	X	Y	Z	Fields†
Quercus bicolor	swamp white oak	Nt Tree	8	x	-	-	-	x	-	x	-	-	-	-	-	
Quercus ellipsoidalis	Hill's oak	Nt Tree	4	-	-	x	-	-	x	-	-	-	-	-	-	
Quercus macrocarpa	bur oak	Nt Tree	5	-	-	-	x	-	-	-	-	-	-	-	-	
Quercus rubra	red oak	Nt Tree	5	-	-	x	-	x	-	-	-	-	-	-	-	
Quercus velutina	black oak	Nt Tree	6	-	-	x	-	-	-	-	-	-	-	-	-	
Ranunculus abortivus	small-flowered buttercup	Nt A-Forb	0	-	-	x	-	-	-	-	-	-	-	-	-	
Ranunculus hispidus	swamp buttercup	Nt P-Forb	5	-	-	-	-	x	-	-	-	-	-	-	-	
Ranunculus recurvatus	hooked crowfoot	Nt A-Forb	5	-	-	x	-	x	x	-	-	-	-	-	-	
RHAMNUS FRANGULA	GLOSSY BUCKTHORN	Ad Shrub	0	-	-	-	x	-	-	-	x	x	-	-	-	
Ribes americanum	wild black currant	Nt Shrub	6	-	x	-	-	-	-	-	-	-	-	-	-	
Ribes cynosbati	prickly or wild gooseberry	Nt Shrub	4	-	-	x	-	-	x	-	-	-	-	-	-	
ROBINIA	BLACK LOCUST	Ad Tree	0	-	-	x	-	-	-	-	-	-	-	-	x	
PSEUDOACACIA																
Rosa carolina	pasture rose	Nt Shrub	4	-	-	x	-	-	-	-	-	-	-	-	-	
ROSA MULTIFLORA	MULTIFLORA ROSE	Ad Shrub	0	-	-	x	-	-	-	-	-	-	-	-	-	
Rosa palustris	swamp rose	Nt Shrub	5	-	x	-	x	x	-	x	x	-	-	-	-	
Rubus allegheniensis	common blackberry	Nt Shrub	1	-	-	x	-	-	-	-	-	-	-	-	-	
Rubus flagellaris	northern dewberry	Nt Shrub	1	-	-	-	-	-	-	x	-	-	-	-	-	
Rubus hispidus	swamp dewberry	Nt Shrub	4	-	-	-	-	x	-	-	-	-	-	-	x	
Rubus occidentalis	black raspberry	Nt Shrub	1	-	-	x	x	-	-	-	x	-	-	-	-	
Rubus pensylvanicus	dewberry	Nt Shrub	2	-	-	-	-	-	-	x	-	-	-	-	-	
Rubus pubescens	dwarf raspberry	Nt P-Forb	4	-	-	-	-	-	x	-	-	-	-	-	-	
Rubus strigosus	wild red raspberry	Nt Shrub	2	-	-	-	-	-	-	-	x	-	-	-	-	
Rudbeckia hirta	black-eyed susan	Nt P-Forb	1	x	-	-	-	-	x	-	-	-	x	-	-	
RUMEX ACETOSELLA	SHEEP SORREL	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x	
Rumex orbiculatus	great water dock	Nt P-Forb	9	-	x	-	x	-	-	-	x	x	-	x	-	
Sagittaria latifolia	common arrowhead	Nt P-Forb	1	-	x	-	x	x	-	-	-	x	-	x	-	
Salix bebbiana	Bebb's willow	Nt Shrub	1	x	-	-	-	-	-	-	x	x	-	-	-	
Salix candida	hoary willow	Nt Shrub	9	-	-	-	-	x	-	-	-	-	x	-	-	
Salix discolor	pussy willow	Nt Shrub	1	x	-	-	x	-	-	-	x	x	-	-	-	
Salix serissima	autumn willow	Nt Shrub	8	-	-	-	-	x	-	-	-	-	-	-	-	

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z
Sambucus canadensis	elderberry	Nt Shrub	3	-	-	-	-	x	x	-	-	-	-	-	-
Sanicula gregaria	black snakeroot	Nt P-Forb	2	-	-	-	-	x	-	-	-	-	x	-	-
SAPONARIA OFFICINALIS	BOUNCING BET	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
Sarracenia purpurea	pitcher plant	Nt P-Forb	10	-	-	-	-	-	-	x	-	-	-	-	-
Sassafras albidum	sassafras	Nt Tree	5	-	-	x	-	-	-	-	-	-	-	-	-
Schoenoplectus tabernaemontani	softstem bulrush	Nt P-Sedge	4	-	-	-	-	x	-	-	-	-	-	-	-
Scirpus atrovirens	bulrush	Nt P-Sedge	3	x	-	-	x	-	-	-	-	x	x	-	-
Scirpus cyperinus	wool grass	Nt P-Sedge	5	-	-	-	-	-	-	x	x	-	-	-	-
Scirpus pendulus	bulrush	Nt P-Sedge	3	x	-	-	-	-	-	-	-	x	-	-	-
Scutellaria galericulata	common skullcap	Nt P-Forb	5	x	-	-	x	-	-	-	-	-	-	-	-
Scutellaria lateriflora	mad dog skullcap	Nt P-Forb	5	-	-	-	-	x	-	-	-	-	-	-	-
Sisyrinchium albidum	common blue-eyed grass	Nt P-Forb	7	-	-	-	-	-	-	-	-	x	-	-	-
Sisyrinchium angustifolium	stout blue-eyed grass	Nt P-Forb	4	x	-	-	-	-	-	-	-	-	-	-	-
Smilacina racemosa	false spikenard	Nt P-Forb	5	-	-	x	-	-	-	-	-	-	-	-	-
Smilacina stellata	starry false Solomon-seal	Nt P-Forb	5	-	-	-	-	x	-	-	-	-	-	-	-
Smilacina trifolia	false mayflower	Nt P-Forb	10	-	-	-	-	x	-	-	-	-	-	-	-
Smilax tamnoides	bristly green-brier	Nt W-Vine	5	-	-	x	-	-	-	-	-	-	-	-	-
SOLANUM DULCAMARA	BITTERSWEET NIGHTSHADE	Ad P-Forb	0	-	-	-	-	-	x	-	-	-	x	-	-
Solidago altissima	tall goldenrod	Nt P-Forb	1	-	-	-	-	-	-	-	-	-	x	-	x
Solidago canadensis	Canada goldenrod	Nt P-Forb	1	x	-	-	-	-	-	-	x	-	-	-	x
Solidago gigantea	late goldenrod	Nt P-Forb	3	-	x	-	-	-	-	-	x	-	-	-	-
Solidago juncea	early goldenrod	Nt P-Forb	3	x	-	-	-	-	-	-	-	-	-	-	-
Solidago nemoralis	old field goldenrod	Nt P-Forb	2	x	-	x	-	-	-	-	-	x	-	-	x
Solidago ohioensis	Ohio goldenrod	Nt P-Forb	8	-	-	-	-	-	x	-	-	x	-	-	-
Solidago patula	swamp goldenrod	Nt P-Forb	6	-	-	-	-	x	-	-	x	-	-	-	-
Solidago riddellii	Riddell's goldenrod	Nt P-Forb	6	x	-	-	-	-	x	-	-	x	x	-	-
Solidago rugosa	rough goldenrod	Nt P-Forb	3	x	-	x	-	x	x	-	-	x	-	-	-
Solidago speciosa	showy goldenrod	Nt P-Forb	5	-	-	-	-	-	x	-	-	-	-	-	-

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code* Life Form	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old
			C	O	P	Q	R	S	T	U	V	W	X	Y	Z
<i>Solidago uliginosa</i>	bog goldenrod	Nt P-Forb	4	-	-	-	-	-	-	-	-	-	x	x	-
<i>Sorghastrum nutans</i>	Indian grass	Nt P-Grass	6	x	-	-	-	-	x	-	-	-	x	-	-
<i>Sparganium chlorocarpum</i>	green-fruited bur-reed	Nt P-Forb	6	-	-	-	-	-	-	-	-	x	-	-	-
<i>Sparganium sp.</i>	bur-reed	Nt P-Forb	0	-	-	-	x	-	-	-	-	-	-	-	-
<i>Spartina pectinata</i>	cordgrass	Nt P-Grass	5	-	-	-	x	-	-	-	-	-	-	-	-
<i>Sphenopholis intermedia</i>	slender wedgegrass	Nt P-Grass	4	-	-	-	x	-	-	-	-	-	-	-	-
<i>Spiraea alba</i>	meadowsweet	Nt Shrub	4	x	x	x	x	x	-	-	x	x	-	-	-
<i>Spiranthes cernua</i>	nodding ladies'-tresses	Nt P-Forb	4	x	-	-	-	-	-	-	-	-	x	-	-
<i>Spirodela polyrhiza</i>	great duckweed	Nt A-Forb	6	-	-	-	-	-	-	-	-	x	-	-	-
STELLARIA MEDIA	COMMON CHICKWEED	Ad A-Forb	0	-	-	x	-	-	-	-	-	-	-	-	-
<i>Symplocarpus foetidus</i>	skunk cabbage	Nt P-Forb	6	-	-	-	x	x	-	x	-	x	-	-	-
<i>Taenidia integririma</i>	yellow pimpernel	Nt P-Forb	8	-	-	x	-	-	-	-	-	-	-	-	-
TARAXACUM OFFICINALE	COMMON DANDELION	Ad P-Forb	0	-	-	x	-	x	x	-	-	-	-	-	-
<i>Thalictrum dasycarpum</i>	purple meadow-rue	Nt P-Forb	3	-	-	-	x	x	-	-	-	-	x	-	-
<i>Thalictrum dioicum</i>	early meadow-rue	Nt P-Forb	6	-	-	x	-	-	-	-	-	-	-	-	-
<i>Thelypteris palustris</i>	marsh fern	Nt Fern	2	-	-	-	x	x	-	-	x	x	x	x	-
THLASPI ARVENSE	PENNY CRESS	Ad A-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
<i>Tilia americana</i>	basswood	Nt Tree	5	-	-	x	-	x	-	x	-	-	-	-	-
<i>Toxicodendron radicans</i>	poison-ivy	Nt W-Vine	2	-	-	x	x	x	-	x	-	x	-	-	x
<i>Toxicodendron vernix</i>	poison sumac	Nt Shrub	6	-	-	-	x	x	-	x	-	x	-	x	-
<i>Trientalis borealis</i>	starflower	Nt P-Forb	5	-	-	-	-	-	-	x	-	-	-	-	-
TRIFOLIUM PRATENSE	RED CLOVER	Ad P-Forb	0	x	-	-	-	-	-	-	-	-	-	-	x
TRIFOLIUM REPENS	WHITE CLOVER	Ad P-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x
<i>Trillium grandiflorum</i>	common trillium	Nt P-Forb	5	-	-	x	-	-	-	-	-	-	-	-	-
<i>Typha latifolia</i>	broad-leaved cat-tail	Nt P-Forb	1	-	x	-	x	-	-	-	-	x	-	x	-
<i>Ulmus americana</i>	American elm	Nt Tree	1	x	x	-	x	x	-	x	-	x	-	x	-
<i>Vaccinium angustifolium</i>	blueberry	Nt Shrub	4	-	-	x	-	-	-	-	x	-	-	-	-
<i>Vaccinium corymbosum</i>	smooth highbush blueberry	Nt Shrub	6	-	-	-	-	x	-	-	-	-	-	-	-
<i>Vaccinium macrocarpon</i>	large cranberry	Nt Shrub	8	-	-	-	-	x	-	-	-	-	-	-	-

\* Listed in Table 1, p.13.

Scientific Name	Common Name	Site/Site Code*	ROP	BSM	EWO	EWE	WRP	RES	GPS	FLB	FLT	BDP	BPM	WOK	Old	
		Life Form	C	O	P	Q	R	S	T	U	V	W	X	Y	Z	Fields†
Vaccinium oxycoccos	small cranberry	Nt Shrub	8	-	-	-	-	-	-	x	-	-	-	-	-	
Vaccinium pallidum	blueberry	Nt Shrub	7	-	-	x	-	-	-	-	-	-	-	-	-	
VERBASCUM THAPSUS	COMMON MULLEIN	Ad B-Forb	0	-	-	-	-	-	-	-	-	-	-	-	x	
Verbena urticifolia	white vervain	Nt P-Forb	4	-	-	-	-	-	-	-	x	-	-	-	-	
Viburnum acerifolium	maple-leaved arrow-wood	Nt Shrub	6	-	-	-	-	-	x	-	-	-	-	-	-	
Viburnum lentago	nannyberry	Nt Shrub	4	-	-	x	x	x	x	-	-	x	-	-	-	
VIBURNUM OPULUS	EUROPEAN HIGHBUSH CRANBERRY	Ad Shrub	0	-	-	-	-	-	-	-	-	x	-	-	-	
Viburnum opulus var. americanum	highbush cranberry	Nt Shrub	5	-	-	-	-	-	-	-	-	-	x	-	-	
Viburnum rafinesquianum	downy arrow-wood	Nt Shrub	5	-	-	x	-	-	-	-	-	-	-	-	-	
Vicia caroliniana	pale or wood vetch	Nt P-Forb	8	-	-	x	-	-	-	-	-	-	-	-	-	
VINCETOXICUM ROSSICUM	WHITE SWALLOW- WORT	Ad P-Forb	0	-	-	x	-	-	-	-	-	-	-	-	x	
Viola conspersa	dog violet	Nt P-Forb	3	-	-	-	-	x	-	-	-	-	-	-	-	
Viola cucullata	marsh violet	Nt P-Forb	5	-	-	-	-	x	-	-	-	-	-	-	-	
Vitis riparia	riverbank grape	Nt W-Vine	3	-	x	x	x	x	x	x	-	x	-	-	x	
Zanthoxylum americanum	prickly-ash	Nt Shrub	3	-	-	x	-	x	-	-	-	-	-	-	-	
Zizania palustris	wild-rice	Nt A-Grass	9	-	-	-	-	x	-	-	-	-	-	-	-	
Zizia aurea	golden alexanders	Nt P-Forb	6	-	-	-	-	x	x	-	-	-	x	-	-	
<b>Total number of species observed in survey site:</b>				66	30	112	75	127	45	62	36	80	74	40	10	55
<b>Total number of species observed in Rose Oaks:</b>			<b>360</b>													

\* Listed in Table 1, p.13.





**APPENDIX F**

**PUBLIC FORUM AND NEIGHBORHOOD SURVEY VOTING**

**Questionnaire:  
Rose Oaks Park Recreation Master Plan  
Rose Township**

The Oakland County Parks and Recreation Department is preparing a Recreation Master Plan for the Rose Oaks Park and is requesting public input during the initial planning phase. Your comments and impressions of the park will provide an important baseline to the planning process. When providing a response to the following questions, please be as specific as possible.

- 1. What do you like best about the park? (items to respond to may include: natural character of the site, lack of park amenities, access only by hiking trails, geocaching, wildlife habitat, others)

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- 2. What do you like least about the park? (items to respond to may include: natural character of the site, lack of park amenities, access only by hiking trails, geocaching, wildlife habitat, others)

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- 3. The Master Plan will identify existing park features and possible new features. What features would you like to see that currently do not exist at the park, or are existing but not in sufficient quality & quantity? (items to consider may include: fishing, boating and boat launches, winter activities, picnic facilities, horse trails, benches, interpretive signage/displays, nature center, vehicular access, others)

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- 4. How many times each year do you visit the park?

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- 5. Other comments: provide a description of any of anything else you feel is important in the development of the master plan.

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The numbers next to each preferred recreational use represent the actual number of votes placed.

### Overall Voting Summary

- Horse Trails: 60
- Hiking/Cross-Country Skiing: 46
- Interpretive Trails: 26
- Nature Center: 24
- Canoeing: 19
- Bike Trail: 18
- Entry Kiosk/Information Board: 13
- Fishing: 11
- Non-Motorized Boating: 9
- Boardwalks: 8
- Picnic Shelter: 2
- Boat Access and ATV Trails: 1 Each

### Question Summaries

Question # 1: What do you like the **best** about the park?

Responses:

- Rustic/Natural Character: 34
- Lack of Amenities: 19
- Wildlife: 19
- Trails: 19
- Tranquility: 7
- Park Signage: 4
- Biodiversity of Plants and Animals: 5
- No Boating: 3
- No Hunting: 3
- Terrain: 2
- Cleanliness: 2
- Occasional Views: 1

Question #2: What do you like **least** about the park?

Responses:

- Perfect As Is: 8
- No Picnic Area and Restrooms: 6
- Unmonitored Public Access: 5
- Big School Lot Lake Access Point: 5
- Poaching and Other Illegal Activities: 4
- No Horseback Riding: 3
- Unfinished Trail System: 3
- Lack of Recreation Opportunities: 3
- Invasive Species: 2
- Better Maintenance: 2
- Remnants of Previous Uses: 1
- Camp Fires at Big School Lot Lake Access Point: 1
- Absence of a Recreation Center: 1
- Urban Landscaping at Entrances: 1
- Excessive Mowings Around Entrance: 1
- Lack of Access for Wheelchairs: 1
- No Hunting Restrictions: 1
- Dogs: 1

Question #3: What features would you like to see that currently do not exist at the park or are existing but not sufficient in quantity or quality?

Responses:

- Interpretive Signage: 13
- Maintained Trails: 11
- Horse Trails/Staging: 11
- Picnic Facilities: 10
- Restrooms: 9
- Leave As Is: 8
- Better Signage: 8
- Nature Center: 6
- Benches: 7
- Bow Hunting: 5
- Fishing: 4
- Snowmobiling: 3
- More Security: 3
- Playscape: 3
- Fishing Dock on Big School Lot Lake: 1
- Anything that Excluded Motors: 1
- Keep Natural: 1
- Canoes, Kayaks: 1
- Wheelchair Access: 1
- Mountain Biking: 1

Question #4: How many times do you visit the park each year?

Responses:

- 1-5: 14
- 5-10: 11
- 10-15: 5
- 15-20: 1
- Greater than 20: 13

Question #5: Provide a description of anything else you feel is important in the development of the master plan.

Responses:

- Keep it Passive: 10
- Maintain the Woods & Wildlife Habitat: 8
- No Access to School Lot Lake: 5
- Provide Greater Trail Opportunities/Uses: 5
- Do Not Commercialize: 5
- Maintain Privacy of Lakes: 2
- Special Activity Days for Children: 2
- Open Bow Hunting Season: 1
- Less Mowings: 1
- Equestrian Trail Head: 1
- Keep it Dog Friendly: 1

## **APPENDIX G**

### **2007 OAKLAND COUNTY PARKS AND RECREATION MASTER PLAN COUNTY-WIDE PUBLIC INTEREST SURVEY RESULTS<sup>1</sup>**

#### **Resident Survey**

During the fall of 2006, a survey of Oakland County residents was conducted. The questionnaire was developed by Leisure Vision/ETC Institute and Oakland County Parks and included questions related to visitation, satisfaction, recreation facility and program use and desires, priorities for improvement, and willingness to pay. A copy of the questionnaire is included in Appendix A. [Refer to Appendix A of the *2007 Oakland County Parks and Recreation Master Plan*.]

Surveys were mailed to a random sample of 3,000 households in Oakland County. Two follow-up phone calls were done to encourage participants to complete the survey. A total of 607 surveys were completed. Survey results from key questions were compared to a database of communities across the country for which Leisure Vision has conducted citizen surveys. The results focused on current usage and satisfaction, needs and priorities for improvements, and tax funding and voter support.

#### ***Current Usage and Satisfaction***

Oakland County Parks and Recreation is one of the top providers of parks and recreation activities in the county with high satisfaction from survey respondents.

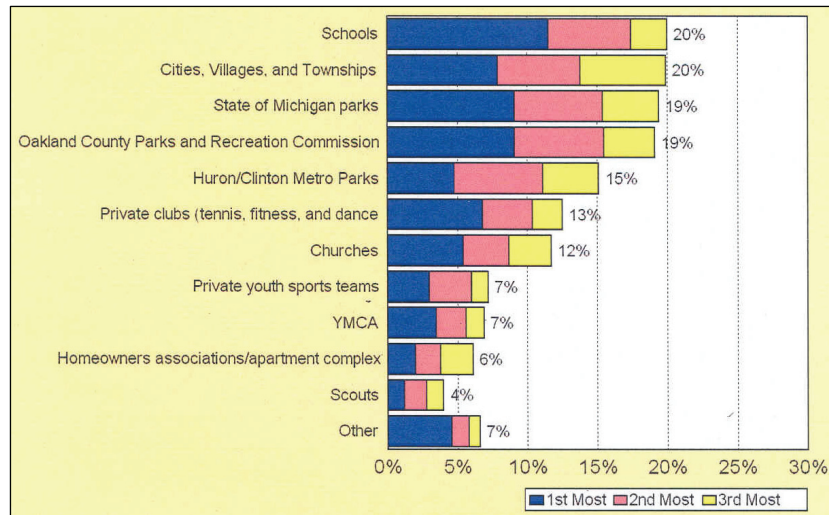
Seventy-one percent of respondents indicated that they have used at least one of the recreation facilities offered in the county parks over the last year. Ninety-five percent of park users indicated that the condition of the parks was excellent (34%) or good (61%). The usage rating is consistent with the national benchmarking average of 72 percent of households using parks and recreation sites during the past year. However, the rating of the parks'

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<sup>1</sup> Excerpt from the *2007 Oakland County Parks and Recreation Master Plan*

condition is considerably higher than national benchmarking averages rating parks and recreation sites as excellent (30%) or good (53%).

Out of 11 public, private, and non-profit organizations providing parks and recreation services to Oakland County residents, Oakland County Parks was one of the top four recreation providers most used by residents. Nineteen percent of respondents indicated that Oakland County Parks was one of the recreation providers used the most often (based on the sum of their top three choices). The other top providers included schools (20%), cities, villages, and townships (20%), and state parks (19%).

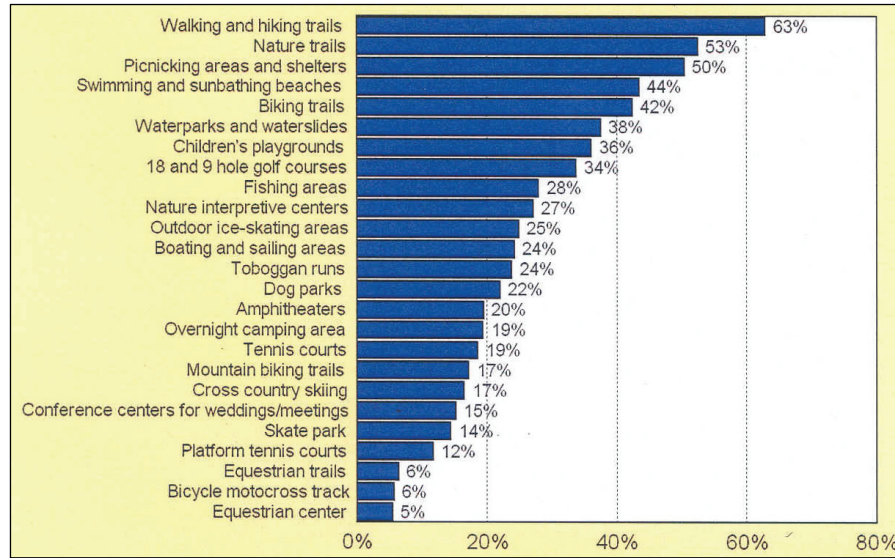


Source: Leisure Vision/ETC Institute

### **Needs and Priorities for Improvement**

While the results of the survey clearly show that Oakland County Parks and Recreation is doing an excellent job in providing a wide array of park and recreation facilities and programs to its residents, the responses also indicate an unmet demand for some facilities and opportunity for improvements. A few key findings are described as follows.

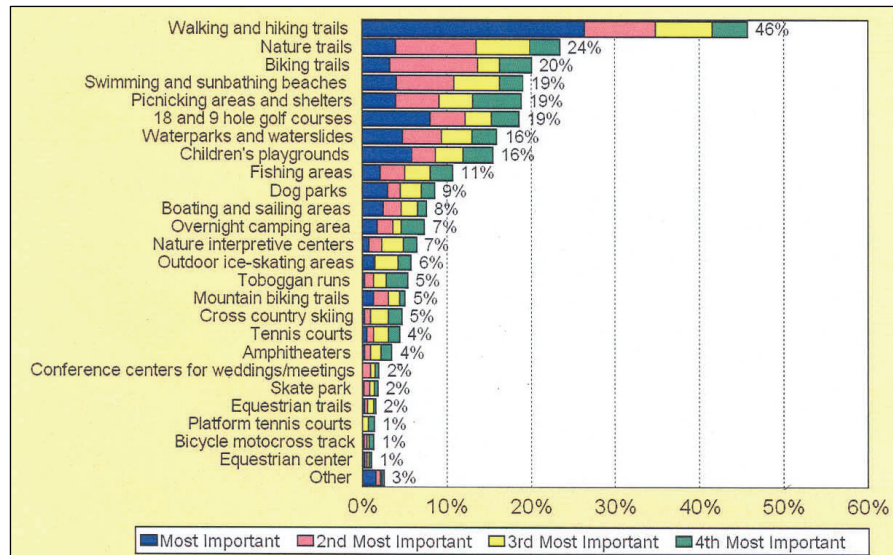
The top three recreation facilities identified as most needed include walking and biking trails (63%), nature trails (50%), and picnic areas and shelters (50%). When looking at the distribution of respondents within the county, at least 60 percent of respondents have a need for walking and biking trails in all four quadrants.



Source: Leisure Vision/ETC Institute

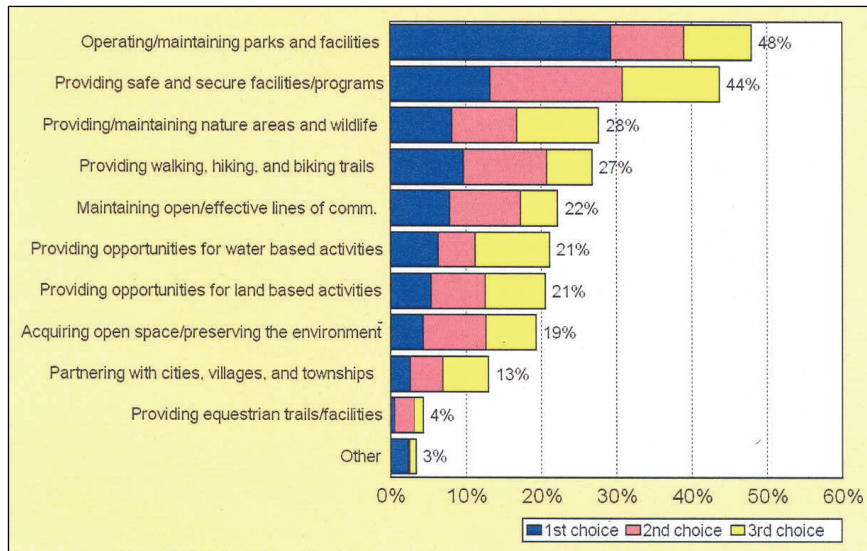
Based on the respondents four top choices, walking and biking trails (46%), nature trails (24%), and biking trails (20%) are the most important recreation facilities. Walking and biking trails are also the most important facilities identified by respondents in all four quadrants of the county.





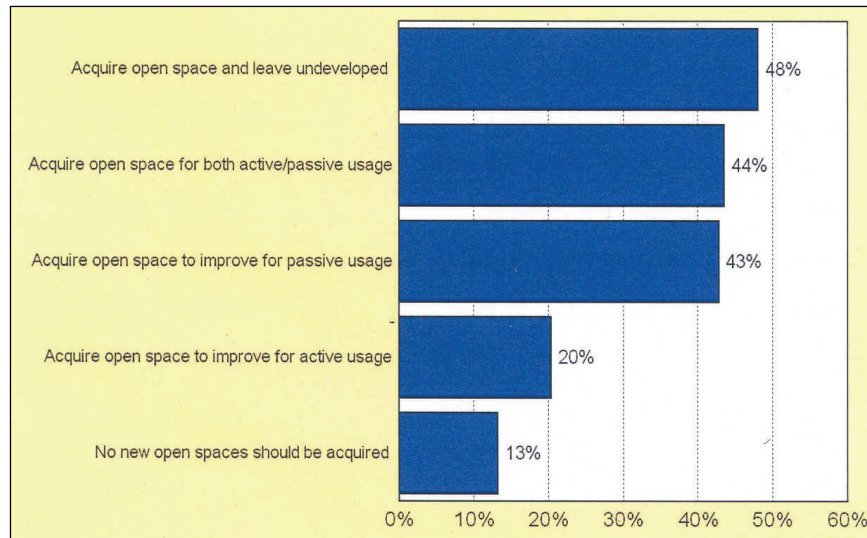
Source: Leisure Vision/ETC Institute

Operating/maintaining parks and facilities (48%) and providing safe and secure facilities/programs (44%) were the most important functions of Oakland County Parks and Recreation. The other functions in order of importance include: providing/maintaining nature areas and wildlife; acquiring open space/preserving the environment; providing walking, hiking, and biking trails; maintaining open/effective lines of communication; partnering with cities, villages, and townships; providing opportunities for land-based activities; and providing opportunities for water-based activities. All functions other than providing equestrian trails/facilities were rated as very important or somewhat important by 85 percent of respondents.



Source: Leisure Vision/ETC Institute

When considering options for open space and parkland acquisition and development, 48 percent of respondents supported acquiring open space and leaving it undeveloped for future generations. In addition, 44 percent of respondents supported acquiring open space for both passive and active use, while 43 percent of respondents supported acquiring open space for passive use only. Only 13 percent of respondents feel that no new open spaces should be acquired.

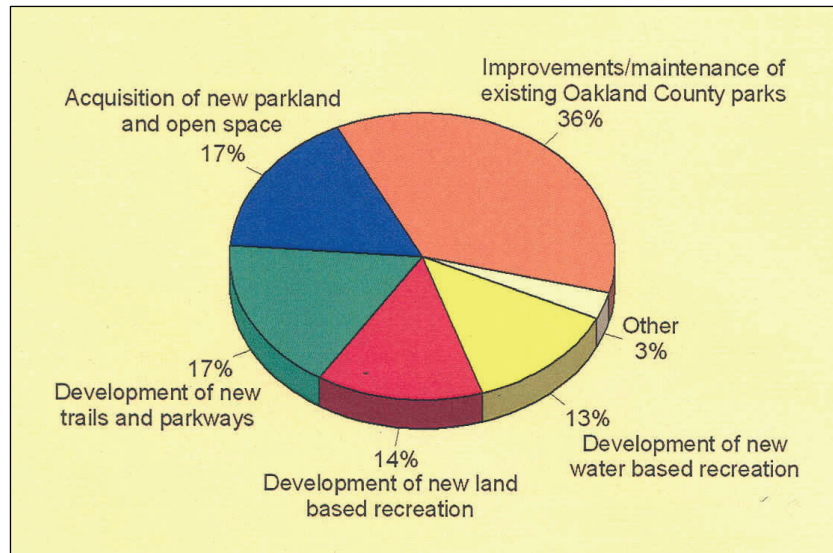


Source: Leisure Vision/ETC Institute

**Tax Funding and Voter Support**

Citizens of Oakland County recognize that continued maintenance of the current park system and improvements to recreation facilities will require continued investments of tax dollars. Oakland County residents also recognize the importance of potentially funding a dedicated millage for open space and parkland acquisition, and trail development.

Respondents take a balanced approach to allocating resources for parks and recreation facilities. Thirty-six percent of respondents would allocate resources to improvements and maintenance of existing Oakland County Parks. The remaining allocation is as follows: acquisition of new parkland and open space (17%); development of new trails (17%); development of new land-based recreation (14%); development of new water-based recreation (13%); and other (3%).



Source: Leisure Vision/ETC Institute

Sixty-six percent of respondents indicated they would either vote in favor (51%) or might vote in favor (15%) of renewing the annual tax for funding operations and capital improvement projects of Oakland County Parks. Twenty-two percent indicated they were not sure how they would vote and only nine percent indicated they would vote against the annual tax. In all four quadrants, 57 percent of respondents indicated they would either vote in favor or might vote in favor of renewing the annual tax.

A strong 61 percent of respondents indicated they would either vote in favor (42%) or might vote in favor (19%) of an additional property tax levy dedicated for open space and parkland acquisition and for trail development. Twenty-one percent indicated they were not sure how they would vote and 14 percent indicated they would vote against an additional tax.



**APPENDIX H**

**SYNOPSIS OF 30-DAY PUBLIC COMMENT PERIOD – APRIL 2007**

To be completed.

