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VASCULAR PLANTS OF NEWPORT STATE PARK, WISCONSIN

By

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INTRODUCTION

Newport State Park, a minimum-development park located in northern Door County, contains over 2,000 acres of primarily forested land, and has eight miles of natural Lake Michigan shoreline. The park, with a variety of plant communities present, supports a vascular flora of over 400 species. Collections of vascular plants made in the park's Newport Conifer-Hardwoods Scientific Area during the 1976 growing season, and the entire park during the summers of 1977 and 1978, are the basis for the catalogue of plant species presented in this paper. The specimens collected have been deposited in the Herbarium of the University of Wisconsin, Madison, and at the nature center of the Ridges Sanctuary in Baileys Harbor, Wisconsin.

Sanctuary in Baileys Harbor, Wisconsin. This report does not include the recently acquired Hotz Tract on the north end of the Park, between Europe Lake and Europe Bay.

HISTORY OF LAND USE AND PRESENT USAGE

Most of what is now Newport State Park was logged during the 1880's and 1890's, when the logging village of Newport was located at the site at the Park's main beach and picnic area. (Visitor-Newport State Park, 1977). Forest fires, which occurred after the logging are indicated by the presence of large charred pine stumps and fire scars on some of the older trees in the park.

Large stands of paper birch, which originated in the early 1900's, became established on mineral soil exposed by the fires. From the time of these major disturbances, until the area was purchased by the State of Wisconsin for a park in 1966, potatoes were grown in fields near the park entrance and a small amount of selective logging was carried out in the second growth forests. However, the abandoned farm fields are being reclaimed by bracken ferns and grasses, and the wooded areas of the park have not had large scale disturbances for over seventy years.

Newport is presently managed as a minimum development park by the Wisconsin Department of Natural Resources, and only a few acres of land at the main beach on Newport Bay are developed for intensive uses, such as swimming and picnicking. The remainder of the park is accessible by a system of hiking trails, which also give access to thirteen backpack campsites placed throughout the park. No motor vehicles are allowed on the trails, and no timber management is practiced in the park (Fig. 1).

GEOLOGY, TOPOGRAPHY AND DRAINAGE

The bedrock which underlies all of Newport State Park several hundred feet thick is Niagara Dolomite. This bedrock is quite near the surface in most of the park, and its outcroppings are common. At the time the dolomite was deposited, during the Silurian Period about 440 million years ago, coral reefs were common in this area. Many of these corals have become fossilized in the hard dolomite, and both chain and honeycomb types of coral fossils can be found on cobblestone beaches in the park.

Mixed in with the light colored dolomite cobbles on the beach, are occasional darker colored rocks, such as granite and basalt. These darker rocks are glacial erratics which were brought here from further north and deposited relatively recently, about 12,000 years ago, by the Labrador Ice Sheet. When The Labrador Ice Sheet passed over this region, it was divided into two lobes, the Green Bay Lobe and the Lake Michigan Lobe, which take their names from the present day bodies of water whose basins they formed. It was the Green Bay Lobe of the glacier which overrode Door County, including Newport State Park (Martin, 1965). Glacial striae, which can be seen in the bedrock along Rowleys Bay, show that the glacier moved over this area in a northwest to southeast direction, leaving the land in the park relatively flat.

As the glaciers receded, ice blocked the drainage of the Great Lakes Basin, causing the formation of glacial lakes which had water levels much higher than Lake Michigan does today. Thus, nearly all of the land in Newport Park was formerly flooded by one or both of two of these glacial lakes, Lake Algonquin and Lake Nipissing. Glacial Lake Algonquin once covered all but the highest point of land in the park, since its abandoned shoreline is 75 feet above Lake Michigan. Glacial Lake Nipissing, whose abandoned shoreline stands only about 21 feet above the present level of Lake Michigan, covered less than half of the park (Fig. 2).

The abandoned shorelines of the glacial lakes appear as terrace-like breaks in the otherwise level topography of the park. They were formed by wave action, and display the same types of ledges, boulders, and low bluffs that are characteristic of the present shoreline of Lake Michigan in rocky areas. Local relief is also provided by several series of parallel sand ridges (now mostly stabilized and covered with mesic forest), located along Europe Bay, Newport Bay, and elsewhere. These ridges were formed as offshore sand bars during the past three thousand years, and each was at one time a beach along the lake. These ridges have become dry land because the gradual lowering of the water level from Lake Nipissing levels to present day levels has exposed the sand bars, and also because of the slow uplift of the land due to glacial rebound.

The present shoreline of Lake Michigan exhibits several types of beaches in the park. These include low dunes along the larger bays; moist middle beaches; wet, sometimes marshy beaches in sheltered areas; and dolomite ledges on the ends of all the major points in the park.

Since there are no permanent streams in the park, drainage of water is quite slow. Melted snow and rain accumulate in many ephemeral ponds in wet mesic forests and in wet spots throughout the park in spring and early summer, when these ponds may contain water over a foot deep. From these ponds, the water drains along the bedrock and emerges on the beach as temporary springs. These springs slowly empty the inland ponds, and usually dry up by the middle of August.

SOILS

Most of Newport State Park is covered with shallow, sandy and gravelly types of soil (Fig. 4). Major soil types include Duell loamy sand, Kiva sandy loam, Longrie loam, Namur loam, and Summerville loam. These soils are from less than ten to a maximum of forty inches deep, well to excessively drained, and light colored. Although Kiva sandy loam is deposited over beds of gravel, all of the other types

NEWPORT STATE PARK

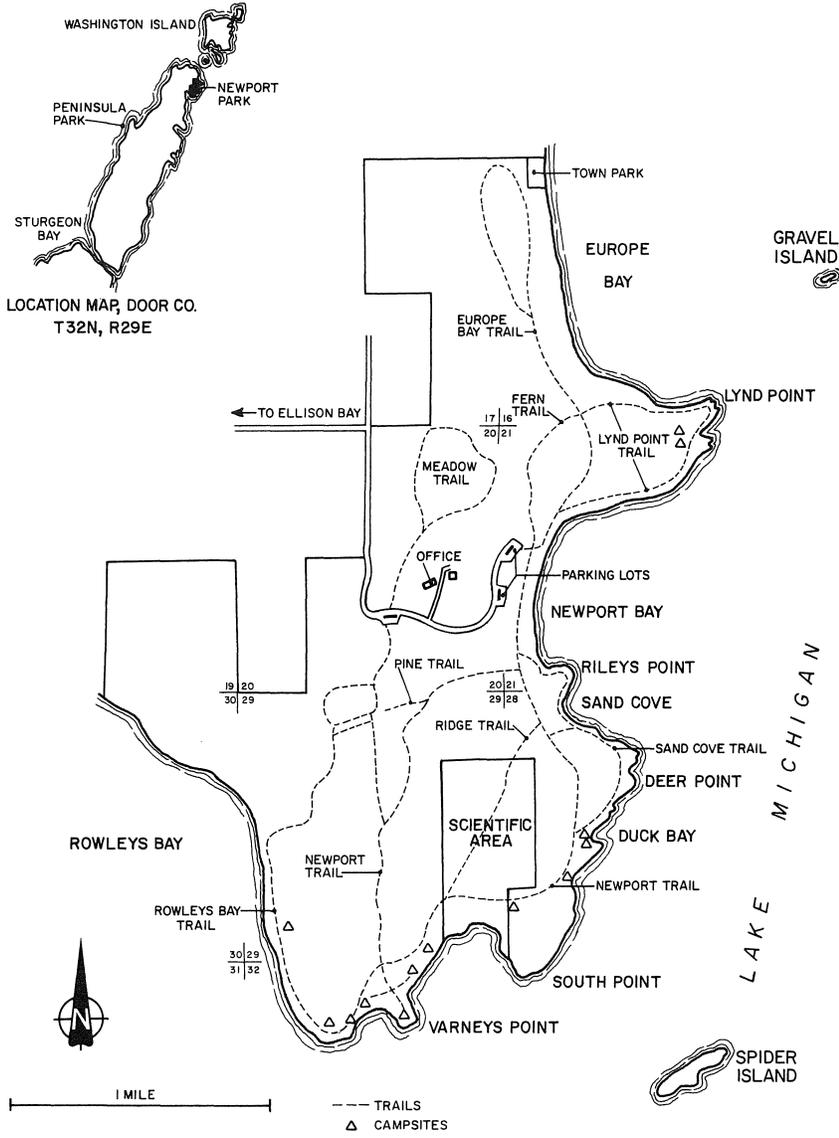


FIGURE 1. Park locator map

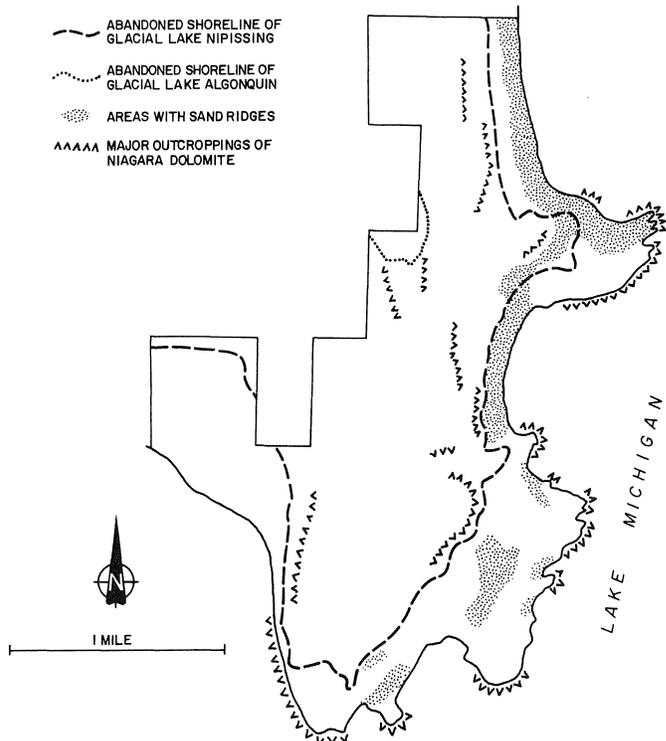


FIGURE 2. Geology map

LEGEND

1. Rousseau loamy find sand (excessively drained) - Deep, light colored sandy soils. They occur on outwash plains and undulating outwash areas.
2. Alpena gravelly sandy loam (excessively drained) - Very shallow, light colored soil over calcareous sand and gravel at less than 15 inches.
3. Bonduel find sandy loam (shallow) (somewhat poorly drained) - Shallow, dark colored loamy soil over limestone bedrock at 10 to 20 inches.
4. Rousseau find sand, blowout land (excessively drained). Deep, light colored sandy soil. They generally occur on wind or water-deposited hilly topography.
5. Bonduel loam (somewhat poorly drained) - Moderately deep, dark colored loamy soil over limestone bedrock at 20 to 40 inches.
6. Lake Beaches, sandy (excessively drained) - Deep, light colored sandy soil. They generally occur along shoreline and beaches.
7. Lake Beaches, cobbly (excessively drained) - Deep, cobble and gravel soil. They generally occur along shoreline and beaches.
8. Lake Beaches, wet (somewhat poorly drained) - Deep, sandy and cobbly soil. They generally occur along shorelines and beaches.
9. Wainola loamy find sand (somewhat poorly drained) - Deep, moderately dark colored, sandy soil over calcareous sand. They occur on lacustrine or outwash plains.
10. Rousseau-Wainola-Roscommon loamy fine sand complex (well to poorly drained) - Deep, light to dark colored sandy soil over calcareous sand. Rousseau occurs on the higher areas, Roscommon occupies low, wet depressions, and Wainola occurs in the intermediate areas.
11. Longrie loam (well drained) - Moderately deep, light colored loamy soil over limestone bedrock at 20 to 40 inches.
12. Namur loam (well drained) - Very shallow, light colored loamy soil over limestone bedrock at less than 12 inches.
13. Summerville loam (well drained) - Shallow, light colored loamy soil over limestone bedrock at 10 to 20 inches.
14. Onaway loam (well drained) - Deep, light colored soil with reddish-brown clay loam subsoil over calcareous reddish-brown loam glacial material at 25 to 30 inches. They occur on glacial uplands.
15. Solona loam (somewhat poorly drained) - Deep, dark colored soil with reddish-brown clay loam subsoil over calcareous reddish-brown loam glacial material at 25 to 30 inches. They occur in depressions and drainageways of glacial uplands.
16. Gibraltar sandy loam (well drained) - Deep, light colored soil with reddish-brown sandy clay loam subsoil over calcareous reddish-brown loam glacial material at less than 20 inches.
17. Namur loam, wet variant (poorly drained) - Very shallow, dark colored loamy soil over limestone bedrock at less than 12 inches.
18. Duel loamy sand (well drained) - Moderately deep, light colored sandy soil over limestone bedrock at 20 to 40 inches.
19. Duel sandy loam, gray subsoil variant (somewhat poorly drained) - Moderately deep, moderately dark colored sandy soil over limestone bedrock at 20 to 40 inches.
20. Kiva sandy loam (excessively drained) - Shallow, light colored loamy soil over calcareous sand and gravel at 10 to 20 inches.
21. Roscommon loamy find sand (poorly drained) - Deep, dark colored sandy soil in depressions and drainageways of outwash plains.

FIGURE 3. Soils map



NEWPORT STATE PARK

0 500' 1000' 2500'



..... PARK BOUNDARY (approved)

mentioned above are deposited directly over the dolomite bedrock. It is interesting to note that the park's wet-mesic forests occur on wet variants of these same soils, with only several inches or less of muck over the underlying mineral soil. This is in contrast to the common type of wet-mesic forest in Wisconsin, which occurs on deep azonal peat formed by bogs, wet forests, alder thickets, and sedge meadows (Curtis, 1959).

Some areas of the park have deep sandy soils associated with the previously mentioned sand ridges (Fig. 2). These soils are classified as Rousseau (excessively drained), Wainola (intermediate), and Roscommon (poorly drained) sands. The shallow loams found in the park tend to be slightly alkaline, while the deeper sandy soils tend to be slightly acidic (Hole, 1976).

CLIMATE

Because Newport State Park is low-lying land on a peninsula in Lake Michigan, there is a local type of climate which is different from that of the interior areas of the state at the same latitude. The main difference is that temperature extremes are moderated, even though the average annual temperature of about 43°F is similar to that in other areas of the state. Although no specific weather records from Newport State Park are available, temperature and precipitation have been recorded on Washington Island, several miles north of Newport, for many years. These records have been reported in "Climatological Data-Wisconsin" each month, and are used here for discussion as the most accurate data available for the Newport area (It should be noted, however, that summer temperatures are probably a few degrees cooler in Newport, which is more exposed to Lake Michigan than the Washington Island Station.)

Comparison of Washington Island mean temperatures for January and July, with those of Sturgeon Bay (somewhat removed from the effect of Lake Michigan by being located in the south central portion of Door County), and Crivitz High Falls (a station of similar latitude and elevation to Washington Island, but well away from Lake Michigan in Marinette Co.), reveals that January temperatures are warmer near the lake, while in July, the effect is reversed, with inland areas warmer (Table 1). It is also apparent from the table that the spring warmup during the months April, May and June, is greatly retarded near the lake. This causes snow cover to persist longer in April, as well as delaying the blossoming of many early flowering plants and opening of leaf buds until the end of May. Also, cool temperatures during the spring and summer months, along with condensation from local fogs which frequently form during the growing season, keep the evaporation rate in the park quite low. Even though the average annual precipitation in the area is only 28-30 inches (compared to as much as 34 inches in other parts of the state), the lower evaporation allows for the development of mesic forests on sites that would otherwise be too dry for many of the trees that grow there.

In the fall, temperatures remain warm well into October, with no frost near the lake until the end of the month. Significant amounts of snow begin to accumulate in the latter part of December, reaching a maximum depth of 20-30 inches by mid-March. The continuous cover of snow disappears from wooded areas by mid-April.

TABLE 1. Comparison of selected mean monthly temperature of Washington Island (near Newport Park) with an inland Door County location (Sturgeon Bay) and an inland Wisconsin location with the same latitude and elevation (Crivitz, Marinette Co.).

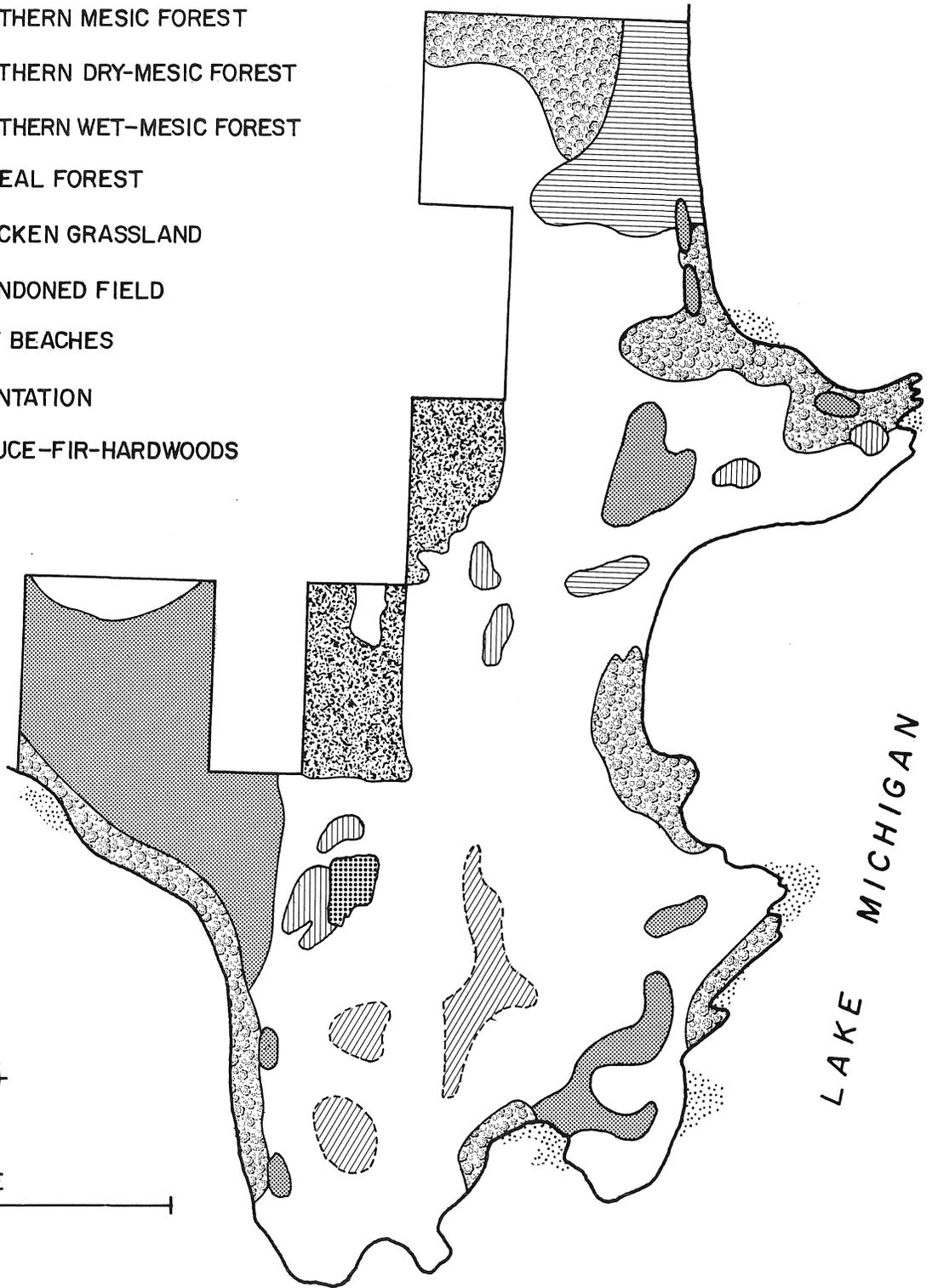
	Jan. mean	July mean	Apr. mean	May mean	June mean
Washington Island	18.5	65.0	40.0	48.9	59.0
Sturgeon Bay	18.6	68.3	42.4	52.2	62.5
Crivitz High Falls	14.7	68.7	42.8	54.5	64.1
Climatic summary - Washington Island					
Mean annual temperature	43°F				
Mean annual precipitation	28-30 inches				
Seasonal snowfall (1970-78 avg.)	58.7 inches				

Source: Climatological Data-Wisconsin.

VEGETATION

The forests of the park have been classified as four types; northern mesic forest, northern dry-mesic forest, northern wet-mesic forest and boreal forest (after Curtis, 1959). The areas marked spruce-fir-hardwoods on the vegetation map are intermediate between northern mesic forest and boreal

-  NORTHERN MESIC FOREST
-  NORTHERN DRY-MESIC FOREST
-  NORTHERN WET-MESIC FOREST
-  BOREAL FOREST
-  BRACKEN GRASSLAND
-  ABANDONED FIELD
-  WET BEACHES
-  PLANTATION
-  SPRUCE-FIR-HARDWOODS



1 MILE

LAKE MICHIGAN

FIGURE 4. Vegetation map

forest. Several northern sedge meadows and alder thickets are present in the park. However, they are much too small to be shown on a vegetation map, and are considered part of the northern wet-mesic forest. The open areas of the park have been classified as bracken-grasslands and abandoned fields, and these two closely related communities are presented together.

The park's beaches have been divided into four types; upper beaches and dunes, middle beaches, wet beaches and dolomite ledge beaches. The four types of beaches are difficult to show on a vegetation map, since they are narrow and two or more types may occur on a single segment of beach. However, wet beaches are shown on the vegetation map and dolomite ledge beaches are shown on the map of geological features of the park (Fig. 2), while the locations of the other two types of beach are given in the discussion. Two other minor plant communities, shaded cliffs and pine plantation, are also briefly discussed.

Northern Mesic Forest

Northern mesic forest is the most common vegetation type in the park, covering a majority of the land area. The typical climax type of northern mesic forest, dominated by large sugar maple (Acer saccharum), beech (Fagus grandifolia) and hemlock (Tsuga canadensis), is found only on sites with deep sandy soil (Fig. 3), where tree growth is more rapid than on the shallow rocky soils that cover most of the park. The remainder of the northern mesic forest in the park has a high frequency of paper birch (Betula papyrifera), aspen (Populus spp.) and white ash (Fraxinus americana). These species became established in the early 1900's, after extensive logging and fire, and are now beginning to give way to trees of climax forest species.

Near the edges of the frequently occurring dolomite outcrops, are large areas of very thin soil. These areas ordinarily support dense thickets of mountain maple (Acer spicatum) which, unlike larger tree species, are able to avoid excessive windthrow due to shallow rooting. Seedlings of sugar maple, white ash, beech, and other forest trees are common in mountain maple thickets, however, it is doubtful whether these species will ever establish a climax forest, since frequent storms are able to uproot tall trees growing in such shallow soil.

Because the climate of the park is ideal for the growth of coniferous trees, such as balsam fir (Abies balsamea), white spruce (Picea glauca), and white cedar (Thuja occidentalis), there are relatively large amounts of these species present in the park's northern mesic forests. Three areas, shown on the vegetation map, have balsam fir and white spruce co-dominant with hardwoods. These areas, as well as many others are too small or too complex to be accurately outlined on the vegetation map, are intermediate between northern mesic forest and boreal forest. These intermediate stands contain every possible admixture of northern mesic and boreal trees, shrubs and herbs, so that there is no ecotone, or definite border between these two forest types. Thus the forests of the park seem a part of a vegetational continuum as described by Maycock and Curtis (1960) in which northern mesic forests change gradually over a distance of several hundred miles, into boreal forests.

Some areas of the park's northern mesic forest are occasionally infested with Saddled Prominent Moths (Heterocampa guttivitta) of the family Notodontidae. The larvae of these moths eat the leaves of sugar maple, paper birch and beech trees, sometimes stripping large portions of forest completely bare in July and August. Where this happens, a large amount of sunlight is allowed to enter the forest for the remainder of the growing season. Also, a few trees are killed by the infestations, and this creates large sunflecks on the forest floor for several years afterwards. The abundance of light promotes a rapid increase in the growth of the ground layer. In 1978, for example, areas that were infested in 1976 and 1977 showed a great increase in abundance of forest herbs such as mountain fringe (Adlumia fungosa), largeleaf aster (Aster macrophyllus), nodding fescue (Festuca obtusa), sweet cicely (Osmorhiza claytonii), and bindweed (Polygonum cilinode). These moths may give a competitive edge to white ash trees, whose leaves they do not eat. This may be why white ash is so abundant in certain areas of the park.

The shrub and herb layers of the park's northern mesic forests are very dense in the white ash dominated areas just mentioned, intermediate in areas dominated by sugar maple and paper birch, and very sparse in stands with beech, hemlock, or white spruce and balsam fir. It is interesting to note that only a few of the spring ephemerals typical of northern mesic forests, such as spring beauty (Claytonia caroliniana), dutchman's breeches (Dicentra cucullaria), and yellow trout lily (Erythronium americanum) are found in the park. Even these few species which are present are confined to the farthest inland areas of the park, indicating that the climate near Lake Michigan may be unsuitable for these species.

Northern Dry-Mesic Forest

Newport State Park's northern dry-mesic forests, are characterized by white pine (Pinus strobus), red pine (P. resinosa), and red oak (Quercus borealis). These three species of trees are able to establish themselves on soils which are too dry for the growth of other forest trees, and are best developed on sand ridges in the northeastern corner of the park. The park's northern dry-mesic

forests are mostly second growth, having resulted from disturbance caused by logging, combined with the factor of dry soil. However, the shade produced by these now maturing forests keeps the soil moist enough to allow the establishment of sugar maple, beech, and hemlock seedlings, all of which are much more shade tolerant than the seedlings of the pines and oaks.

Therefore, it can be expected that the northern dry-mesic forest in some portions of the park is a transitory forest type which will be replaced eventually through succession by northern mesic forest. This appears to be the case in certain areas of the park already. In contrast, other parts of the park's northern dry-mesic forests still have a rather open canopy with a dense growth of shrubs and herbs. Mountain maple (Acer spicatum) and round-leaved dogwood (Cornus rugosa) frequently attain small tree size in these areas, forming large thickets.

Northern Wet-Mesic Forest

Northern wet-mesic forests are dominated by white cedar (Thuja occidentalis), black ash (Fraxinus nigra), and on slightly higher ground, by yellow birch (Betula alleghaniensis) and hemlock (Tsuga canadensis). There are few large, pure stands of any of these trees in these areas of the park. Since these forests often occur on very hummocky or ridge-swale type of topography, they are actually extremely intricate mixtures of ephemeral ponds, sedge meadows, and thickets of speckled alder (Alnus rugosa), red-osier dogwood (Cornus stolonifera) and winterberry (Ilex verticillata), along with stands of the dominant trees.

The canopy of the wet-mesic forests is much more open than that of northern mesic forests, so that the ground layer of vegetation is very dense (except under clumps of white cedar). The vegetational composition changes from year to year, influenced by fluctuations in the shallow water table. When the water table is high, sedges become abundant; when the water table is lower, swamp buttercup (Ranunculus septentrionalis), water avens (Geum rivale), nodding trillium (Trillium cernuum), jewelweed (Impatiens biflora), purple fringed orchid (Habenaria psychodes), marsh skullcap (Scutellaria galericulata), and other species with brightly colored flowers, produce fine floral displays throughout the growing season.

The wet-mesic forests also contain more abundant ferns than any other plant community in the park. Large pure stands of ostrich fern (Matteucia struthiopteris), sensitive fern (Onoclea sensibilis), and marsh fern (Thelypteris palustris) are common in wet places, while oak fern (Gymnocarpium dryopteris), lady fern (Athyrium filix-femina), and wood ferns (Dryopteris austriaca) are abundant on slightly higher ground. Under dense clumps of white cedar, the sparse vegetation consists of small herbs, such as Carex disperma, goldthread (Coptis trifolia), naked miterwort (Mitella nuda), pale coralroot (Corallorhiza trifida), and mosses.

Boreal Forest

Relics from a time when the climate was cooler than it is now, boreal forest is a very uncommon plant community in Wisconsin. However, several small areas of boreal forest persist along the Lake Michigan coast of Door County, including Newport State Park. The boreal forests of the park are dominated by balsam fir (Abies balsamea), white spruce (Picea glauca) and white cedar (Thuja occidentalis).

The boreal forests are largely restricted to thin-soiled ledges along the lakeshore, and are thus directly exposed to severe storms along the lake. The shallowly-rooted canopy trees are often windthrown and rarely attain the large sizes which are common in the interior mesic forests of the park. Thimbleberries (Rubus parviflorus) are quick to take advantage of openings caused by downed trees, and are much more abundant in boreal forests than any other forest type.

The more shaded areas of boreal forest lack the thick layers of deciduous leaves common in mesic forests, and instead the ground is covered with needles and cones from the various conifers, with an abundance of mosses and lichens. The ground vegetation consists of what is known as a Canadian carpet, a sparse mixture of low growing herbs including twinflower (Linnaea borealis), starflower (Trientalis borealis), wild lily-of-the-valley (Maianthemum canadense), one-sided pyrola (Pyrola secunda), striped coralroot (Corallorhiza striata), wild sarsaparilla (Aralia nudicaulis), and others. It is also on semi-shaded boreal forest edges in the park that the best springtime display of dwarf lake iris (Iris lacustris) and Gaywings (Polygala paucifolia) occurs.

There are two reasons why boreal forest is largely restricted to the Door Peninsula in this region. One is that the climate is relatively cool and humid. The boreal forests of Newport Park are located on low-lying land which juts out from the main peninsula of Door County, and it may well be that this forest distribution is due to accentuated cool microclimate resulting from this lake exposure. It has been frequently observed that cool air with a temperature in the 60's settles into the low-lying land of the park (twenty feet or less above Lake Michigan) occupied in part by boreal forest.

The second reason is that balsam fir and white spruce reproduce well under a semi-open canopy, such as is produced by the storms which frequent the shore of Lake Michigan (Maycock and Curtis, 1960). During their studies of boreal forests in the upper Great Lakes region, Maycock and Curtis also noticed that minor continuous disturbances caused by storms may perpetuate boreal forest, especially in rocky thin-soiled areas such as Newport Park.

Bracken-Grassland and Abandoned Field

The non-forested interior areas of Newport State Park, consist of bracken-grassland and abandoned fields. These two closely related plant communities share the same floral list, so that the main difference between them is the different abundance of certain plant species. The true bracken-grasslands are the areas which have been undisturbed for many years. They have abundant bracken fern (Pteridium aquilinum), wheatgrass (Agropyron trachycaulum), fringed aster (Aster ciliolatus), orange hawkweed (Hieracium aurantiacum), and several goldenrods (Solidago spp.). The abandoned fields, on the other hand, have abundant star thistle (Centaurea maculosa), timothy grass (Phleum pratense), poverty oat grass (Danthonia spicata), several clovers (Melilotus spp.; Trifolium spp.), and Queen Anne's lace (Daucus carota), with only a few specimens of those species mentioned as being abundant on bracken-grasslands.

Eventually, all of the abandoned fields will probably undergo succession to bracken-grasslands, unless directly invaded by trees. The tree species which commonly invade abandoned fields in this area, are white ash (Fraxinus americana) and sugar maple (Acer saccharum). Although pioneering trees such as cherry (Prunus spp.), aspen (Populus spp.), and white pine (Pinus strobus), sometimes also invade abandoned fields in this area, it is not unusual for white ash and sugar maple to establish a forest with no intervening pioneer forest stage. Bracken-grasslands, however, are hard for trees to colonize, since bracken fern, orange hawkweed and several other species which grow on bracken-grasslands, are suspected of producing substances which inhibit the growth of seedlings of many trees (Dawes and Maravolo, 1973). Bracken ferns are also able to compete very successfully against tree seedlings for space, light and nutrients (Levy, 1970). Thus, once bracken-grasslands become established in abandoned fields, they will be long lasting features of the park which are converted to forest very slowly.

Upper Beaches and Dunes

Dry upper beaches and their associated low dunes, occur in the park along Europe Bay, Newport Bay, and to a limited extent, on Sand Cove and Duck Bay. The part of the dunes toward the forests edge has an almost solid vegetation cover of common juniper (Juniperus communis var. depressa), horizontal juniper (J. horizontalis), bearberry (Arctostaphylos uva-ursi), and poison ivy (Rhus radicans). Toward the lake, the upper beach often contains a few grasses and beach pea (Lathyrus japonicus). These plants tend to stabilize the beach, producing conditions ideal for the invasion by trees such as red pine (Pinus resinosa), white pine (P. strobus), and balsam poplar (Populus balsamifera) from nearby forests. However, there are other processes operating on the upper beaches which tend to unstabilize the sand, thus preventing them from being engulfed and destroyed by forest. For example, during the winter, it is sometimes observed that mice tunneling under the snow eat the bark of junipers, occasionally killing them. During the summer, drought may kill carpets of bearberry, thus setting succession back to the open sand stage. Also, during storms or high water periods, waves may cut well back into the upper beach. When the lake returns to normal levels, the sand is redeposited by the lake and by wind, and the slow colonization of the sand by pioneering plants must begin again. These natural processes serve to keep the upper beach ideal for certain species of plants which are especially adapted to the harsh, changing conditions.

Middle Beaches

Middle beaches, with moist sand and cobblestones, are found the length of the shoreline in the park, except on dolomite ledges. Middle beaches are sometimes reached by waves during severe storms, which deposit water-borne seeds of many plants in strands. Since these beaches are used by shore birds and are exposed to a great deal of wind, seeds of weedy plants often become established rapidly. Thistles (Cirsium spp.), sow thistle (Sonchus uliginosus), smartweeds (Polygonum spp.), and other weeds are most abundant on middle beaches.

The middle beaches in sandy bays are rather barren, sometimes vegetated with only a strand or two of sea rockets (Cakile edentula) and smartweeds (Polygonum sp.). Other beaches, where rocks offer some protection from waves, may avoid having their sand constantly washed away and redeposited. These beaches are more stable, and develop a dense vegetation cover.

Wet Beaches

The development of wet beaches which contain vegetation in the park is limited to areas where offshore shallow water or reefs break incoming waves which would otherwise remove all of the existing vegetation. The wet beaches are periodically submerged by high water periods of Lake Michigan, and also may be submerged for a few days time by storms with large waves.

Species of plants which are new to the area, or which may not have been present for many years, may appear on the wet beaches anytime during the growing season. For example, Eleocharis pauciflora, Carex garberi, and Gentiana procera appeared on wet beaches in the park in 1977, after an apparent six to ten year absence during a period of high water.

When the wet beaches are not disturbed for two or more years, dense stands of reedgrass (Phragmites communis), water sedge (Carex aquatilis), and rushes (Juncus spp.), may develop. During the latter part of August, a striking display of wild flowers including boneset (Eupatorium perfoliatum), Verbena (Verbena hastata), black-eyed susan (Rudbeckia hirta), Kalm's lobelia (Lobelia kalmii), goldenrods (Solidago spp.), and fringed gentians (Gentiana procera) produce the most colorful wild flower show to be found in the park.

Dolomite Ledge Beach

Dolomite ledges exposed to Lake Michigan occur on the ends of points. These ledges vary from large flat surfaces, called pavements, to low bluffs at the water's edge. The vegetation of the ledges is quite sparse, and is kept free of trees and dense shrubs by wave action and winter ice. The dolomite ledges provide many microhabitats, such as ephemeral ponds, protected crevices, small sand deposits, and dry exposed rocks. Since there is an abundance of microhabitats on the dolomite ledges, the plant species growing here are a mixture of those from various other habitats: Kalm's lobelia (Lobelia kalmii), low calamint (Satureja glabella var. angustifolia) and marsh aster (Aster simplex), usually found on wet beaches; sand violet (Viola adunca), sand cress (Arabis lyrata) and yarrow (Achillea millefolium), usually found on dry sand; hairgrass (Deschampsia cespitosa) and arctic primrose (Primula mistassinica), of boreal distribution; and columbine (Aquilegia canadensis) and harebell (Campanula rotundifolia), which are common on dry exposed cliffs.

Shaded Cliff

Shaded cliff communities are poorly developed in the park, since most of the bluffs are only about five to eight feet high. Where outcrops do exist, however, one may find such plants such as fragile fern (Cystopteris fragilis), common polypody (Polypodium vulgare), and hairy rock cress (Arabis hirsuta var. pyncocarpa), walking fern (Camptosorus rhizophyllus), maidenhair spleenwort (Asplenium trichomanes), and colombine (Aquilegia canadensis). Shrubs such as swamp currant (Ribes lacustre), american fly honeysuckle (Lonicera canadensis), and yew (Taxus canadensis) do well on the moss-covered dolomite ledges, which are shaded by white cedar (Thuja occidentalis) and mountain maple (Acer spicatum).

Pine Plantations

Pine plantations were planted about 40 years ago on several acres near the end of Pine Trail, and near the end of Fern Trail. These plantations have pure stands of white pine (Pinus strobus), red pine (P. resinosa), and Norway spruce (Picea abies). There is little or no reproduction in the plantations, and there is a dense carpet of needles which prevents the growth of herbs. These areas are of little botanical interest, but may become more natural looking as time passes.

USE OF CATALOGUE

This catalogue of vascular plants of Newport State Park is arranged in alphabetical order by family. Within family groups entries are arranged in alphabetical order by scientific name. Nomenclature largely follows Gleason and Cronquist's Manual of Vascular Plants of Northeastern United States and Adjacent Canada (Princeton: Van Nostrand Reinhold, 1963).

Species considered non-native are indicated by an asterisk (*) before the genus name. Geographical and vegetation-type references given for each species refer to the park map (Figs. 1 and 2), and the vegetation map (Fig. 4). The names of other species which may be associated with each listing in the catalogue, may be found by consulting the lists of common species for each major plant community.

CATALOGUE OF PLANT SPECIES

ACERACEAE Maple Family

Acer rubrum L. Red Maple. Occasional on dry sandy areas; also in swamps.

A. saccharum Marsh. Sugar Maple. Common throughout the park except in boreal and wet-mesic forests. Becoming dominant in many areas as paper birch dies out. Codominant with beech in mature forests.

A. spicatum Lam. Mountain Maple. Common in all forests throughout the park. Dominant on areas with very thin soil and bedrock near the surface, as along Ridge Trail and several other places in the park.

ALISMATACEAE Water-plantain Family

Sagittaria latifolia Willd. Arrow-head. Scattered on wet sand near Lake Michigan.

ANACARDIACEAE Cashew Family

Rhus radicans L. Poison Ivy. Common in sandy areas, sometimes found in wet-mesic forests.
R. typhina L. Staghorn Sumac. Locally abundant on the edges of bracken grasslands.

APOCYNACEAE Dogbane Family

Apocynum androsaemifolium L. Spreading Dogbane. Locally abundant on dry sand and in open dry-mesic forests.

AQUIFOLIACEAE Holly Family

Ilex verticillata (L.) Gray. Winterberry. Locally abundant in wet-mesic forests.

ARACEAE Arum Family

Arisaema atrorubens (Ait.) Blume. Jack-in-the-pulpit. Locally abundant in wet-mesic woods.
Symplocarpus foetidus (L.) Nutt. Skunk Cabbage. Occasional in wet-mesic beaches

ARALIACEAE Ginseng Family

Aralia hispida Vent. Bristly Sarsaparilla. Infrequent on dry bracken grasslands.
A. nudicaulis L. Wild Sarsaparilla. Common in all forest types throughout the park.
A. racemosa L. Spikenard. Local in mesic forests in the western part of the park.
Panax trifolius L. Dwarf Ginseng. Rare in mesic forests in the south-central part of the park.

ASCLEPIADACEAE Milkweed Family

Asclepias incarnata L. Swamp Milkweed. Occasional on wet beaches.
A. syriaca L. Common Milkweed. Common on dry beaches and bracken grasslands.

BALSAMINACEAE Touch-me-not Family

Impatiens biflora Walt. Orange Jewelweed. Very abundant in open wet-mesic forests, and in protected areas along Lake Michigan.

BERBERIDACEAE Barberry Family

Podophyllum peltatum L. May-apple. Local in Northern mesic forest.

BETULACEAE Birch Family

Alnus rugosa (DuRoi) Spreng. Speckled Alder. Common in dense thickets surrounding wet openings in wet-mesic forests.
Betula alleghaniensis Britt. Yellow Birch. Scattered in all forest types throughout the park. Common only in wet-mesic forests in the extreme southern part of the park, where specimens attain large size and old ages.
Betula cordifolia (Regel) Fern. Canoe Birch. Mixed with B. papyrifera throughout the park.
B. papyrifera Marsh. Paper Birch. Often dominant in young-aged forests.
Carpinus caroliniana Walt. Blue Beech. Rare in mesic hardwood forests.
Corylus americana Walt. Hazelnut. Uncommon on the edges of bracken grasslands and abandoned fields.
C. cornuta Marsh. Beaked Hazelnut. Very common, dominating the shrub layer in many open forests.
Ostrya virginiana (Mill.) K. Koch. Ironwood. A common understory tree in all mesic forests.

BORAGINACEAE Borage Family

Cynoglossum boreale Fern. Northern Wild Comfrey. Uncommon in rocky woods, especially under mountain maples.
*Myosotis sylvatica Hoffm. Garden Forget-me-not. Abundant near campsite number seven.

CAMPANULACEAE Harebell Family

Campanula aparinoides Pursh. Marsh Bellflower. Uncommon on wet beaches.
C. rotundifolia L. Bluebell. Common in dry forest openings; also on dolomitic ledges near Lake Michigan.

CAPRIFOLIACEAE Honeysuckle Family

Diervilla lonicera Mill. Bush Honeysuckle. Abundant in open woods throughout the park.
Linnaea borealis var. americana (Forbes) Rehd. Twinflower. Abundant in all forests with coniferous trees present.
*Lonicera x bella Zabel Honeysuckle. Rare on the edges of fields.
L. canadensis Marsh. American Fly Honeysuckle. The most common honeysuckle in the park, found in all forests.
L. dioica L. Wild Honeysuckle. Common in wet-mesic forests and in white cedar forests along Lake Michigan.
L. hirsuta Eat. Hairy Honeysuckle. Locally abundant in wet-mesic woods.
*L. tatarica L. Tartarian Honeysuckle. Occasional on abandoned fields.
Sambucus pubens Michx. Red-berried Elder. Occasional in open woods throughout the park.
Symphoricarpos albus (L.) Blake. Snowberry. Common in boreal forests near Lake Michigan.
Viburnum acerifolium L. Arrowwood. Frequent in mesic forests.
V. trilobum Marsh. Highbush Cranberry. Occasional in wet-mesic forests and along Lake Michigan.

CARYOPHYLLACEAE Pink Family

- *Cerastium fontanum Baumg. Mouse-ear Chickweed. Found as a weed along hiking trails.
- *Dianthus barbatus L. Sweet William. Occasional on dry beaches and dunes.
- *Saponaria officinalis L. Soapwort. Locally abundant on abandoned farm fields near the park entrance.
- *Silene cucubalus Wibel. Bladder Champion. Weed along hiking trails.

COMPOSITAE Composite Family

- Achillea millefolium L. Yarrow. Common on dry bracken grasslands.
- Anaphalis margaritacea (L.) C. B. Clarke. Pearly Everlasting. Locally abundant on the edges of bracken grasslands.
- Antennaria plantaginifolia (L.) Richards. Pussytoes. Locally abundant on bracken grasslands.
- Artemisia caudata Michx. Beach Wormwood. Common on dry beaches.
- Aster ciliolatus Lindl. Common in open woods and on bracken grasslands.
- A. lateriflorus (L.) Britt. Side-Flowering Aster. Locally abundant in wet-mesic forests along Fern Trail.
- A. macrophyllus L. Large-leaved Aster. Abundant in all forest types.
- A. puniceus L. Swamp Aster. Scattered on wet beaches.
- A. simplex Willd. Marsh Aster. Common on the Lake Michigan shoreline.
- Bidens cernua L. Beggarticks. Scattered on the wet beach in the scientific area.
- B. frondosa L. Locally abundant in open wet-mesic woods in the southeastern quarter of the park.
- *Centaurea maculosa Lam. Knapweed. Very abundant on recently disturbed fields and in gravel along the road.
- *Chrysanthemum leucanthemum L. var. pinnatifidum Lecoq & Lamotte. Oxeye Daisy. Common on abandoned fields and disturbed places.
- *Cichorium intybus L. Chicory. Occasional on bracken grasslands.
- *Cirsium arvense (L.) Scop. Canada Thistle. A weed of the Lake Michigan shore. One of the few weeds that is a serious pest in native plant communities of the park.
- *C. palustre (L.) Scop. Swamp Thistle. Rare weed on the Lake Michigan shoreline.
- *C. vulgare (Savi.) Tenore. Bull Thistle. Occasional weed on the Lake Michigan shoreline.
- Coreopsis lanceolata L. var. lanceolata Sand coreopsis. Occasional on sand dunes in northern part of the park.
- Erigeron annuus (L.) Pers. Daisy Fleabane. Common on bracken grasslands.
- E. philadelphicus L. Fleabane. Uncommon in dry forests.
- Eupatorium maculatum L. Joe-Pye Weed. Abundant on wet beaches, especially toward the south.
- E. perfoliatum L. Boneset. Common on wet beaches. Spreading rapidly on new beaches exposed by low water.
- *Hieracium aurantiacum L. Orange Hawkweed. Common on bracken grasslands and disturbed areas.
- *H. florentinum All. Yellow Devil's Paintbrush. Common on bracken grasslands.
- H. scabriusculum Schwein var. scabriusculum. Common on moist sand on the northern part of Lynd Point.
- H. scabrum Michx var. scabrum. Rough Hawkweed. Occasional on moist sand along Lake Michigan.
- Lactuca biennis L. Wild Lettuce. Scattered in open forests.
- L. canadensis L. Wild Lettuce. Occasional in open woods throughout the park.
- Petasites palmatus (Ait.) Gray. Sweet Coltsfoot. Rare in wet-mesic woods along Europe Bay.
- Rudbeckia hirta L. Black-eyed Susan. Common on moist sand along Lake Michigan.
- Solidago canadensis L. var. scabra T.&G. Common on moist sand near the lake and on bracken grasslands.
- S. flexicaulis L. Zig-zag Goldenrod. Common in mesic forests.
- S. graminifolia (L.) Salisb. var. graminifolia. Grass-leaved Goldenrod. Common on beaches of all types.
- S. hispida Muhl. Hairy Goldenrod. Uncommon in openings of dry-mesic forests.
- S. juncea Ait. Early Goldenrod. Common on abandoned fields.
- S. nemoralis Ait. Field Goldenrod. Common on dry open areas.
- S. spathulata D.C. var. gillmani (Gray) Cronq. Dune Goldenrod. Common on dry sand along Newport Bay and Europe Bay.
- S. speciosa Nutt. Showy Goldenrod. Common on sand near Lake Michigan.
- *Sonchus uliginosus Bieb. Sow Thistle. Occasional weed on the Lake Michigan lakeshore.
- Tanacetum huronense Nutt. Lake Huron Tansy. Rare on dry sand along Newport Bay.
- *Taraxacum officinale Weber. Common Dandelion. Common weed.
- *Tragopogon dubius Scop. Goat's Beard. Common weed in open areas.

CORNACEAE Dogwood Family

- Cornus canadensis L. Bunchberry. Common in all forest types throughout the park.
- C. rugosa Lam. Round-leaved Dogwood. Common in all forest types, but especially abundant in wet-mesic forests.
- C. stolonifera Michx. Red-osier Dogwood. Common along Lake Michigan and in wet-mesic forests.

CRASSULACEAE Orpine Family

- *Sedum acre L. Locally abundant on dolomitic ledges along Lake Michigan on the southern part of Lynd Point.

CRUCIFERAE Mustard Family

- Arabis glabra (L.) Bernh. Tower Mustard. Infrequent in open places.
A. hirsuta (L.) Scop. var. pyncocarpa (Hopkins) Rollins. Hairy Rock Cress. Common in white cedar forests on dolomitic ledges near Lake Michigan.
A. lyrata L. Sand Cress. Common on dry sand beaches.
Cakile edentula (Bigel) Hook var. lacustris Fern. Sea Rocket. Common on wet sand beaches, usually in areas with no other plant growth. Appeared in 1976 for the first time in several years.
*Capsella bursa-pastoris (L.) Medic. Shepherd's Purse. Uncommon weed on the Lake Michigan lakeshore.
Cardamine pensylvanica Muhl. Uncommon in wet-mesic forests and on the wet beach in the scientific area.
*Erucastrum gallicum (Willd.) O. E. Schultz. Dog Mustard. Uncommon in open places, in rocky or gravelly soil.
*Nasturtium officinale R. Br. Water Cress. Uncommon in wet swales in the extreme southern part of the park.
Rorippa islandica (oeder) Borbas. var. hispida (Desv.) Butt. & Abbe. Marsh Cress. Common on wet beaches.
*Thlaspi arvense L. Penny Cress. Uncommon weed on wet beaches.

CUPRESSACEAE Cypress Family

- Juniperus communis L. var. depressa Pursh. Common Juniper. Locally abundant on sand beaches and dry bracken fern-dominated fields.
Juniperus horizontalis Moench. Trailing Juniper. Forms carpets on dunes, rarely found inland.
Thuja occidentalis L. White Cedar. Lines the shoreline throughout most of the park, but may give way to white spruce in sandy areas. Inland, mostly confined to areas with dolomite outcroppings.

CYPERACEAE Sedge Family

- Carex aquatilis Wahl. var. altior (Rydb.) Fern. Water Sedge. Locally abundant on wet marly sand on the beach in the scientific area.
C. arctata Boott. One of the most common sedges in boreal and beech-maple forests.
C. aurea Nutt. Infrequent sedge of white cedar forests and swamps.
C. bebbii Olney. Frequent in wet-mesic forests and sometimes on wet beaches.
C. brunnescens (Pers.) Poir. Common in both wet-mesic forests and mesic forests of beech.
C. castanea Wahl. Infrequent in wet-mesic forests.
C. communis Bailey. Very common in all hardwood and boreal forests, sometimes forming sods that dominate the ground flora.
C. convoluta Mackenz. Star Sedge. Locally abundant in inland forests with white ash, basswood, and sugar maple.
C. deweyana Schwein. Common in mesic forests.
C. disperma Dew. Uncommon in wet-mesic white cedar forests.
C. eburnea Boott. Locally abundant on dolomite ledges, mostly in white cedar forests near Lake Michigan, scattered in hardwood forests inland.
C. garberi Fern. Rare on wet sand near Lake Michigan, increasing when water levels are lower.
C. granularis Willd. var. haleana (Olney) Porter. Rare in open wet-mesic forests.
C. hystericina Willd. Scattered on wet dolomite near Lake Michigan.
C. intumescens Rudge. One of the most common sedges of open wet-mesic forests.
C. lacustris Willd. Sawgrass. Occasional in openings of wet-mesic forests.
C. leptonevia Fern. Scattered throughout the park, in mesic or wet-mesic forests.
C. lupulina Willd. Hops Sedge. Common in wet depressions in white cedar-black ash forests.
C. ormostachya Wieg. Infrequent in beech forests.
C. peckii Howe. Locally abundant in boreal forests near the lake, occasional in hardwood forests.
C. pedunculata Willd. Uncommon in birch-aspens forests near Meadow Trail.
C. pensylvanica Lam. Uncommon in moist woods near Fern Trail.
C. plantaginea Lam. Occasional in mesic woods of inland areas.
C. rostrata Stokes. Abundant in a wet opening of white cedar forest behind Duck Bay.
C. sparganoides Willd. Rare in inland hardwood forests.
C. stipata Willd. Locally abundant in open wet-mesic forests behind Duck Bay and Europe Bay.
C. viridula Michx. The most abundant sedge of the lakeshore. Found on dolomite flats, dolomite ledges and sand. One of the first plants to populate beaches that are exposed during periods of low water.
C. vulpinoidea Michx. Common on limy wet sand on the beach in the scientific area, sometimes spreading to adjacent cedar swamps.
Cyperus engelmanni Steud. Rare on the beach in the scientific area. Appearing for the first time in 1977.
Eleocharis acicularis (L.) R.&S. Spike-Rush. Forming tiny sods on limy sand. Found on all wet beaches in the park.

- E. elliptica Kunth. Spike-Rush. Common on wet beaches.
E. pauciflora (Lightf.) Link. var. fernaldii Svenson. Spike-Rush. Locally abundant on wet beaches east of South Point and on Lynd Point. Appeared in 1977 for the first time in many years.
Scirpus americanus Pers. Three-square Bulrush. Scattered on wet beaches.
S. atrovirens Willd. Dark-green Bulrush. Occasional on wet beaches.
S. cyperinus (L.) Kunth. Wool Grass. Infrequent in wet meadows on South Point.
S. validus Vahl. Soft Roundstem Bulrush. The most common bulrush in the area, found on wet beaches. Invades newly exposed sand after rushes and sedges have become established.

ELEAGNACEAE Oleaster Family

- Shepherdia canadensis (L.) Nutt. Canada Buffalo Berry. Frequent on open dolomitic outcrops.

EQUISETACEAE Horsetail Family

- Equisetum arvense L. Field Horsetail. Common in moist woods; dwarf forms occur on rocks and dry sand near Lake Michigan.
E. xferrissii Clute. Ferriss' Horsetail. Occasional on dry sand near Lake Michigan
E. hyemale L. Scouring-Rush. Occasional on dry sand, sometimes mixed in with E. xferrissii and E. variegatum.
E. pratense Ehrh. Meadow Horsetail. Locally abundant in wet-mesic forests in the south-central part of the park, rare elsewhere.
E. scirpoides Michx. Dwarf Horsetail. Abundant on hammocks in wet-mesic forests of white cedar and yellow birch.
E. variegatum Schleich. Variegated Horsetail. Common on dry sand of upper beaches, as well as on wet rocks near Lake Michigan.

ERICACEAE Heath Family

- Arctostaphylos uva-ursi (L.) Spreng. Bearberry. Abundant on dry sand dunes and beaches.
Chimaphila umbellata (L.) Bart. var. cisatlantica Blake. Prince's Pine. Scattered in dry-mesic woods.
Gaultheria hispida (L.) Bigel. Creeping Snowberry. Rare in wet-mesic forests along Europe Bay.
G. procumbens L. Wintergreen. Locally abundant in dry-mesic forests.
Moneses uniflora (L.) Gray. Wood Nymph. Scattered in boreal forest.
Monotropa hypopithys L. Pinesap. Rare in mesic forests.
M. uniflora L. Indian Pipe. Common in all forest types throughout the park.
Pyrola asarifolia Michx. Pink Pyrola. Rare in wet-mesic woods along Fern Trail.
P. elliptica Nutt. Shinleaf. The most common Pyrola in the park; found in all forest types.
P. secunda L. One-sided Pyrola. Frequent in boreal forests.
P. virens Schweigger. Green-flowered Pyrola. Common in moist forests near Lake Michigan.
Vaccinium angustifolium Ait. Early Blueberry. Infrequent in dry-mesic woods and on bracken grasslands.

FABACEAE Bean Family

- Lathyrus japonicus Willd. var. glaber (Ser.) Fern. Beach Pea. Common on dry beaches.
Lathyrus ochroleucus Hook. Pale Vetchling. Dry-mesic forests; scattered.
L. palustris L. Marsh Vetchling. Locally abundant in open wet-mesic forests along Fern Trail.
*Medicago lupulina L. Black Medick. Common on abandoned fields.
*M. sativa L. Alfalfa. Persisting after cultivation on abandoned fields.
*Melilotus alba Desr. White Sweet Clover. Common weed of roadsides, parking lot edges.
*M. officinalis (L.) Lam. Yellow Sweet Clover. Weed of picnic area and parking lot edge.
*Trifolium pratense L. Red Clover. Common weed on abandoned fields, occasional on bracken grasslands.
*T. repens L. White Clover. Common weed in disturbed areas.
Vicia americana Muhl. Purple Vetch. Moist beach; occasional.
*V. villosa Roth. Hairy Vetch. Bracken grassland; common.

FAGACEAE Beech Family

- Fagus grandifolia Ehrh. Beech. Often dominant or codominant in mesic forests on sand ridges, as in the east central part of the scientific area, and along Europe Bay Trail. Also common in forests on dolomitic bedrock throughout the park except in wet-mesic or boreal forests. In a few areas, such as parts of the beech forest in the scientific area, root sprouts give rise to dense thickets of saplings.
Quercus borealis Michx. Northern Red Oak. Common and sometimes codominant in dry-mesic forests in the northern part of the park; Scattered elsewhere.

FUMARIACEAE Fumitory Family

- Adlumia fungosa (Ait.) Green. Alleghany-vine. Very local in open forests at the northern end of the park.
Corydalis aurea Willd. Golden Corydalis. Common in young forests on the southern part of Lynd Point.
Dicentra cucullaria (L.) Bernh. Dutchman's Breeches. Uncommon in mesic forests, found only far inland.

GENTIANACEAE Gentian Family

- Gentiana procera Holm. Narrow-leaved Fringed Gentian. Common on wet dolomite near Lake Michigan. Rare during high water years.
Halenia deflexa (Sm.) Griseb. Spurred Gentian. Locally abundant in all forests.

GERANIACEAE Geranium Family

- Geranium bicknellii (Britt.) Wild Geranium. Scattered in cedar forests near Lake Michigan.
Geranium robertianum L. Herb Robert. Locally abundant in moist woods near Lake Michigan, sometimes also on dolomitic cobblestones and ledges near Lake Michigan.

GRAMINEAE Grass Family

- Agropyron dasystachyum (Hook.) Scribn. var. psammophilum (Gillett & Senn) E. Voss. Common on upper beaches along Europe Bay and Newport Bay.
*A. repens (L.) Beauv. Quackgrass. A weed of abandoned farms, and occasionally on beaches.
A. trachycaulum (Link.) Steud. Wheat-grass.
var. trachycaulum. Occasional on dry beaches.
var. unilaterale (Cassidy) Malte. Common on bracken grasslands.
Agrostis perennans (Walt.) Tuckerm. Found in open woods, scattered throughout the park.
A. scabra Willd. Very common on dolomite and moist sand near Lake Michigan, sometimes spreading to adjacent wet-mesic forests.
*A. stolonifera L. var. major (Gaud.) Farw. (A. alba). Redtop. Locally abundant on wet sand near Lake Michigan.
Alopecurus aequalis Sobol. Foxtail. Locally abundant in limy ponds of wet-mesic forests, during low water years.
Ammophila breviligulata Fern. Beachgrass. Common on dry sand along Europe Bay and Newport Bay.
Bromus ciliatus L. Brome Grass. Infrequent in moist boreal forests and dolomite boulders near Lake Michigan.
*B. inermis Leyss. Smooth Brome. A weed common on abandoned farms.
Calamagrostis canadensis (Michx.) Nutt. Bluejoint. Abundant on wet sand beaches in the scientific area, and in openings of nearby wet-mesic forests.
C. inexpansa Gray. Common on upper beaches of Europe Bay and Newport Bay.
Calamovilfa longifolia (Hook.) Scribn. var. magna Scribn. & Merr. Sand-reed. Common on dry sand along Europe Bay.
Danthonia spicata (L.) Beauv. Oat Grass. Common on abandoned farms.
Deschampsia cespitosa (L.) Beauv. var. glauca (Hartm.) Lindm. Hairgrass. Locally abundant in cracks of dolomite boulders, in areas exposed to the lake, such as Lynd Point and Varney's Point.
D. flexuosa (L.) Trin. Hairgrass. Open dry-mesic forest; common.
Elymus canadensis L. Wild Rye. Very common on dry sand of upper beaches, but also occurs in lesser amounts along the entire shore.
E. villosus Muhl. Silky Wild Rye. Infrequently found in open hardwood forests.
Festuca obtusa Biehler. Nodding Fescue. One of the common grasses found in mature mesic forests.
F. occidentalis Hook. Western Fescue. This rare Wisconsin grass is found sparingly in open forests with shallow soil and on many dolomite outcrops, such as Lynd Point and along Ridge Trail.
*F. ovina L. Sheep Fescue. A weed found in disturbed places, such as near parking lots.
Glyceria borealis (Nash) Batchelder. Floatgrass. Common on wet marl on the beach of the scientific area.
G. canadensis (Michx.) Trin. Rattlesnake Grass. Common on wet dolomite or sand near Lake Michigan.
G. striata (Lam.) Hitch. Fowl Manna. Locally abundant in open wet-mesic forests.
Hystrix patula Moench. Bottlebrush Grass. Common in open forests of paper birch.
Leersia oryzoides (L.) Sw. Rice-cutgrass. Locally abundant on the wet beach of the scientific area.
Milium effusum L. Millet Grass. Occasional in open forests, especially mountain maple thickets.
Oryzopsis asperifolia Michx. Rice Grass. Probably the most common grass of beech-maple forests.
O. racemosa (J.E. Smith) Ricker. Found on moss covered dolomite boulders, not common.
Panicum capillare L. Witchgrass. A weed which pioneers new sand deposits near Lake Michigan.
P. implicatum Scribn. Not common, but invading rocky beaches after the lower water levels of Lake Michigan during the past year.
Phalaris arundinacea L. Reed Canarygrass. Abundant on moist sand beaches.
*Phleum pratense L. Timothy Grass. Common in abandoned fields.
Phragmites communis Trin. Reed Grass. Dominant on flat dolomite beaches near South Point.
*Poa compressa L. Canada Bluegrass. A weed along trails and on all types of beaches.
P. palustris L. Marsh Bluegrass. Locally abundant on wet beaches.

- *P. pratensis L. Kentucky Bluegrass. Abundant in bracken grasslands, on beaches and along trails.
Schizachne purpurascens (Torr.) Swallen. Common in mature beech-maple forests.
Sphenopholis intermedia Rydb. Slender Wedgegrass. Locally abundant on moist sand along Lake Michigan.

HALORAGACEAE Water-milfoil Family

- Myriophyllum spicatum L. var. exalbenscens (Fern.) Jeps. Water-milfoil. Often found washed up on Lake Michigan beaches.

HYPERICACEAE St. John's-wort Family

- Hypericum kalmianum L. Kalm's St. John's-Wort. Rare on dolomitic ledges on the end of Lynd Point.

- *H. perforatum L. Common St. John's-wort. Common on bracken grasslands and in dry forest openings.

IRIDACEAE Iris Family

- Iris lacustris Nutt. Dwarf Lake Iris. Very common in open white cedar forests near Lake Michigan along Europe Bay, on Lynd Point, on Newport Bay and south along the shore to Deer Point. Absent from the interior and western half of the park.

- Iris virginica L. var. shrevi (Small) Anders. Blue Flag. Common in wet depressions in wet-mesic forests, occasional on the wet beach in the scientific area.

- Sisyrinchium montanum Greene. Blue-eyed Grass. Scattered on rocky Lake Michigan shoreline.

JUNCACEAE Rush Family

- Juncus alpinus Vill. var. rariflorus (Fries) Hartm. Very common on wet sand on Lake Michigan. One of the first plants to invade beaches after high water.

- Juncus balticus Willd. var. littoralis Engelm. Lake Shore Rush. Common on wet beaches, sometimes found on dry upper beaches and dunes.

- J. dudleyi Wieg. Dudley's Rush. Common on wet marly sand of wet beaches.

- J. effusus L. Soft Rush. Locally abundant on wet beaches.

- J. nodosus L. Joint Rush. Often dominant on wet beaches. The first plant to invade newly deposited sand near the lake.

- J. tenuis Willd. Path Rush. Common on wet beaches. Also found along the larger hiking trails.

LABIATAE Mint Family

- *Leonurus cardiaca L. Motherwort. Scattered in white cedar forests along Rowley's Bay.

- Lycopus americanus Muhl. Water Horehound. Common on wet beaches.

- L. uniflorus Michx. Bugleweed. Abundant in open wet-mesic forests.

- Mentha arvensis L. Mint. Common on moist beaches and in open wet-mesic woods.

- Monarda fistulosa L. Wild Bergamot. Frequent on bracken grasslands.

- *Prunella vulgaris L. Self-heal. Common in moist woods along trails.

- Satureja glabella (Michx.) Briq. var. angustifolia (Torr.) Svenson. Low Calamint. Frequent on wet dolomite on Lynd Point; scattered along the Lake Michigan shoreline elsewhere.

- Satureja vulgaris (L.) Fritsch. Wild Basil. Common in openings in boreal forests.

- Scutellaria galericulata L. Marsh Skullcap. Locally abundant in wet-mesic forests.

- S. lateriflora L. Side-flowered Skullcap. Common in open wet-mesic woods.

- Stachys palustris L. Hedge Nettle. Uncommon on wet beaches.

- Teucrium canadense L. var. virginicum (L.) Eaton. Germander. Locally abundant on moist sand at the edge of the forest in the scientific area.

LEMNACEAE Duckweed Family

- Lemna minor L. Small Duckweed. Found in ephemeral ponds in wet-mesic forest.

LILIACEAE Lily Family

- Allium tricoccum Ait. Wild Leek. Abundant in inland hardwood forests.

- *Asparagus officinalis L. Garden Asparagus. Persisting near Meadow Trail after being cultivated by former landowners.

- Clintonia borealis (Ait.) Raf. Blue Bead-lily. Common in all forests throughout the park. Especially abundant in boreal forest and woods dominated by mountain maple.

- Erythronium americanum Ker. Yellow Trout-lily. Locally abundant in forests surrounding the park entrance.

- *Hemerocallis fulva L. Day Lily. Persisting near abandoned homesites.

- Lilium philadelphicum L. var. philadelphicum. Wood Lily. Rare on upper beaches, very rare on rocky shores.

- Maianthemum canadense Desf. Canada Mayflower. Very common in all forests in the park.

- Polygonatum pubescens (Willd.) Pursh. Small Solomon's Seal. Common in all mesic forests.

- Smilacina racemosa (L.) Desf. Solomon's Plume. Frequent in mesic forests.

- S. stellata (L.) Desf. Starry Solomon's Plume. Locally abundant on the edge of forests near upper beaches and on dry bracken grasslands.

- Smilax lasioneura Hook. Carrion-flower. Locally abundant in wet-mesic woods along Fern Trail.

- Streptopus amplexifolius (L.) D.C. var. denticulatus Fassett. Twisted-Stalk. Rare in boreal forests near Lake Michigan.

- S. roseus Michx. var. longipes (Fern.) Fassett. Twisted-Stalk. Common in mesic forests.

Trillium cernuum L. Nodding Trillium. Infrequent in wet-mesic forests. More abundant during years when the water table is low.
T. grandiflorum (Michx.) Salisb. Common Trillium. Occurs in all mesic forests in the park, but abundant only inland.
Uvularia grandiflora Sm. Bellwort. Found in mesic forests away from Lake Michigan.
Zigadenus elegans Pursh. var. glaucus (Nutt.) Preece. White Camass. Locally abundant in moist forests and beaches on the northern side of Lynd Point.

LOBELIACEAE Lobelia Family

Lobelia kalmii L. Kalm's Lobelia. Abundant on wet limy beaches.

LYCOPODIACEAE Clubmoss Family

Lycopodium annotinum L. Stiff Clubmoss. Common in all forests, sometimes forming clones that dominate the ground flora.
L. clavatum L. Running-pine. Locally abundant in forests of fir-spruce, especially on sandy soil.
L. lucidulum Michx. Shining Clubmoss. Scattered in rocky forests, not as common as other clubmosses.
L. obscurum L. Ground Pine. Very abundant on abandoned sand beach ridges.

OLEACEAE Olive Family

Fraxinus americana L. White Ash. Scattered in mesic forests, sometimes dominant in the central part of the park away from Lake Michigan.
F. nigra Marsh. Black Ash. Common in wet-mesic forests, sometimes codominant with white cedar.
F. pennsylvanica Marsh. var. subintegerrima (Vahl.) Fern. Green Ash. Uncommon in moist forests near Lake Michigan.
*Syringa vulgaris L. Lilac. Persisting after cultivation in several scattered localities in the park.

ONAGRACEAE Evening-primrose Family

Circaea alpina L. Small Enchanter's Nightshade. Common in mesic forests, usually on rotten logs or moss-covered dolomite.
C. quadrisulcata (Maxim.) Franch & Sav. Local in birch-dominant forests.
Epilobium angustifolium L. Fireweed. Locally abundant on bracken grasslands and abandoned fields.
E. coloratum Biehler. Willow-herb. Common in wet-mesic forests and on wet beaches.
Oenothera parviflora L. Evening-primrose. Common on moist sand near Lake Michigan.

OPHIOGLOSSACEAE Adder's-tongue Family

Botrychium virginianum (L.) Sw. Rattlesnake Fern. Common in all forests, especially in rocky areas.

ORCHIDACEAE Orchid Family

Corallorhiza maculata Raf. Spotted Coral-root. Scattered in mesic forests in the central areas of the park.
C. striata Lindl. Striped Coral-root. Frequent throughout the park. Most common in white cedar forests.
C. trifida Chat. var. verna (Nutt.) Fern. Barley Coral-root. Uncommon in moist forests near Lake Michigan.
Cypripedium acaule Ait. Moccasin Flower. Rare in dry-mesic forest.
Cypripedium calceolus L. var. pubescens (Willd.) Correll. Large Yellow Lady's Slipper. Locally abundant in hardwood forests.
Goodyera repens (L.) R.Br. var. ophioides Fern. Dwarf Rattlesnake Plantain. Rare in dry-mesic forests at the northern end of the park. Sometimes found on dolomite ledges.
Habenaria hyperborea (L.) R.Br. var. huronensis (Nutt.) Farw. Northern Green Orchid. Rare in wet-mesic forests.
Habenaria orbiculata (Pursh.) Torr. Large Round-leaved Orchid. Scattered throughout the park, mostly in mixed forests.
H. psycodes (L.) Spreng. Purple-fringed Orchid. Frequent in wet-mesic woods in the southern part of the park. May be quite rare some years when the water table is high.
H. viridis (L.) R.Br. var. bracteata (Muhl.) Gray. Bracted Orchid. One of the most common orchids in mesic hardwood forests.

OROBANCHACEAE Broom-rape Family

Conopholis americana (L.) Wallr. Squawroot. Local in dry-mesic, oak dominant forests in the northern part of the park.
Epifagus virginiana (L.) Bart. Beech-drops. Common in beech forests.
Orobanche uniflora L. Cancerroot. Rare on dry upper beaches.

OSMUNDACEAE Royal Fern Family

Osmunda claytoniana L. Interrupted Fern. Rare in moist beech-yellow birch forests.

OXALIDACEAE Wood-sorrel Family

*Oxalis stricta L. Common weed of disturbed places.

PINACEAE Pine Family

Abies balsamea (L.) Mill. Balsam Fir. Very common in forests near Lake Michigan. Also abundant in certain inland areas that were formerly bracken grasslands.

Larix laricina (DuRoi.) K.Koch. Tamarack. Not common in the park. Widely scattered along the lake and in wet-mesic forests.

*Picea abies (L.) Karst. Norway Spruce. Planted years ago on several acres in the park.

P. glauca (Moench.) Voss. White Spruce. Abundant in forests on Lake Michigan, and may even replace white cedar where the soil is sandy. Also scattered throughout the inland hardwood forests.

P. mariana (Mill.) B.S.P. Black Spruce. Rare in the park, widely scattered in wet-mesic and boreal forests.

Pinus resinosa (Ait.) Red Pine. Scattered along the shore of Lake Michigan; locally dominant on sandy areas at the north end of the park. Also planted on several acres.

P. strobus L. White Pine. Scattered throughout the park, locally dominant in boreal forests and in sandy areas at the north end of the park. Several acres of white pine were also planted with red pine and Norway spruce in a small plantation near the end of Pine Trail.

Tsuga canadensis (L.) Carr. Hemlock. Locally dominant in a mature northern mesic forest on a sand ridge running most of the length of Europe Bay Trail. Elsewhere, hemlock is scattered in hardwoods and boreal forests.

POLYGALACEAE Milkwort Family

Polygala paucifolia Willd. Gaywings. Common in forests with pine trees; sometimes also in wet-mesic forests.

POLYGONACEAE Smartweed Family

Polygonum cilinode Michx. Fringed Bindweed. Common in open woods throughout the park.

*P. hydropiper L. Water Pepper. Occasional weed on the Lake Michigan lakeshore.

P. lapathifolium L. Heartsease. The most common Polygonum on beaches, invading new sand deposits near the lake.

P. natans Eaton. Water Smartweed. Rare in wet swales behind Duck Bay.

*P. periscaria L. Lady's Thumb. Frequent weed on wet sand beaches.

*P. ramosissimum Michx. Bushy Knotweed. Infrequent weed on the Lake Michigan lakeshore.

*Rumex acetosella L. Sheep Sorrel. Frequent on bracken grasslands and abandoned fields.

*R. crispus L. Curly Dock. An uncommon weed of the Lake Michigan lakeshore.

POLYPODIACEAE Polypody Family

Adiantum pedatum L. Maidenhair Fern. Locally abundant in hardwood forests, mostly far inland.

Asplenium trichomanes L. Maidenhair Spleenwort. Rare; occurring sparingly in two places, both at the base of moss covered dolomite ledges in white cedar-mountain maple forests near Lake Michigan.

Athyrium filix-femina (L.) Roth var. michauxii Mett. Lady Fern. Frequent in mesic forests, throughout the park.

Camptosorus rhizophyllus (L.) Link. Walking Fern. Infrequent on dolomite ledges in open forests.

Cystopteris bulbifera (L.) Bernh. Bulblet Fern. Infrequent on dolomite ledges of inland hardwood stands. Also occurs in cedar swamps along Rowley's Bay.

C. fragilis (L.) Bernh. Fragile Fern. Very common on dolomitic abandoned shorelines, throughout the park.

Dryopteris austriaca (Jacq.) Woynar. Woodfern.

var. fructuosa (Gilbert) Morton. Scattered in hardwood forests, not common.

var. intermedia (Muhl.) Morton. Frequent in beech forests.

var. spinulosa (Muell.) Fiori. The most common woodfern in the area. Occurs in all forests, especially abundant in areas near a swamp.

Gymnocarpium dryopteris (L.) Newm. Oak Fern. Locally abundant in wet-mesic forests in the extreme southern part of the park. Sometimes spreading to adjacent boreal and beech forests.

Matteuccia struthiopteris (L.) Todaro. Ostrich Fern. Occasionally the dominant plant in openings of wet-mesic forests.

Onclea sensibilis L. Sensitive Fern. Very abundant in wet-mesic forests.

Polypodium virginianum L. Polypody. Occurs in dolomite ledges throughout the park. More common near the lake.

Pteridium aquilinum (L.) Kuhn. Bracken Fern. Dominant in some forest openings, and now invading fields that were formerly farmed.

Thelypteris palustris Schott. Marsh Fern. Common in wet-mesic forests.

T. phegopteris (L.) Slosson. Northern Beechfern. Rare, occurring very locally in hemlock-hardwood stands.

PORTULACACEAE Purslane Family

Claytonia carolinana Michx. Spring-beauty. Locally abundant in hardwood forests away from Lake Michigan.

PRIMULACEAE Primrose Family

Lysimachia quadriflora Sims. Prairie Loosestripe. Common on moist beaches.

L. thyrsoiflora L. Tufted Loosestripe. Common in wet-mesic forests.

Primula mistassinica Michx. Bird's-eye Primrose. Frequent on dolomitic ledges near Lake Michigan on Lynd Point and Riley's Point.

Trientalis borealis Raf. Starflower. Common in all forest types throughout the park.

RANUNCULACEAE Buttercup Family

- Actaea pachypoda Ell. White Baneberry. Common in mesic forests.
A. rubra (Ait.) Willd. Red Baneberry. Not as common as white baneberry. Forms with white berries may be occasionally found.
Anemone canadensis L. Canada Anemone. Locally abundant on moist beaches.
A. quinquefolia L. var. interior Fern. Wood Anemone. Common in mesic forests, usually inland.
A. riparia Fern. Thimbleweed. Common in dry bracken grasslands.
Aquilegia canadensis L. Columbine. Common on dolomitic ledges and rocky woods throughout the park.
Coptis trifolia (L.) Salisb. Goldthread. Locally abundant on hummocks in wet-mesic forests.
Hepatica acutiloba D.C. Sharp-lobed Hepatica. Common in mesic forests.
H. americana (D.C.) Ker. Round-lobed Hepatica. Scattered throughout the park; most common in boreal forests.
Ranunculus abortivus L. Small-flowered Crowfoot. The most common woodland buttercup in the park. Especially abundant on moss covered dolomitic ledges.
*R. acris L. Tall Buttercup. Occasional on bracken grasslands.
R. recurvatus Poir. Hooked Buttercup. Common in wet-mesic forests.
R. reptans L. Spearwort. Rare on wet dolomitic cobbles near Lake Michigan. Apparently increasing due to lower water levels of the past year.
R. scleratus L. Cursed Crowfoot. Common in wet-mesic forests and on wet beaches.
R. septentrionalis Poir. Swamp Buttercup. Found in swales of wet-mesic forests; locally abundant.
Thalictrum dasycarpum Fisch & Lall. Purple Meadow Rue. Rare on wet limy beaches.
T. dioicum L. Early Meadow Rue. Uncommon in mesic forests and behind lakeshore thickets.

RHAMNACEAE Buckthorn Family

- Rhamnus alnifolia L'Her. Alder Buckthorn. Locally abundant in wet-mesic woods along Fern Trail.

ROSACEAE Rose Family

- Agrimonia gryposepala Wallr. Agrimony. Common along hiking trails.
Amelanchier laevis Wieg. Serviceberry. Common in young forests throughout the park.
A. sanguinea (Pursh.) D.C. Round-leaved Serviceberry. Common on the edge of forests along Lake Michigan and on dry beaches.
Fragaria vesca L. var. americana Porter. Woodland Strawberry. Common throughout the park.
F. virginiana Duchesne. Strawberry. Uncommon in wet-mesic forests.
Geum alepPICUM Jacq. var. strictum (Ait.) Fern. Yellow Avens. Common in wet forests and wet beaches in the southern part of the park.
G. canadense Jacq. White Avens. Common in openings of forests and on bracken grasslands.
G. rivale L. Water Avens. Scattered in wet-mesic forests.
Physocarpus opulifolius (L.) Maxim. Ninebark. Locally abundant on rocky Lake Michigan shores.
Potentilla anserina L. Silverweed. Common on sand, wet or dry beaches.
*P. norvegica L. var. hirsuta (Michx.) T. & G. Rough Cinquefoil. Common on wet beaches.
P. palustris (L.) Scop. Marsh Cinquefoil. Abundant in a swale behind Duck Bay.
*P. recta L. A common weed on abandoned fields.
Prunus americana Marsh. Wild Plum. Locally abundant on sand dunes along Newport Bay.
P. pennsylvanica L.f. Pin Cherry. Frequent in young forests.
P. pumila L. Sand Cherry. Occasional on dry sand.
P. serotina Ehrh. Black Cherry. Common in mesic forests.
P. virginiana L. Choke Cherry. Frequent in young forests.
*Pyrus malus L. Apple. Persisting on abandoned farm sites.
Rosa acicularis Lindl. ssp. sayi (Schw.) Lewis. Locally abundant in wet-mesic woods along Fern Trail.
R. blanda Ait. Meadow Rose. Common on dry beaches and in open moist forests.
Rubus allegheniensis Porter. Common Blackberry. Very abundant in open mesic forests.
R. exsularis Bailey. Uncommon on dry bracken grasslands.
R. idaeus L. Red Raspberry. Common in all forest types throughout the park.
R. parviflorus Nutt. Thimbleberry. Common in all forest types especially abundant in boreal forests.
R. pergratus Blanch. Locally abundant in open forests in the southern part of the park.
R. pubescens Raf. Dwarf Red Blackberry. Abundant in wet-mesic forests.
Sorbus decora (Sarg.) Hyland. Mountain Ash. Scattered in all forests, but more common near Lake Michigan.

RUBIACEAE Madder Family

- Galium aparine L. Cleavers. Common in moist forests and beaches. Plants on the beach die by the end of June.
Galium lanceolatum Torr. Wild Licorice. Common in hardwoods far inland from Lake Michigan.
Galium tinctorium L. Abundant in openings of wet-mesic forests.
G. triflorum Michx. Sweet-scented Bedstraw. Very common in all forest types throughout the park.
Mitchella repens L. Partridge Berry. Common in forests with sandy soil.

SALICACEAE Willow Family

Populus balsamifera L. Balsam Poplar. Common as saplings on dry sand beaches and dunes, scattered in boreal forests.

P. deltoides Marsh. Cottonwood. Not common; found in moist open areas near Lake Michigan and in swamps.

P. grandidentata Michx. Large-toothed Aspen. Common in a variety of young forest types.

P. tremuloides Michx. Trembling Aspen. Common on edges of bracken grasslands and in young forests.

Salix discolor Muhl. Pussy-willow. Common on all types of Lake Michigan shorelines, scattered in swamps.

S. interior Rowlee. Sandbar Willow. Locally abundant on moist sandy lakeshores.

S. lucida Muhl. Shining Willow. Infrequent shrub scattered widely on the Lake Michigan lakeshore.

S. nigra Marsh. Black Willow. Several trees, widely scattered along the Lake Michigan lakeshore.

S. petiolaris J. E. Smith. Uncommon on Lake Michigan lakeshore.

*S. purpurea L. Basket Willow. Occurs near Lake Michigan on the northern side of Deer Point. Evidently was introduced by people from old Newport Village, and now appears native.

S. serrissima Fern. Autumn Willow. Rare shrub of the Lake Michigan lakeshore.

SANTALACEAE Sandal-wood Family

Comandra umbellata (L.) Nutt. False Toadflax. Common on upper beaches toward the edge of the forest.

SAXIFRAGACEAE Saxifrage Family

Mitella nuda L. Naked Miterwort. Locally abundant in wet-mesic forests.

Ribes americanum Mill. American Black Currant. Common in all forest types; especially abundant in open wet-mesic forests and moist forests near Lake Michigan.

R. cynosbati L. Prickly Gooseberry. The most common Ribes in mesic forests.

R. hirtellum Michx. Smooth Gooseberry. Uncommon in white cedar forests near Lake Michigan.

R. lacustre (Pers.) Poir. Swamp Currant. Found throughout the park; not as common in swamps as on dolomitic ledges.

SCROPHULARIACEAE Figwort Family

Agalinis purpurea (L.) Pennell. ssp. borealis (Pennell) Crosswhite. (Gerardia purpurea var. parviflora). Purple False Foxglove. Common on wet limy beaches.

Castilleja coccinea (L.) Spreng. Indian Paintbrush. Uncommon on wet limy beaches.

*Linaria vulgaris Hill. Butter-and-eggs. Occasional on dry bracken grasslands.

Melampyrum lineare Desr. Cow-wheat. Common in dry-mesic and boreal forests.

Pedicularis canadensis L. Wood Betony. Abundant in dry-mesic forests in the northern part of the park.

Scrophularia lanceolata Pursh. Figwort. Infrequent on bracken grasslands and in open woods.

*Verbascum thapsus L. Mullien. Scattered on the Lake Michigan shore and on bracken grasslands.

*Veronica anagallis-aquatica L. Water Speedwell. Locally abundant on wet limy beaches and appearing native.

V. scutellata L. Marsh Speedwell. Frequent in open wet-mesic forests.

*V. serpyllifolia L. Thyme-leaved Speedwell. Occasional weed on hiking trails in mesic forests.

SELAGINELLACEAE Selaginella Family

Selaginella apoda (L.) Spring. Rare to common on wet limy rocks and sand near Lake Michigan. Frequency fluctuates due to water level changes of Lake Michigan.

SOLANACEAE Nightshade Family

Physalis heterophylla Nees. Clammy Ground Cherry. Occasional in bracken grasslands.

*Solanum dulcamara L. Nightshade. Locally abundant in moist forests along Lake Michigan in the scientific area.

Solanum nigrum L. var. virginicum Black Nightshade. Common in wet-mesic forests along Fern Trail.

TAXACEAE Yew Family

Taxus canadensis Marsh. Ground Hemlock. Common throughout the park, but kept to small size by browsing deer.

TILIACEAE Linden Family

Tilia americana L. Basswood. Frequent in forests surrounding the park entrance. Apparently does not grow near Lake Michigan.

ULMACEAE Elm Family

Ulmus americana L. American Elm. Uncommon in wet-mesic forests.

UMBELLIFERAE Parsley Family

Cicuta bulbifera L. Bulblet Water-hemlock. Uncommon in wet, open swales in the scientific area.

*Daucus carota L. Queen Anne's Lace. Common on bracken grasslands, abandoned fields, and in dry forest openings.

Heracleum lanatum Michx. Cow Parsnip. Occasional behind lakeshore thickets.

Osmorhiza chilensis H.&A. Chilean Sweet Cicely. Locally abundant in open woods, as in the northern part of the scientific area and the southern half of Lynd Point.

O. claytonii (Michx.) C.B. Clarke. Hairy Sweet Cicely. Very common, throughout the park.

O. longistylis (Torr.) D.C. Smooth Sweet Cicely. Locally abundant in open woods in the extreme southern part of the park.

Sium suave Walt. Water Parsnip. Abundant in open, wet swales in the southeastern part of the park.

URTICACEAE Nettle Family

Urtica dioica L. var. procera (Muhl.) Wedd. Nettle. Locally abundant in open woods on the southern part of Lynd Point, and on the lakeshore of Deer Point to the scientific area.

VERBENACEAE Vervain Family

Verbena hastata L. Common on wet beaches. One of the first plants to invade rocky beaches exposed by low water.

VIOLACEAE Violet Family

Viola adunca Sm. Sand Violet. Frequent on dolomitic ledges near Lake Michigan at the end of Lynd Point.

V. canadensis L. Canada Violet. Locally abundant in hardwood forests along Meadow Trail.

V. cucullata Ait. Long-stemmed Marsh Violet. Common on dolomite near Lake Michigan and occasional in wet-mesic forests.

V. pubescens Ait.

var. eriocarpa (Schw.) Russell. Smooth Yellow Violet. The most common violet in the park, found in mesic forests.

var. pubescens. Downy Yellow Violet. Not as common as var. eriocarpa, but found with it.

V. renifolia Gray. var. brainerdii (Greene) Fern. Kidney-leaved Violet. Common in wet-mesic forests and on moss covered dolomitic boulders.

V. rostrata Pursh. Long-spurred Violet. Very common in all forest types.

V. selkirkii Pursh. Rare in hardwood forests, widely scattered.

VITACEAE Grape Family

*Vitis labrusca L. Fox-grape. Locally abundant at the site of Newport village. Evidently introduced in the early 1900's and persisting.

Vitis riparia Michx. River-bank Grape. Common in northern wet-mesic forest and on sand dunes.

STATISTICAL SUMMARY OF THE PLANTS LISTED IN THE CATALOGUE

	Families		Genera		Species	
	nat.	intr.	nat.	intr.	nat.	intr.
Pteridophyta	6	0	17	0	26	0
Spermatophyta	61	3	188	32	341	62
Gymnospermae	3	0	8	0	11	1
Angiospermae	58	3	175	32	330	61
Monocotyledonae	8	0	47	3	106	9
Dicotyledonae	50	3	128	29	224	52
Totals: Families	native 67					
	intr. 3					
	total 70					
Genera	native 200					
	intr. 32					
	total 232					
Species	native 367					
	intr. 62					
	total 429					
Largest families:	Compositae	42 spp.	9.7% of total spp.			
	Gramineae	39 spp.	9.1% of total spp.			
	Cyperaceae	36 spp.	8.4% of total spp.			
	Rosaceae	28 spp.	6.5% of total spp.			
Largest Genus:	Carex	28 spp.	6.5% of total spp.			

Number of Modal Species for Various Plant Communities Present (after Curtis, 1959). Of the 429 species listed in this catalogue, only 360 are listed by Curtis, and percentages given are based on 360 species. Most of those not listed by Curtis would be plants of beaches and dunes and northern mesic forest. Only those communities which are most important are shown here.

Boreal Forest	(BF)	48 spp.	13.3%	Northern Dry-Mesic Forest	(NDM)	14 spp.	3.9%
Southern Dry-Mesic Forest	(SDM)	25 spp.	6.9%	Northern Sedge Meadow	(NS)	14 spp.	3.9%
Northern Wet-Mesic forest	(NWM)	21 spp.	5.8%	Alder Thicket	(AT)	13 spp.	3.6%
Bracken Grassland	(BG)	19 spp.	5.3%	Northern Mesic Forest	(NM)	12 spp.	3.3%
Dunes	(DUN)	17 spp.	4.7%	Northern Dry Forest	(ND)	12 spp.	3.3%
Fen	(FN)	16 spp.	4.4%	Southern Dry Forest	(SD)	12 spp.	3.3%
Beach	(BEA)	15 spp.	4.2%	Northern Wet Forest	(NW)	9 spp.	2.5%
Southern Mesic Forest	(SM)	15 spp.	4.2%	Emergent Aquatics	(AQE)	9 spp.	2.5%

NORTHERN MESIC FOREST



Interior of a mature northern mesic forest on a stabilized sand ridge near the southern end of Fern Trail. Large leaning tree is sugar maple; also present are beech and hemlock.



Interior of a young northern mesic forest dominated by paper birch and sugar maple. This forest, located on Lynd Point, is typical of much of Newport State Park.

NORTHERN WET-MESIC FOREST



Interior of northern wet-mesic forest dominated by swamp hardwoods. Large trees are black ash, while the branch in the foreground is red maple. Note the rather open canopy and abundance of ostrich ferns on the floor of this forest near the northern end of Fern Trail.



Interior of northern wet-mesic forest dominated by white cedar. Near Duck Bay.

NORTHERN DRY-MESIC FOREST



Exterior view of northern dry-mesic forest near Newport Bay. Large conifers are white pine and the smaller deciduous trees are red maple and beech.

BOREAL FOREST



Interior of boreal forest on Lynd Point, dominated by balsam fir, white spruce, white cedar and paper birch. The dense undergrowth is composed of thimbleberry and mountain maple.

BRACKEN GRASSLAND

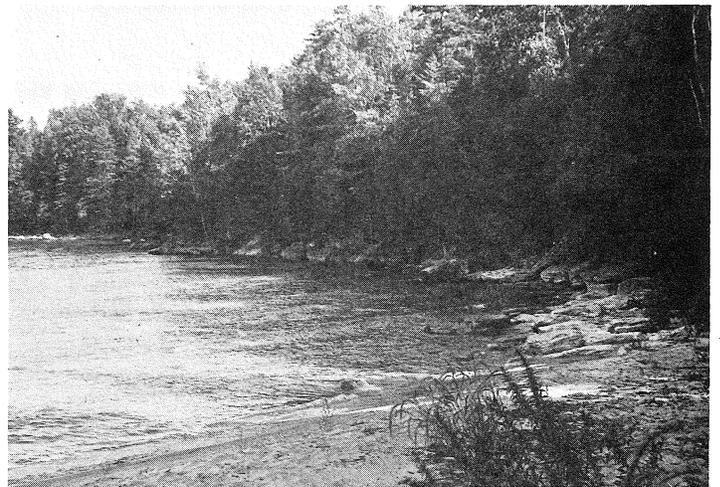


Bracken-grassland dominated by bracken fern and wheatgrass. Trembling aspen, white pine and white spruce are invading from the margin of this area. Located between Fern and Europe Bay Trails.

DOLOMITE LEDGE BEACH



Dolomite ledges on Lynd Point. Although the vegetation on these ledges is quite sparse, the large variety of microhabitats present permits the growth of many hardy plant species.



Rugged dolomite shoreline on Riley's Point. Here the dolomite forms low bluffs at the water's edge, and where protected by trees, exhibits a shaded cliff community. The thin soil on this point also supports a boreal forest.

UPPER BEACH



Dry upper beach on Newport Bay. The foreground grasses are dune wheatgrass and wild rye; tree seedlings are balsam poplar. In the background are carpets of horizontal juniper and bearberry, and boreal forest.

SHADED CLIFF



Located about 20 feet above the present level of Lake Michigan, the abandoned shoreline of Glacial Lake Nipissing appears as terrace-like dolomite ledges in the park's woodlands. These ledges sometimes support a shaded cliff community.

SPECIES GROUPINGS BY MAJOR PLANT COMMUNITIES OF NEWPORT STATE PARK

NORTHERN MESIC FOREST and SPRUCE-FIR-CEDAR*

Trees

Abies balsamea
Acer saccharum
A. spicatum
Amelanchier laevis
Betula papyrifera
Fagus grandifolia
Fraxinus americana
Ostrya virginiana

Picea glauca
Pinus strobus
Populus grandidentata
P. tremuloides
Prunus serotina
Tilia americana
Tsuga canadensis

Shrubs

Corylus cornuta
Diervilla lonicera
Lonicera canadensis
Ribes cynosbati
Rubus allegheniensis

R. idaeus
R. parviflorus
Sambucus pubens
Taxus canadensis
Virburnum acerifolium

Herbaceous Plants

Acea pachypoda
Adiantum pedatum
Adlumia fungosa
Agrimonia gryposepela
Allium tricoccum
Aralia nudicaulis
A. racemosa
Aster macrophyllus
Botrychium virginianum
Carex arctata
C. communis
C. convoluta
C. deweyana
C. peckii
C. plantaginea
Ciraea alpina
C. quadrisulcata
Claytonia caroliniana
Clintonia borealis
Corallorhiza striata
Cornus canadensis
Dicentra cucullaria
Dryopteris austriaca
Epifagus virginiana
Erythronium americanum
Festuca obtusa

Fragaria vesca
Galium lanceolatum
Galium triflorum
Hepatica acutiloba
Habenaria viridis
Hystrix patula
Lycopodium annotinum
L. lucidulum
L. obscurum
Maianthemum canadense
Miliun effusum
Monotropa uniflora
Oryzopsis asperifolia
Osmorhiza chilensis
O. claytonii
Podophyllum peltatum
Polygonatum pubescens
Polygonum cilinode
Pteridium aquilinum
Schizachne purpurascens
Smilicina racemosa
Solidago flexicaulis
Streptopus roseus
Ranunculus abortivus
Trientalis borealis
Trillium grandiflorum
Uvularia grandiflora
Viola candensis
V. pubescens
V. rostrata

* Pockets of spruce-fir and cedar outlined on the vegetation map probably originated from bracken grasslands or other clearings, which were invaded directly by spruce and fir, resulting in a dense forest. These forests are not true boreal forests and have a large amount of hardwoods present, so they are included with the most common plant community in the park, the northern mesic forest.

NORTHERN DRY-MESIC FOREST

Trees

Abies balsamea
Acer rubrum
A. saccharum
A. spicatum
Amelanchier laevis
Betula papyrifera
Fagus grandifolia
Fraxinus americana
Picea glauca

Pinus resinosa
P. strobus
Populus grandidentata
P. tremuloides
Prunus pensylvanica
P. serotina
P. virginiana
Quercus borealis
Tsuga canadensis

NORTHERN DRY-MESIC FOREST (continued)

Shrubs

Amelanchier sanguinea
Cornus rugosa
Corylus cornuta
Diervilla lonicera
Juniperus communis
Lonicera canadensis
Ribes cynosbati

Rubus allegheniensis
R. idaeus
R. parviflorus
Rhus radicans
Shepherdia canadensis
Vaccinium angustifolium

Herbaceous Plants

Actea pachypoda
Apocynum androsaemifolium
Aquilegia canadensis
Aralia nudicaulis
Aster ciliolatus
A. macrophyllus
Botrychium virginianum
Carex communis
C. peckii
C. pennsylvanica
Chimiphila umbellata
Clinopodium vulgare
Clintonia borealis
Conopholis americana
Cornus canadensis
Corallorhiza maculata
Cypripedium acaule
Deschampsia flexuosa
Dryopteris austriaca
Erigeron annuus
Festuca obtusa
Fragaria vesca
Galium triflorum
Gaultheria procumbens
Geum canadense
Hepatica acutiloba
Hystrix patula
Iris lacustris

Lathyrus ochroleucus
Linnaea borealis
Lycopodium annotinum
L. obscurum
Maianthemum canadense
Melampyrum lineare
Miliun effusum
Mitchella repens
Oryzopsis asperifolia
O. racemosa
Osmorhiza claytonii
Pedicularis canadensis
Poa compressa
Polygala paucifolia
Polygonatum pubescens
Pyrola elliptica
P. virens
Pteridium aquilinum
Schizachne purpurascens
Smilacina racemosa
S. stellata
Solidago flexicaulis
S. hispida
Trientalis borealis
Trillium grandiflorum
Viola pubescens
V. rostrata
Vitis riparia

BOREAL FOREST

Trees

Abies balsamea
Acer spicatum
Amelanchier laevis
Betula papyrifera
Fagus grandifolia
Fraxinus nigra
F. pennsylvanica
Ostrya virginiana
Picea glauca
Pinus resinosa

Pinus strobus
Populus balsamifera
P. grandidentata
P. tremuloides
Prunus pennsylvanica
P. virginiana
Sorbus decora
Thuja occidentalis
Tsuga canadensis

Shrubs

Diervilla lonicera
Cornus rugosa
C. stolonifera
Juniperus communis
Lonicera canadensis
L. dioica
L. hirsuta
Ribes americanum

R. hirtellum
R. lacustre
Rubus idaeus
R. parviflorus
R. pubescens
Shepherdia canadensis
Symphoricarpos albus
Taxus canadensis

BOREAL FOREST (continued)

Herbaceous Plants

Actaea rubra
Anemone canadensis
Apocynum androsaemifolium
Aquilegia canadensis
Arabis hirsuta
Aralia nudicaulis
Asplenium trichomanes
Aster ciliolatus
A. macrophyllus
Botrychium virginianum
Carex arctata
C. aurea
C. brunnescens
C. communis
C. eburnea
C. intumescens
C. leptoneura
C. peckii
Chimaphila umbellata
Circaea alpina
Clintonia borealis
Coptis trifolia
Corallorhiza striata
C. trifida
Cornus canadensis
Cystopteris fragilis
Dryopteris austriaca
Equisetum arvense
E. scirpoides
Fragaria vesca

Galium triflorum
Gaultheria procumbens
Geranium bicknellii
Halenia deflexa
Hepatica americana
Iris lacustris
Linnaea borealis
Lycopodium annotinum
L. clavatum
L. obscurum
Maianthemum canadense
Moneses uniflora
Monotropa uniflora
Oryzopsis asperifolia
Poa compressa
Osmorhiza chilensis
O. claytonii
Polygala paucifolia
Polygonatum pubescens
Polypodium **virginianum**
Pyrola secunda
P. virens
Pteridium aquilinum
Ranunculus abortivus
Satureja vulgare
Streptopus roseus
Trientalis borealis
Trillium cernuum
T. grandiflorum
Viola pubescens
V. renifolia
Zigadenus elegans

NORTHERN WET-MESIC FOREST

Trees

Abies balsamea
Acer rubrum
A. spicatum
Betula alleghaniensis
Fraxinus nigra

Picea glauca
Pinus strobus
Populus tremuloides
Thuja occidentalis
Tsuga canadensis

Shrubs

Alnus rugosa
Cornus rugosa
C. stolonifera
Ilex verticillata
Rhamnus alnifolius
Rhus radicans
Ribes americanum

Ribes lacustre
Rosa acicularis
Rubus idaeus
R. parviflorus
R. pubescens
Salix discolor
Viburnum trilobum

Herbaceous Plants

Alopecurus aequalis
Arisaema atrorubens
Aster lateriflorus
A. simplex
Athryium filix-femina
Bidens frondosa
Calamagrostis canadensis
Cardamine pensylvanica
Carex arctata
C. aurea
C. bebbii
C. brunnescens
C. castanea
C. disperma
C. intumescens

Carex lupulina
C. rostrata
C. stipata
Cicuta bulbifera
Circaea alpina
Coptis trifolia
Clintonia borealis
Corallorhiza striata
C. trifida
Cornus canadensis
Cystopteris bulbifera
Dryopteris austriaca
Equisetum arvense
E. pratense
E. scirpoides

NORTHERN WET-MESIC FOREST (continued)

Herbaceous Plants (continued)

Eupatorium maculatum
Galium tinctorium
Geum aleppicum
G. rivale
Glyceria borealis
G. canadensis
G. striata
Gymnocarpum dryopteris
Habenaria hyperborea
H. psycodes
Heracleum lanatum
Impatiens biflora
Iris virginica
Lathyrus palustris
Lemna minor
Lycopus uniflorus
Lysimachia thyrsoflora
Matteuccia struthiopteris
Maianthemum canadense
Mentha arvensis
Mitella nuda

Moneses uniflora
Onoclea sensibilis
Polygala paucifolia
Potentilla palustris
Pyrola elliptica
Ranunculus scleratus
R. septentrionalis
Rubus pubescens
Scirpus cyperinus
Scutellaria galericulata
S. lateriflora
Sium suave
Smilax lasioneura
Solanum nigrum
Symplocarpus foetidus
Thelypteris palustris
Trientalis borealis
Trillium cernuum
Veronica scutellata
Viola cucullata
V. renifolia
Vitis riparia

BRACKEN GRASSLAND

Shrubs

Juniperus communis
J. horizontalis

Shepherdia canadensis
Vaccinium angustifolium

Herbaceous Plants

Achillea millefolium
Agropyron repens
A. trachycaulum
Anaphalis margaritacea
Anemone riparia
Arabis glabra
Asclepias syriaca
Asparagus officinalis
Aster ciliolatus
Aralia hispida
Bromus inermis
Campanula rotundifolia
Centaurea maculosa
Chrysanthemum leucanthemum
Danthonia spicata
Daucus carota
Elymus canadensis
Epilobium angustifolium
Equisetum arvense
Erigeron annuus
E. philadelphicus
Fragaria vesca
Hieracium aurantiacum
H. florentinum
H. scabrum
Hypericum perforatum
Hystrix patula
Linaria vulgaris
Medicago sativa
Melilotus alba
M. officinalis
Monarda fistulosa

Phleum pratense
Physalis heterophylla
Poa compressa
P. pratensis
Potentilla recta
Pteridium aquilinum
Rudbeckia hirta
Rumex acetosella
Saponaria officinalis
Satureja vulgare
Scrophularia lanceolata
Silene cucubalus
Smilacina stellata
Solidago canadensis
S. graminifolia
S. juncea
S. nemoralis
Taraxacum officinalis
Tragopogon dubius
Trifolium pratense
T. repens
Verbascum thapsus
Vicia villosa

SAND DUNES AND UPPER BEACHES

Shrubs

Amelanchier sanguinea
Juniperus communis
J. horizontalis
Prunus americana

Rosa blanda
Salix interior
Shepherdia canadensis

Herbaceous Plants

Achillea millefolium
Agropyron dasystachyum
A. repens
A. trachycaulum
Ammophila **breviligulata**
Apocynum androsaemifolium
Arabis lyrata
Arctostaphylos uva-ursi
Artemisia caudata
Asclepias syriaca
Calamagrostis inexpansa
Calamovilfa longifolia
Comandra umbellata
Coreopsis lanceolata
Elymus canadensis
Equisetum arvense
E. x ferrissii
E. hyemale
E. variegatum
Iris lacustris
Juncus balticus

Juncus tenuis
Lathyrus japonicus
Lilium philadelphicum
Melampyrum lineare
Oenothera parviflora
Orobanche uniflora
Poa compressa
P. pratensis
Potentilla anserina
Prunus pumila
Pteridium aquilinum
Rhus radicans
Smilacina stellata
Solidago nemoralis
S. spathulata
S. speciosa
Tanacetum huronense
Vitis riparia

MIDDLE BEACHES

Shrubs

Cornus stolonifera
Juniperus communis
Salix discolor
S. interior

Salix lucida
S. nigra
S. petiolaris

Herbaceous Plants

Agrostis scabra
Anemone canadensis
Aster simplex
Bidens cernua
Bromus ciliatus
Cakile edentula
Calamovilfa longifolia
Castilleja coccinea
Cirsium arvense
C. palustre
C. vulgare
Elymus canadensis
Epilobium coloratum
Equisetum arvense
E. x ferrissii
E. hyemale
E. variegatum
Eupatorium maculatum
E. perfoliatum
Gentiana procera
Geranium robertianum
Geum aleppicum
Hieracium scabriusculum
Impatiens biflora
Juncus balticus
J. dudleyi
J. effusus
J. tenuis

Lathyrus japonicus
Lycopus americana
Lysimachia quadriflora
Mentha arvensis
Oenothera parviflora
Phalaris arundinacea
Poa compressa
Poa palustris
Polygonum cilinode
P. hydropiper
P. lapathifolium
P. periscaria
P. ramossissimum
Potentilla anserina
P. norvegica
Rudbeckia hirta
Sisyrinchium montanum
Solanum dulcamara
Solidago canadensis
S. graminifolia
S. speciosa
Sonchus uliginosus
Sphenopholis intermedia
Stachys palustris
Thalictrum dasycarpum
Verbena hastata
Vicia americana
Zigadenus elegans

WET BEACHES

Herbaceous Plants

Agalinis purpurea
Asclepias incarnata
Aster simplex
A. puniceus
Bidens cernua
Cakile edentula
Calamagrostis
Canadensis
Campanula **aparinoidea**
Cardamine pensylvanica
Carex aquatilis
C. bebbii
C. garberi
C. hystericina
C. viridula
C. vulpinoidea
Cyperus engelmanni
Eleocharis acicularis
E. elliptica
E. pauciflora
Epilobium coloratum
Eupatorium maculatum
E. perfoliatum
Gentiana procera
Geum aleppicum
Glyceria borealis
G. canadensis
G. striata
Impatiens biflora
Iris virginica
Juncus alpinus
J. balticus

Juncus dudleyi
J. effusus
J. nodosus
J. tenuis
Leersia oryzoides
Lobelia kalmii
Lycopus americanus
Lysimachia quadriflora
Muhlenbergia mexicana
Myriophyllum exalbescens
Pragmites communis
Poa palustris
Polygonum hydropiper
P. lapathifolium
P. periscaria
P. ramossissimum
Potentilla norvegica
Ranunculus reptans
R. scleratus
Rorippa islandica
Sagittaria latifolia
Satureja glabella
Scirpus americanus
S. atrovirens
S. validus
Selaginella apoda
Solidago graminifolia
Sphenoplis intermedia
Verbena hastata
Veronica anagallis-aquatica

DOLOMITE LEDGE BEACH

Shrubs

Amelanchier sanguinea
Cornus stolonifera
Hypericum kalmianum
Juniperus communis
Physocarpus opulifolius

Ribes americanum
R. lacustre
Rubus idaeus
Shepherdia canadensis
Symphoricarpos albus

Herbaceous Plants

Achillea millefolium
Agrostis scabra
Aquilegia canadensis
Arabis hirsuta
A. lyrata
Aster simplex
Bromus ciliatus
Campanula rotundifolia
Carex hystericina
C. viridula
Chrysanthemum **leucanthemum**
Comandra umbellata
Daucus carota
Deschampsia cespitosa
Elymus canadensis
Fragaria vesca
Gentiana procera
Geranium robertianum

Impatiens biflora
Juncus dudleyi
J. tenuis
Linaria vulgaris
Lobelia kalmii
Lysimachia quadriflora
Poa compressa
Potentilla anserina
Primula mistassinica
Satureja glabella
S. vulgare
Sedum acre
Silene cucubalus
Sisyrinchium montanum
Solidago graminifolia
Viola adunca
V. cucullata
Zigadenus elegans

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COMMON NAME INDEX

Arrangement of entries in the catalogue is alphabetically by family, and within families alphabetically by scientific name. In the Common Name Index, common names are cross listed with their scientific and family names. The number given refers to the page number on which the species is found.

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Hazelnut; *Corylus* (Betulaceae) 11
Hawkweed; *Hieracium* (Compositae) 12
Hearstease; *Polygonum lapathifolium* (Polygonaceae) 18
Hedge Nettle; *Stachys* (Labiatae) 16
Hemlock; *Tsuga* (Pinaceae) 18
Hemlock, Ground; *Taxus* (Taxaceae) 20
Hemlock, Water; *Cicuta* (Umbelliferae) 21
Hepatica; (Ranunculaceae) 19
Herb Robert; *Geranium robertianum* (Geraniaceae) 15
Highbush Cranberry; *Viburnum trilobum* (Caprifoliaceae) 11
Honeysuckle; *Lonicera* (Caprifoliaceae) 11
Horehound, Water; *Lycopus* (Labiatae) 16
Horsetail; *Equisetum* (Equisetaceae) 14
Indian Paintbrush; *Castilleja coccinea* (Scrophulariaceae) 20
Indian Pipe; *Monotropa uniflora* (Ericaceae) 14
Iris; (Iridaceae) 16
Ironwood; *Ostrya* (Betulaceae) 11
Jack-in-the-pulpit; *Arisaema* (Araceae) 11
Jewelweed; *Impatiens* (Balsaminaceae) 11
Joe-pye Weed; *Eupatorium maculatum* (Compositae) 12
Juniper; *Juniperus* (Cupressaceae) 13
Knapweed; *Centaurea* (Compositae) 12
Knotweed; *Polygonum ramosissimum* (Polygonaceae) 18
Lady's Thumb; *Polygonum periscaria* (Polygonaceae) 18
Lady Slipper Orchid; *Cypripedium* (Orchidaceae) 17
Leek; *Allium* (Liliaceae) 16
Lettuce, Wild; *Lactuca* (Compositae) 12
Licorice, Wild; *Galium lanceolatum* (Rubiaceae) 19
Lilac; *Syringa* (Oleaceae) 17
Lily, Blue Bead; *Clintonia* (Liliaceae) 16
Lily, Day; *Hemerocallis* (Liliaceae) 16
Lily, Trout; *Erythronium* (Liliaceae) 16
Lily, Wood; *Lilium* (Liliaceae) 16
Loosestrife; *Lysimachia* (Primulaceae) 18
Manna Grass; *Glyceria* (Gramineae) 15
Maple; *Acer* (Aceraceae) 10
Marsh Bellflower; *Campanula aparinoides* (Campanulaceae) 11
Marsh Cress; *Rorippa* (Cruciferae) 13
May-apple; *Podophyllum* (Berberidaceae) 11
Mayflower, Canada; *Maianthemum* (Liliaceae) 16
Meadow Rue; *Thalictrum* (Ranunculaceae) 19
Milfoil, Water; *Myriophyllum* (Haloragaceae) 16
Milkweed; *Asclepias* (Asclepiadaceae) 11
Mint; *Mentha* (Labiatae) 16
Miterwort; *Mitella* (Saxifragaceae) 20
Moccasin Flower; *Cypripedium* (Orchidaceae) 17
Motherwort; *Leonurus* (Labiatae) 16
Mountain Ash; *Sorbus* (Rosaceae) 19
Mullien; *Verbascum* (Scrophulariaceae) 20
Mustard; *Arabis* (Cruciferae) 13
Mustard; *Erucastrum* (Cruciferae) 13
Nettle; *Urtica dioica* (Urticaceae) 21
Nightshade; *Solanum* (Solanaceae) 20
Ninebark; *Physocarpus* (Rosaceae) 19
Norway Spruce; *Picea abies* (Pinaceae) 18
Oak; *Quercus* (Fagaceae) 14
Orchid; (Orchidaceae) 17
Oxeye Daisy; *Chrysanthemum* (Compositae) 12
Paintbrush, Devil's; *Hieracium* (Compositae) 12
Paintbrush, Indian; *Castilleja* (Scrophulariaceae) 20
Parsnip, Cow; *Heraclium* (Umbelliferae) 21
Parsnip, Water; *Sium* (Umbelliferae) 21
Partridge Berry; *Mitchella* (Rubiaceae) 19
Pearly Everlasting; *Anaphalis* (Compositae) 12
Penny Cress; *Thlaspi* (Cruciferae) 13
Pepper, Water; *Polygonum hydropiper* (Polygonaceae) 18
Pine; *Pinus* (Pinaceae) 18
Pinesap; *Monotropa hypopithys* (Ericaceae) 14
Plum; *Prunus americana* (Rosaceae) 19
Poison Ivy; *Rhus radicans* (Anacardiaceae) 11
Polypody; *Polypodium* (Polypodiaceae) 18
Prince's Pine; *Chimaphila umbellata* (Ericaceae) 14
Pussytoes; *Antennaria* (Compositae) 12
Pyrola; (Ericaceae) 14
Quackgrass; *Agropyron* (Gramineae) 15
Queen Anne's Lace; *Daucus* (Umbelliferae) 21
Raspberry; *Rubus* (Rosaceae) 19
Rattlesnake Fern; *Botrychium virginianum* (Ophioglossaceae) 17
Rattlesnake Plantain; *Goodyera* (Orchidaceae) 17
Red-berried Elder; *Sambucus* (Caprifoliaceae) 11
Redtop; *Agrostis* (Gramineae) 15
Rose; *Rosa* (Rosaceae) 19
Rush; *Juncus* (Juncaceae) 16
Rye, Wild; *Elymus* (Gramineae) 15
Running-Pine; *Lycopodium* (Lycopodiaceae) 17
St. John's Wort; *Hypericum* (Hypericaceae) 16
Sand Cress; *Arabis* (Cruciferae) 13
Sand-reed; *Calamovilfa* (Gramineae) 15
Sarsaparilla; *Aralia* (Araliaceae) 11
Scouring-Rush; *Equisetum* (Equisetaceae) 14
Sea Rocket; *Cakile* (Cruciferae) 13
Sedge; *Carex* (Cyperaceae) 13
Self-heal; *Prunella* (Labiatae) 16
Serviceberry; *Amelanchier* (Rosaceae) 19
Shepherd's Purse; *Capsella* (Cruciferae) 18
Shinleaf; *Pyrola* (Ericaceae) 14
Silverweed; *Potentilla anserina* (Rosaceae) 19
Skullcap; *Scutellaria* (Labiatae) 16
Skunk Cabbage; *Symplocarpus* (Araceae) 11
Smartweed; *Polygonum* (Polygonaceae) 18
Snowberry; *Gaultheria* (Ericaceae) 14
Snowberry; *Symphoricarpos* (Caprifoliaceae) 11
Soapwort; *Saponaria* (Caryophyllaceae) 12
Soloman's Plume; *Smilacina* (Liliaceae) 11
Soloman's Seal; *Polygonatum* (Liliaceae) 16
Sorrel, Sheep; *Rumex* (Polygonaceae) 18
Sorrel, Wood; *Oxalis* (Oxalidaceae) 17
Sow Thistle; *Sonchus* (Compositae) 12
Spearwort; *Ranunculus reptans* (Ranunculaceae) 19
Speedwell; *Veronica* (Scrophulariaceae) 20
Spikenard; *Aralia* (Araliaceae) 11
Spike-Rush; *Eleocharis* (Cyperaceae) 13-14
Spleenwort; *Asplenium* (Polypodiaceae) 18
Spring Beauty; *Claytonia* (Portulacaceae) 18
Spruce; *Picea* (Pinaceae) 18
Spurred Gentian; *Halenia deflexa* (Gentianaceae) 15
Squawroot; *Conopholis* (Orobanchaceae) 17

Starflower; *Trientalis* (Primulaceae) 18
Strawberry; *Fragaria* (Rosaceae) 19
Sumac; *Rhus* (Anacardiaceae) 11
Sweet Cicely; *Osmorhiza* (Umbelliferae) 21
Sweet Coltsfoot; *Petasites* (Compositae) 12
Sweet William; *Dianthus* (Caryophyllaceae) 12
Tamarack; *Larix* (Pinaceae) 18
Tansy; *Tanacetum* (Compositae) 12
Thimbleberry; *Rubus parviflorus* (Rosaceae) 19
Thimbleweed; *Anemone riparia* (Ranunculaceae) 19
Thistle; *Cirsium* (Compositae) 12
Thistle, Sow; *Sonchus* (Compositae) 12
Toadflax, False; *Comandra* (Santalaceae) 20
Trees -
 Ash; *Fraxinus* (Oleaceae) 17
 Aspen; *Populus* (Salicaceae) 20
 Basswood; *Tilia* (Tiliaceae) 20
 Beech; *Fagus* (Fagaceae) 14
 Birch; *Betula* (Betulaceae) 11
 Blue Beech; *Carpinus* (Betulaceae) 11
 Cherry; *Prunus* (Rosaceae) 19
 Cottonwood; *Populus* (Salicaceae) 20
 Elm; *Ulmus* (Ulmaceae) 20
 Fir; *Abies* (Pinaceae) 18
 Hemlock; *Tsuga* (Pinaceae) 18
 Ironwood; *Ostrya* (Betulaceae) 11
 Maple; *Acer* (Aceraceae) 10
 Mountain Ash; *Sorbus* (Rosaceae) 19
 Oak; *Quercus* (Fagaceae) 14
 Pine; *Pinus* (Pinaceae) 18
 Poplar; *Populus* (Salicaceae) 21
 Spruce; *Picea* (Pinaceae) 18
 Tamarack; *Larix* (Pinaceae) 18
 White Cedar; *Thuja* (Cupressaceae) 13
 Willow; *Salix* (Salicaceae) 20
Trillium; (Liliaceae) 17
Trout-lily; *Erythronium* (Liliaceae) 16
Twinflower; *Linnaea* (Caprifoliaceae) 11
Twisted-Stalk; *Streptopus* (Liliaceae) 16
Vervain; *Verbena* (Verbenaceae) 21
Vetch; *Vicia* (Fabaceae) 14
Vetchling; *Lathyrus* (Fabaceae) 14
Violet; *Viola* (Violaceae) 21
Water Cress; *Nasturtium* (Cruciferae) 13
Water Hemlock; *Cicuta* (Umbelliferae) 21
Water Horehound; *Lycopus* (Labiatae) 16
Water Milfoil; *Myriophyllum* (Haloragaceae) 16
Water Parsnip; *Sium* (Umbelliferae) 21
Water Pepper; *Polygonum hydropiper* (Polygonaceae) 18
White Camass; *Zigadenus* (Liliaceae) 17
White Cedar; *Thuja* (Cupressaceae) 13
Willow-herb; *Epilobium coloratum* (Onagraceae) 17
Winterberry; *Ilex* (Aquifoliaceae) 11
Wintergreen; *Gaultheria* (Ericaceae) 14
Wood Betony; *Pedicularis* (Scrophulariaceae) 20
Wood Lily; *Lilium philadelphicum* (Liliaceae) 16
Wood Nymph; *Moneses* (Ericaceae) 14
Wood-sorrel; *Oxalis* (Oxalidaceae) 17
Wormwood; *Artemisia* (Compositae) 12
Yarrow; *Achillea* (Compositae) 12



