



TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE MICHIGAN

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BIOLOGY #11
SUBJECT: Federal Threatened and
Endangered Species
DATE: March 10, 1992

To: All Offices

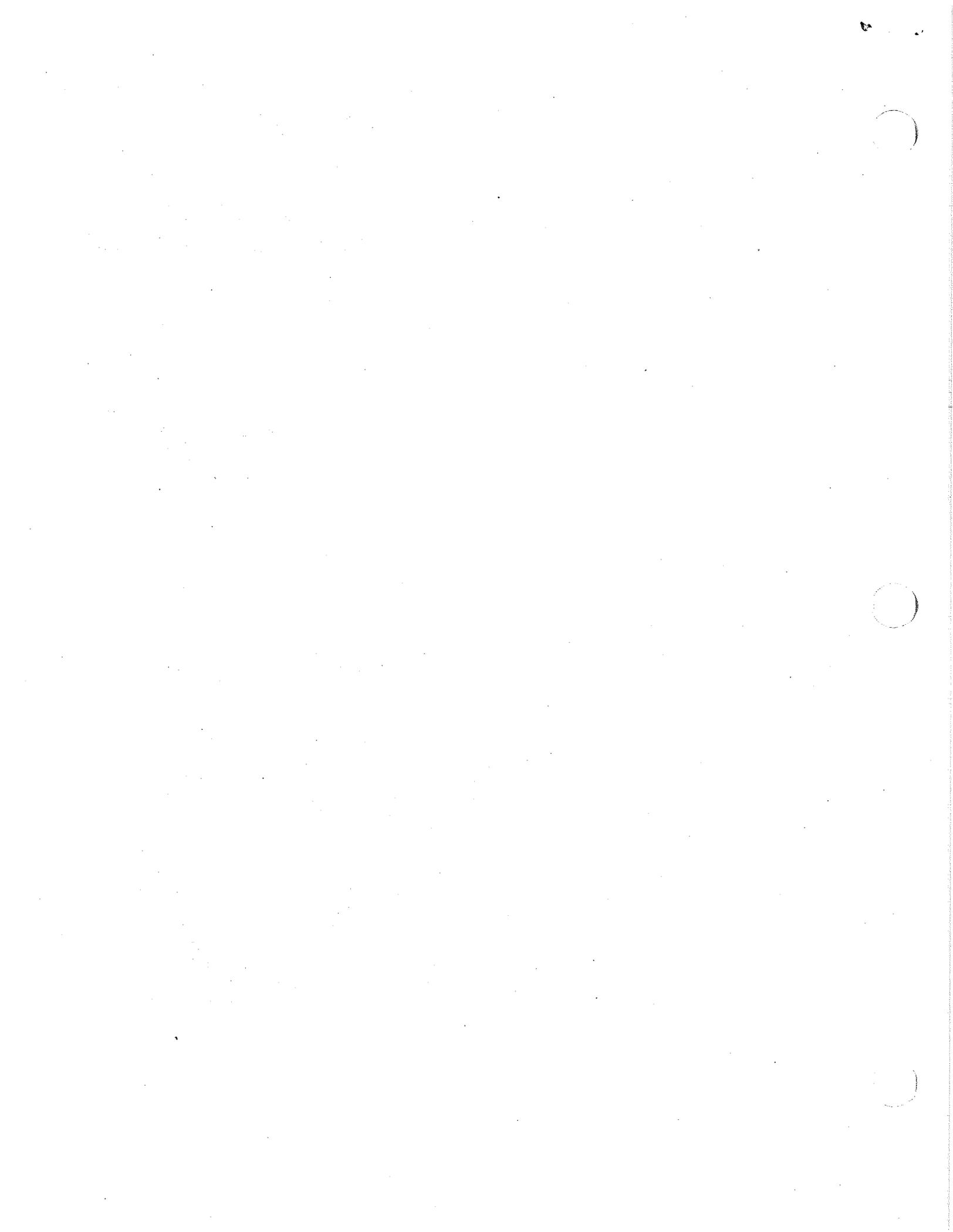
From: Shirley Gammon, Assistant State Conservationist

INTRODUCTION

Our agency has been responsible for protecting endangered and threatened species since 1973 when the Endangered Species Act was passed. The Act has been amended 8 times, the most recent in 1988, and will be considered for re-authorization in 1992.

This technical note was prepared to provide information regarding identification, life history, distribution and important habitats for the species which are currently identified on the federal list as threatened or endangered. The State of Michigan has also identified species which are threatened or endangered. This listing is currently found in the Technical Guide, Section 1.

Our policy regarding the protection of endangered and threatened species and their habitats is found in the General Manual 190 Part 410.22. The Soil Conservation Service will assist in the conservation of threatened or endangered species, and avoid or prevent activities detrimental to such species. Our policy recognizes both federally designated and species designated by the State of Michigan. Field offices will avoid activities that are detrimental to these unique species and their habitats. Consultation with the U.S. Fish and Wildlife Service is required before any action is undertaken which would be detrimental to federally listed species.

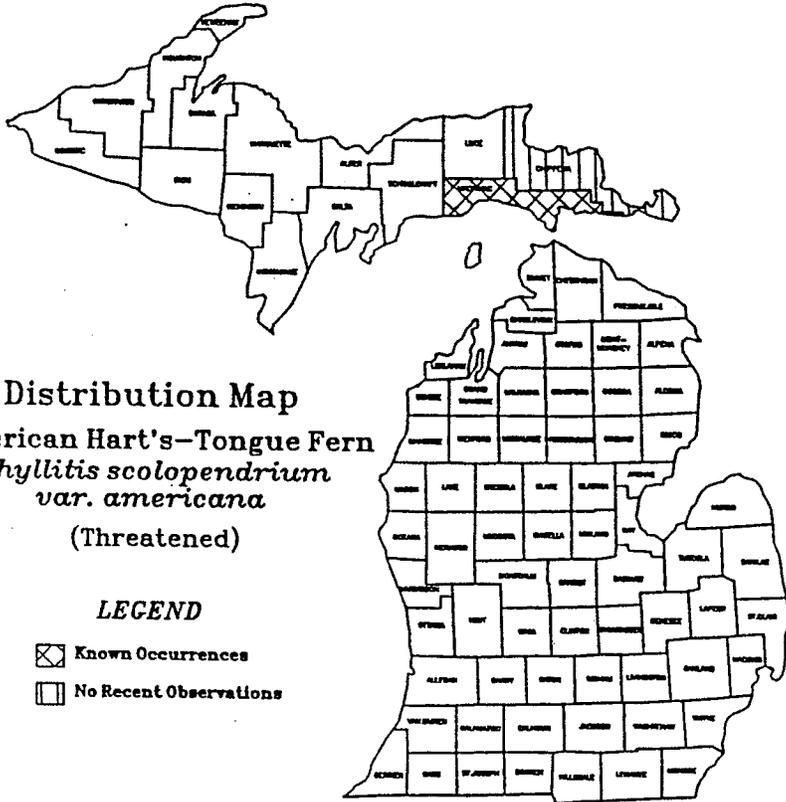


THREATENED AND ENDANGERED SPECIES
FEDERAL

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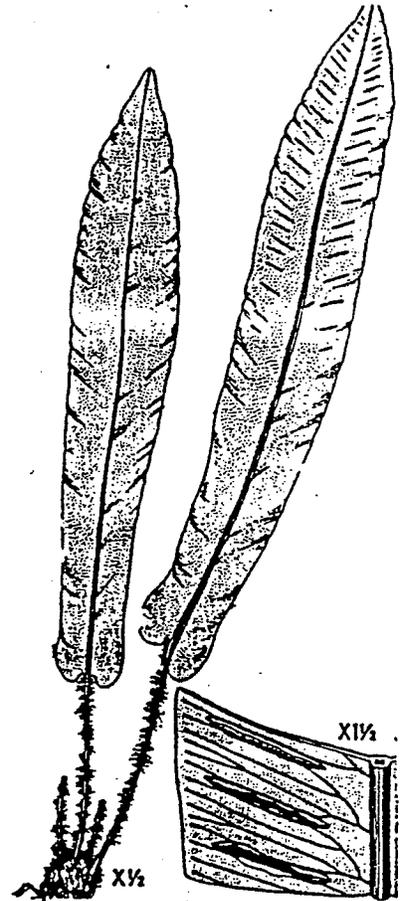
MICHIGAN



Distribution Map
American Hart's-Tongue Fern
Phyllitis scolopendrium
var. americana
 (Threatened)

LEGEND

- Known Occurrences
- No Recent Observations



American Hart-Tongue
 Fern

Drawings from: "An Illustrated Flora of Northern United States and Canada"
 Britton, N.L. and Brown A. 1970, Dover Publications

AMERICAN HART'S-TONGUE FERN
(*Phyllitis scolopendrium* var. *americana*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The hart's-tongue fern is a species common in parts of Europe but the rare American variety is found in only a few locations in North America. This unique plant is currently known in two counties in Alabama, one county in Tennessee, one county in Michigan, two counties in New York and seven counties in Ontario.

The Michigan Natural Features Inventory recognizes four populations of American hart's-tongue fern. All of these sites are located in Mackinac County. An additional site in Chippewa County supported a population up until 1983. Of the four remaining populations, two are owned by the Michigan Nature Association, one is on the Hiawatha National Forest and one is on private property.

IDENTIFICATION

The American Hart's tongue fern is a short fern which grows 7 to 14 inches tall. The blades of this plant are leaf-like with a heart-shaped base. The blade is wide with a blunt tip and smooth edges. The sori are located on the back of the blade and are oblique. This plant can be confused with the Walking-fern (*Camptosorus rhizophyllus*). The blades of the Walking-fern are also heart-shaped at the base but they are long and narrow with pointed tips and the sori are scattered on the back of the blade.

HABITAT

The American Hart's-tongue fern is found only on sites on or near dolomitic limestone. The plant requires high humidity, shade and a moist substrate. The plant occurs on or near limestone outcrops. Since most populations of this plant are small and known, the Fish and Wildlife Service has concluded that it is not prudent to publish critical habitat descriptions and maps.

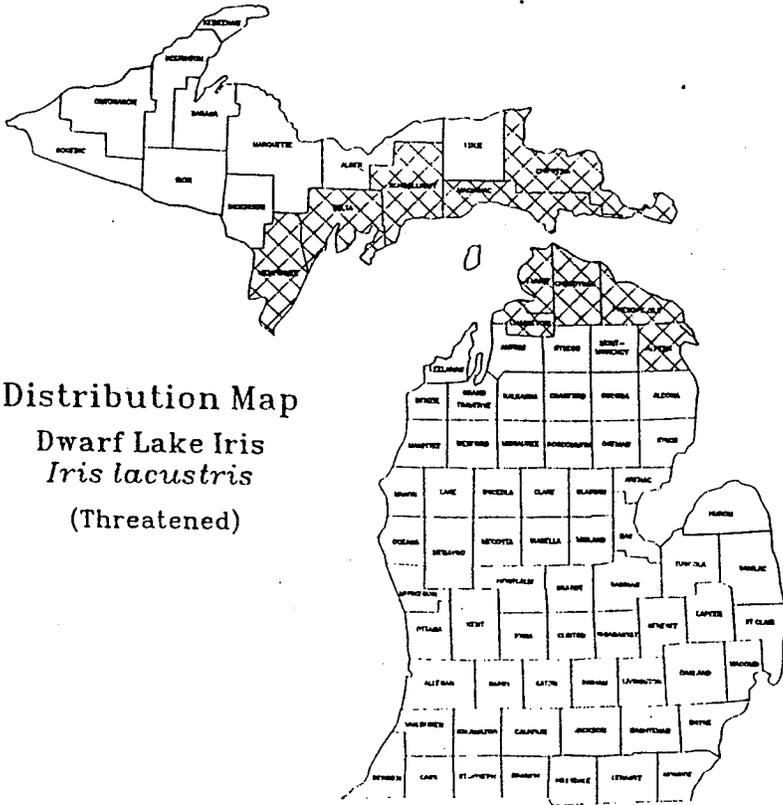
The primary threats to this fern include logging, quarrying, residential development, trampling and other forms of habitat disturbances. Timber removal at most sites would be expected to raise light levels and lower humidity to the detriment of this fern. Known populations of American Hart's-tongue Fern should be protected from habitat disturbances.

FEDERAL ENDANGERED SPECIES ACT STATUS THREATENED

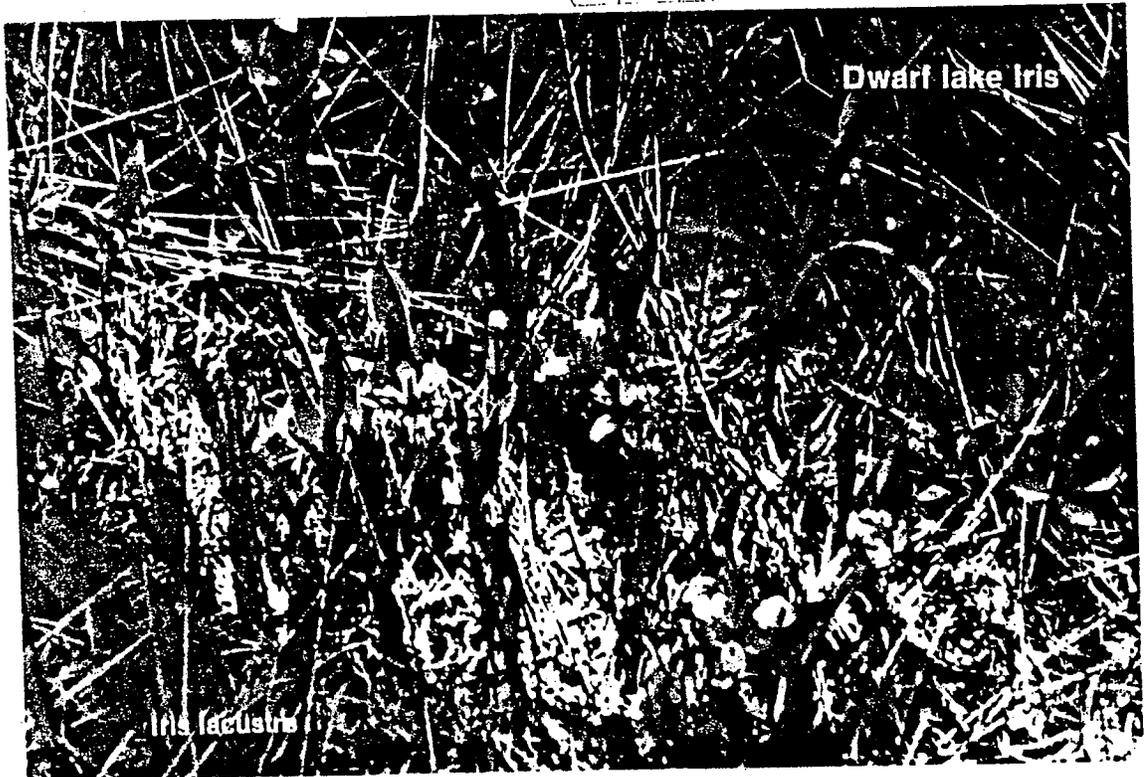
MICHIGAN



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Distribution Map
Dwarf Lake Iris
Iris lacustris
(Threatened)



DWARF LAKE IRIS
(*Iris lacustris*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The Dwarf Lake Iris is a member of the Iris family and at one time was considered a variety of the Crested Iris but is now recognized as a distinct species. This unique plant is found at about 60 sites in 10 Michigan counties on the northern shores of Lakes Huron and Michigan. It is also found in 15 sites in two Wisconsin counties and several areas in Ontario.

Approximately 20 percent of the Dwarf Lake Iris colonies are found on public lands in Michigan including the Huron-Manistee and Hiawatha National Forests. The remaining colonies are on private lands.

IDENTIFICATION

The Dwarf Lake Iris is a herbaceous, perennial, small iris with flat narrow leaves which sheath each other at the base. Leaves are 3 inches tall at flowering in the late spring and later reach 5-6 inches. The blue to purple flowers have three petals and sepals and are approximately 2 inches long. This plant is rhizomatous and forms dense colonies when conditions are favorable.

HABITAT

The Dwarf Lake Iris prefers calcareous gravels, in partial shade, near the lakeshore. The plant does occur in the partial shade of coniferous trees and in mesic areas near the forest edge. The plant will also grow in crevices of limestone bedrock. The plant is usually not found in full sunlight or shade. The Fish and Wildlife Service believes that designation of critical habitat would not be prudent because no benefit would outweigh the potential threat of vandalism.

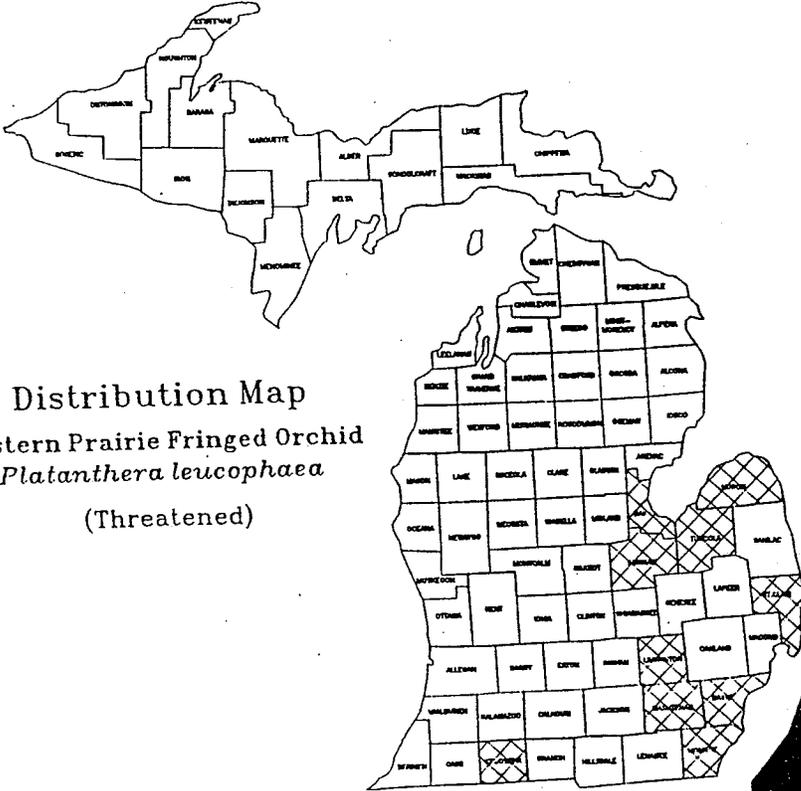
Primary threats to this plant include residential development, road development and off-road vehicle use. Habitats need to be managed to provide partially-shaded conditions as natural plant succession may lead to full shade.

FEDERAL ENDANGERED SPECIES ACT STATUS - THREATENED

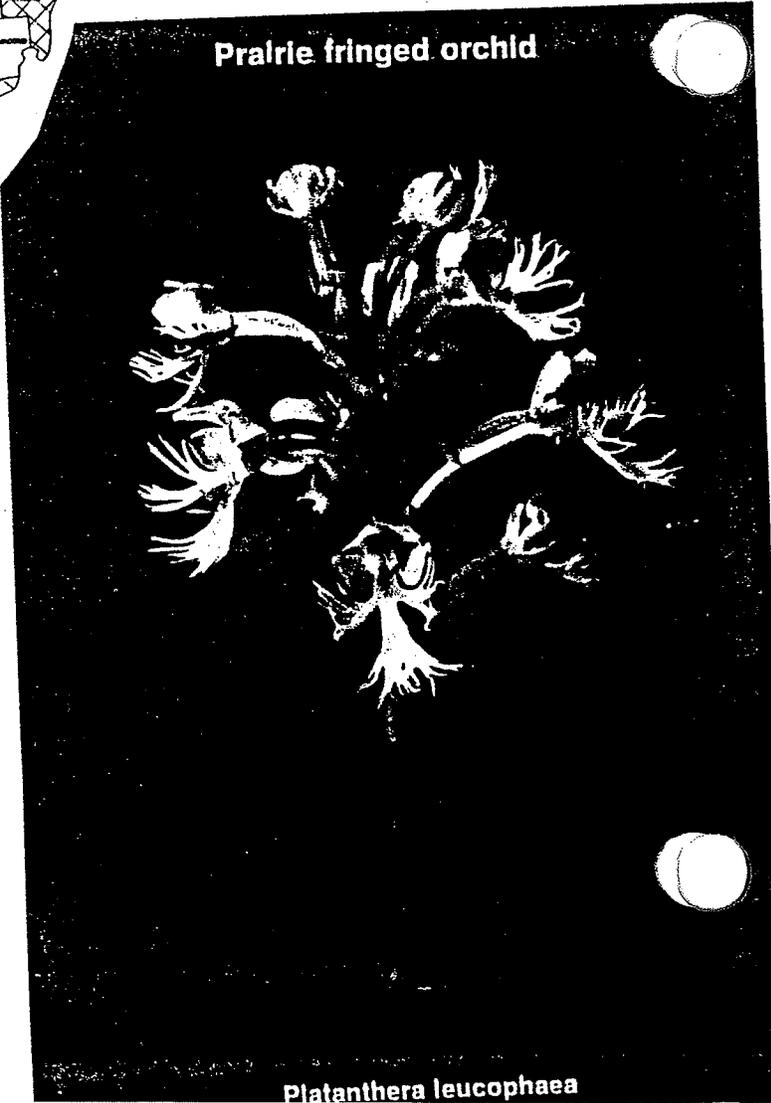
MICHIGAN



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Distribution Map
Eastern Prairie Fringed Orchid
Platanthera leucophaea
(Threatened)



Prairie fringed orchid

Platanthera leucophaea

EASTERN PRAIRIE FRINGED ORCHID
(*Platanthera leucophaea*, also known as *Habenaria leucophaea*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The Eastern Prairie Fringed Orchid was at one time thought to be the same species as its close relative, the Western Prairie Fringed Orchid. The Mississippi River serves as the boundary separating these two species. The Eastern Prairie Fringed Orchid's range has declined over 70% based upon county records and now has 64 known populations in seven states and Ontario.

In Michigan, 18 populations are known from 9 counties. Southern Michigan populations are small and isolated while several larger populations occur in lakeside prairies bordering Saginaw Bay and Lake Erie. A population near Bay City disappeared after severe flooding in 1986 and has not been observed since. The Saginaw Bay region continues to harbor the most viable populations in the state.

IDENTIFICATION

This orchid is a perennial herb which generates from a fusiform tuber rootstock. Leaves and the inflorescence usually emerge in May and flowering begins by late June. The large white flowers are arranged in an inflorescence that may reach 40 inches in height. The lip of the 1-inch flower is divided into 3 lobes with the center lobe wedge-shaped. The flowers are fragrant to attract the night flying hawkmoths, the only insects known to pollinate it.

HABITAT

The Eastern Prairie Fringed Orchid requires full sunlight and usually inhabits tall grass, wet prairies or open portions of fens, sedge meadows, marshes and bogs. The plant prefers calcareous silt loams or wet sands. Many of the largest populations occur in habitats supporting successional vegetation and without management may decline in abundance. The Fish and Wildlife Service believes that designation of critical habitat areas would not be prudent because the threat of vandalism will outweigh any benefits to the species.

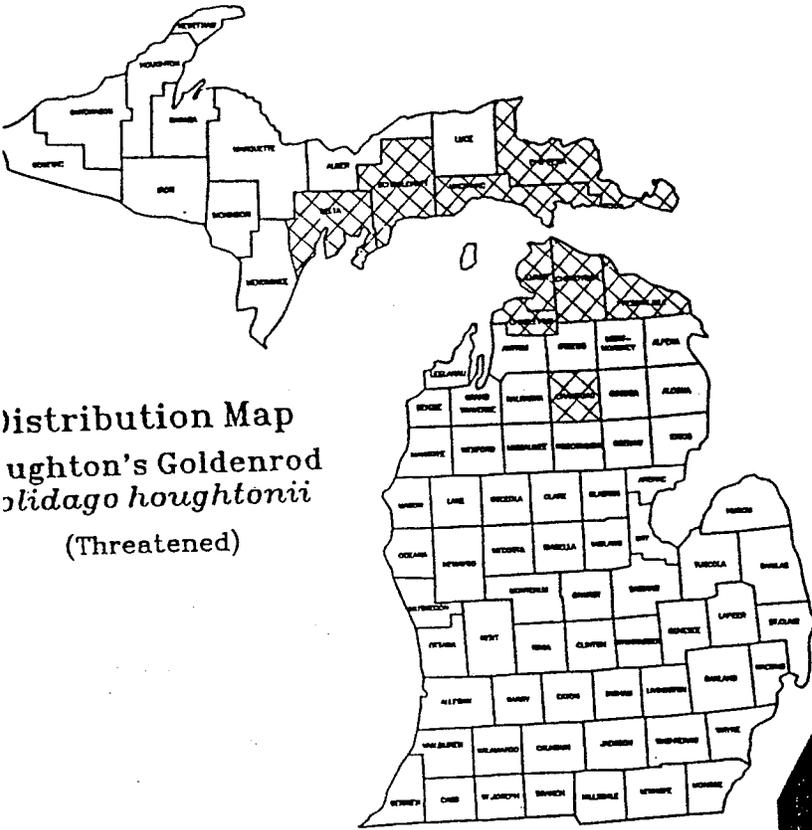
The primary threats to this plant include conversion of habitat to agriculture, drainage, overgrazing, intensive haying and vandalism by collectors. All areas of known or potential habitat of the Eastern Prairie Fringed Orchid should be protected from agricultural impacts including conversion, grazing, drainage and mowing.

FEDERAL ENDANGERED SPECIES ACT STATUS - THREATENED

MICHIGAN



60 0 60 STATUTE MILES



Distribution Map
Houghton's Goldenrod
Solidago houghtonii
(Threatened)



Houghton's goldenrod

HOUGHTON'S GOLDENROD
(*Solidago houghtonii*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

Houghton's Goldenrod was discovered in 1839 by Douglas Houghton along the north shore of Lake Michigan between Naubinway and Epoufette. This perennial plant is a member of the Aster family.

This goldenrod is currently known from about 37 sites in eight Michigan counties along the northern shores of Lake Michigan and Lake Huron and 2 inland sites in Crawford County within Camp Grayling. The plant is also found in several locations in Ontario. Of the 39 sites in Michigan, 11 are owned by the State, 2 by the Federal Government and one by the Nature Conservancy. The remaining 25 sites are privately owned.

IDENTIFICATION

Houghton's Goldenrod is a large-headed goldenrod that is 8-30 inches tall with a flat-topped inflorescence. The stem is slender and smooth, with a few tiny hairs on the upper portion. Many plants do not flower and just consist of basal leaves up to 8 inches long and 3/8 inches wide, tapering and partially clasping the stem. In areas where it is found, Houghton's Goldenrod can be a dominant species.

HABITAT

Solidago houghtonii usually occurs on the sparsely vegetated, moist calcareous sand beach shoreline flats and the depressions between foredune ridges of northern Lake Michigan and Lake Huron. Since no benefit to the plant can be identified that would outweigh the potential threat of vandalism, the U.S. Fish and Wildlife Service has concluded that it is not prudent to publish critical habitat maps.

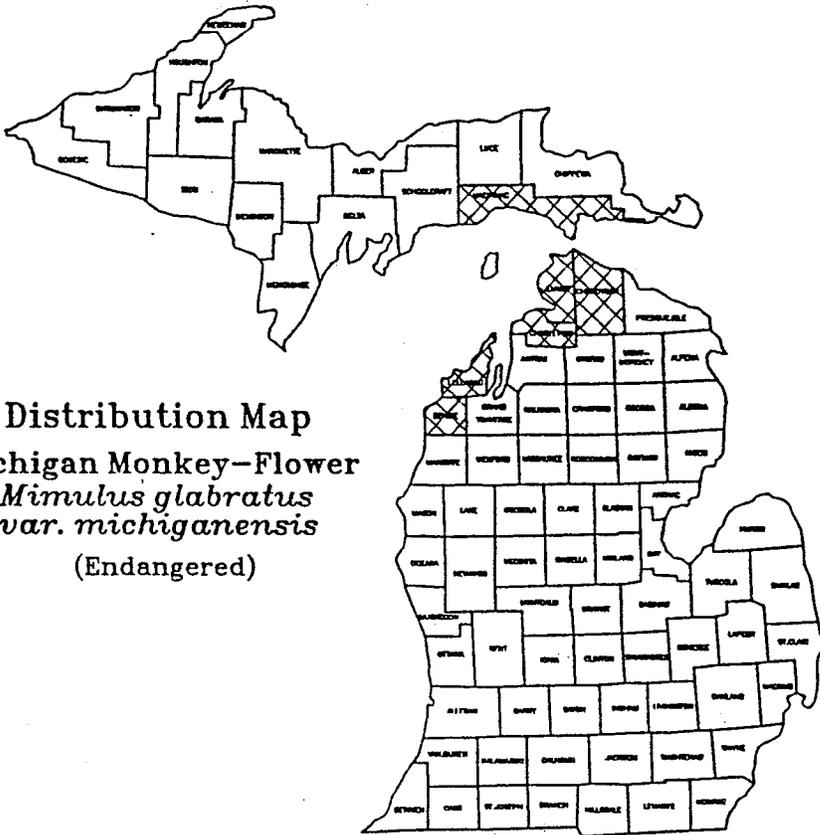
The primary threats to this plant include residential development, hydrologic changes of the Great Lakes, destabilization of shoreline sand dunes and beach flats, human disturbance and off-road vehicles. When providing assistance in potential Houghton's Goldenrod habitat, it is important to recognize that this plant should be protected from habitat disturbance.

FEDERAL ENDANGERED SPECIES ACT STATUS - THREATENED

MICHIGAN



60 0 60 STATUTE MILES



Distribution Map

Michigan Monkey-Flower
Mimulus glabratus
 var. *michiganensis*
 (Endangered)

Michigan Monkey-flower



Drawings from: "An Illustrated Flora of Northern United States and Canada"
 Britton, N.L. and Brown A. 1970, Dover Publications

MICHIGAN MONKEY-FLOWER
(*Mimulus glabratus* var. *michiganensis*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The Michigan Monkey-flower is the only semi-aquatic perennial in the Snap-dragon family. This rare plant is only found in 12 locations in the Mackinaw Straits and Grand Traverse regions of Michigan. Eight of these locations contain less than 10 individuals.

The Michigan Monkey-flower occurs at Sleeping Bear Dunes National Lakeshore, the University of Michigan Biological Station, a county park, a township park and on land owned by the Nature Conservancy. The remaining seven sites are on private lands.

IDENTIFICATION

The Michigan Monkey-flower is an aquatic or semi-aquatic herb with lax stems averaging 14 inches in length. It grows as clumps of up to several hundred colonial stems which are lined with opposite, rotund, coarsely-toothed leaves. The plant blooms from about mid-June to mid-August.

The solitary, yellow flowers are tubular and two lipped approximately 1/2 to 1 inch long. The tube and lower lip are irregularly spotted.

HABITAT

This plant is narrowly restricted to cold, saturated soils of seepages on forest edges and in small openings located along streams and lakeshores. Nearly all known populations are associated with the current or ancient shoreline of the Great Lakes. Northern white cedar is usually dominant in the overstory. This plant is normally associated with muck or mucky sand that is saturated with cold, flowing spring water. Other species frequently present include watercress (*Nasturtium officinale*), touch-me-not (*Impatiens biflora*), forget-me-not (*Myosotis scorpioides*) and spearmint (*Mentha arvensis*).

The primary threats to this plant include direct habitat destruction and indirect offsite activities which affect its water supply. Upstream water supply may be impacted by roads and other activities which divert or degrade the supply. When providing assistance near potential Monkey-flower habitat, careful consideration must be given to possible direct and indirect effects. The Michigan Monkey-flower is particularly vulnerable to extinction because of the low numbers of individuals and its limited capacity for sexual reproduction.

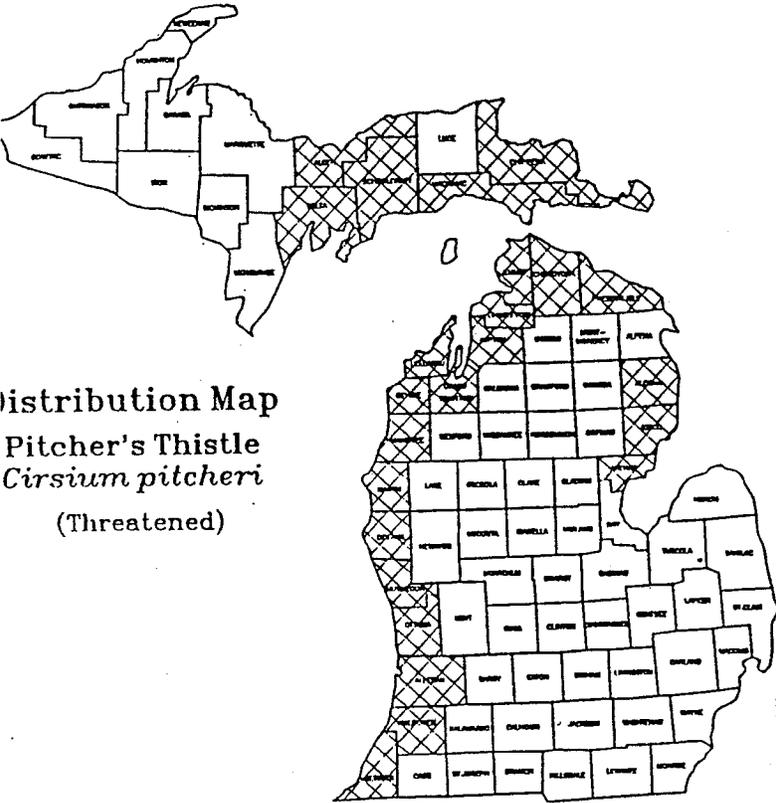
FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

Tech Note, BIOLOGY MI-11, March 1992

MICHIGAN



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Distribution Map
Pitcher's Thistle
Cirsium pitcheri
(Threatened)



PITCHER'S THISTLE
(Cirsium pitcheri)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

Pitcher's thistle was first discovered in 1820 by Dr. Zina Pitcher. The greatest part of this plant's range is in Michigan where it is found at about 100 sites in 25 counties along Lake Huron, Michigan and Superior. It also exists in eight sites in Wisconsin, seven sites in Indiana and 12 sites in Ontario. This plant occurs on various public lands including Sleeping Bear Dunes, Pictured Rocks National Lakeshore, several state parks and within state highway rights-of-way in addition to occurring on private lands.

IDENTIFICATION

This thistle possesses dense-white-wooly and deeply divided leaves with long petioles. Instead of the typical purple flowers of thistle, this species has cream-colored or yellowish flowers. This species reproduces only by seed and requires 3-10 years between germination and flowering.

HABITAT

Pitcher's thistle occurs primarily in the dry sand of stabilized, well developed dunes along the shoreline of the Great Lakes. It is also found in dry areas of loose sand in blowouts behind the main dunes.

Pitcher's thistle apparently has limited ability to disperse seed which restricts it to narrowly defined microhabitats. This plant can tolerate infrequent disturbances of its habitat and can recolonize disturbed areas if a large colony remains.

The primary threats to this plant are from shoreline development, off-road vehicle use and trampling. The Fish and Wildlife Service has determined that no benefit would be derived from designating critical habitat maps at this time.

Areas of known or potential Pitcher's thistle habitat should be protected from frequent disturbance.

FEDERAL ENDANGERED SPECIES ACT STATUS - THREATENED

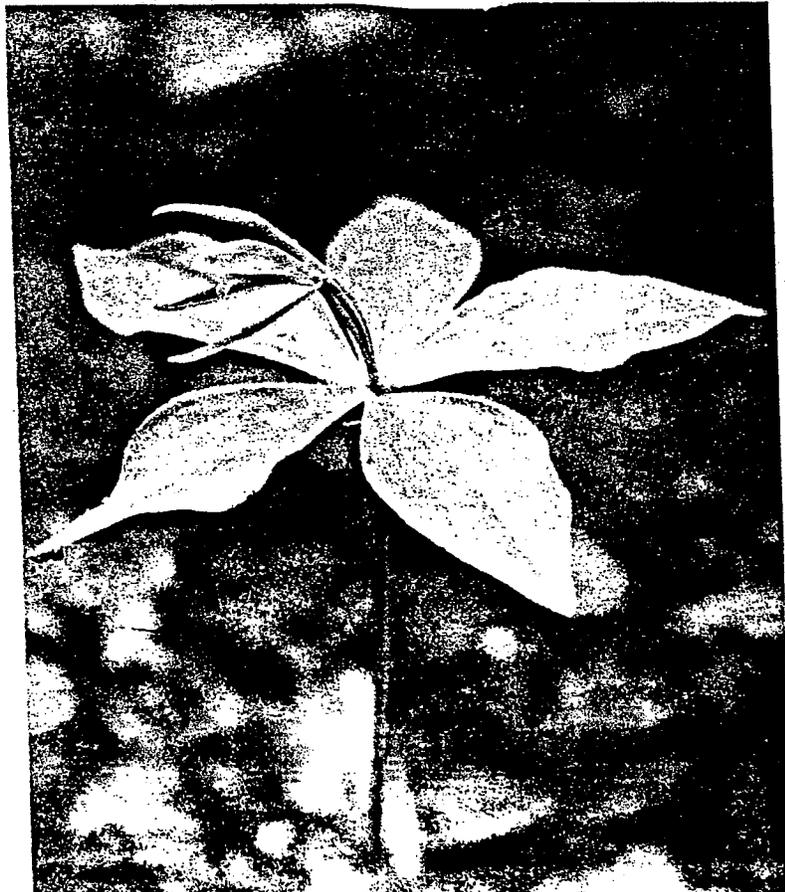
MICHIGAN



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Distribution Map
Small Whorled Pogonia
Isotria medeoloides
(Endangered)



SMALL WHORLED POGONIA
(*Isotria medeoloides*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The Small Whorled Pogonia is often referred to as one of the rarest U.S. orchids. This terrestrial orchid was widely distributed over much of the United States east of the Mississippi River. There are now 49 known populations in various states including Connecticut, Georgia, Illinois, Maine, Maryland, Massachusetts, and Michigan. The only known population of this rare orchid in Michigan is in Berrien County.

IDENTIFICATION

Unlike most orchids, the Small Whorled Pogonia typically grows as scattered solitary plants, rather than localized colonies. It grows to 10 inches in height and produces one or two yellowish-green flowers. The stems are clear, greenish and covered with a pale, waxy coating. The flower forms above a whorl of 5-6 light green elliptical leaves. This plant blooms for several weeks in mid-June. Short, arching sepals about 1 inch long help distinguish this plant from the common whorled pogonia which has longer sepals. Another woodland herb which may be confused with the Small Whorled Pogonia is the Indian Cucumber Root (*Medeola virginiana*). The Indian Cucumber Root has a wiry stem covered with cobwebby hairs compared to the Small Whorled Pogonia which has a hairless stem.

HABITAT

This species is found in various habitats but is most commonly found in dry, second-growth deciduous forest with an open canopy, free of a dense growth of shrubs and other low vegetation and light to moderate shade. It typically prefers acidic soils with a deep leaf litter. Like other orchids, it may remain dormant underground for several years, waiting for favorable growing conditions,

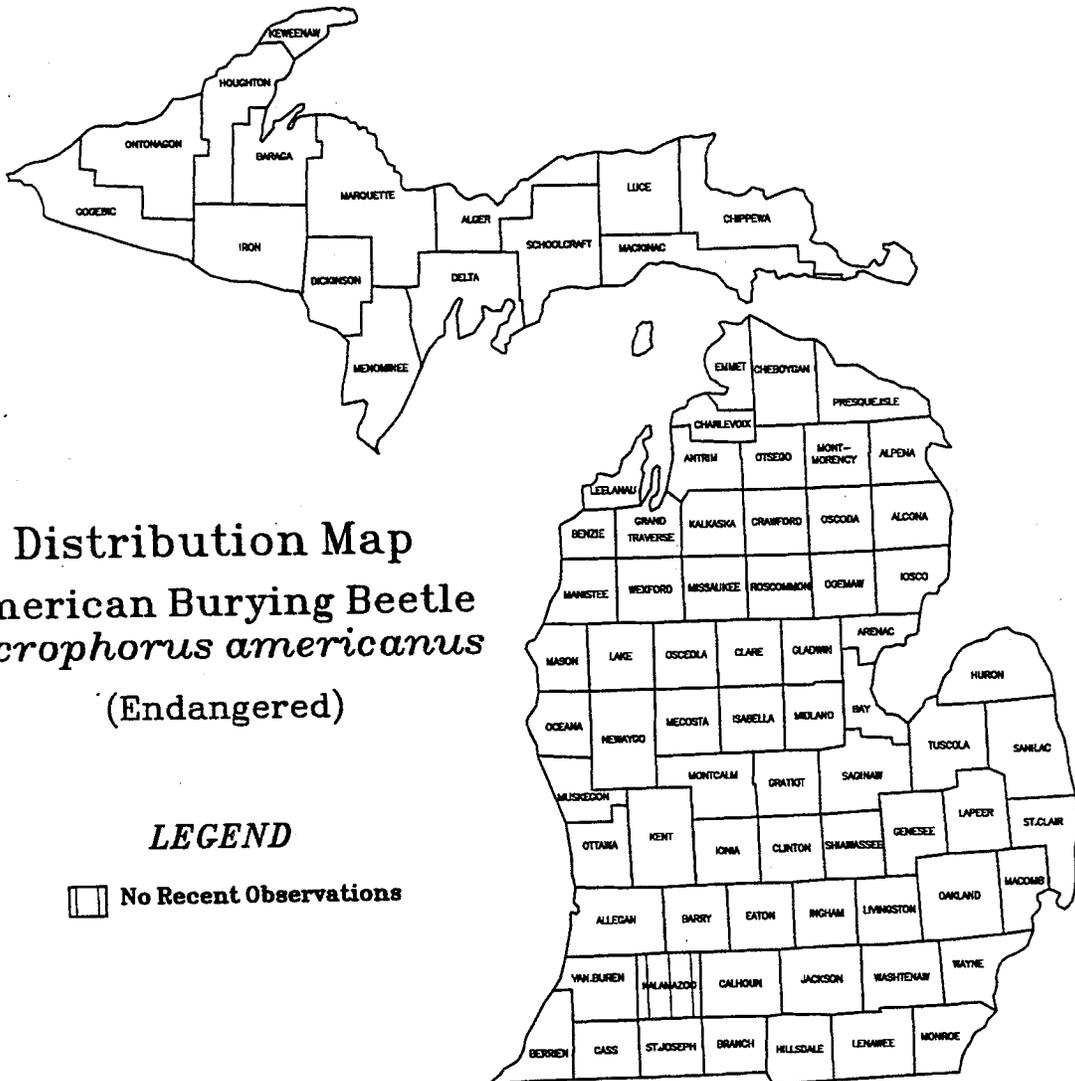
Primary threats to the Small Whorled Pogonia include habitat disturbance, natural plant succession and vandalism by collectors. As with all rare orchids, this plant is particularly vulnerable to collecting by individuals.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

MICHIGAN



50 0 50 STATUTE MILES



October 1991

AMERICAN BURYING BEETLE
(*Nicrophorus americanus*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

This rare insect is also known as the giant carrion beetle. Only two populations are currently known to exist; one in eastern Oklahoma and the other on an island off the coast of New England. Once widely distributed throughout eastern North America, this species has disappeared from most of its historic range. Historical records include 32 states and 3 Canadian Provinces. In 1960, this species was collected in Kalamazoo County, Michigan. Extensive recapture efforts in 1986 failed to find any individuals. It is possible that this species may be extirpated from Michigan.

IDENTIFICATION

This nocturnal beetle is shiny and black with two pair of scalloped red spots on the wing covers; red antenna stems with orange clubs and a large red-orange segment behind its head. It is a large beetle, measuring from 1 to 1.4 inches. Beetles of both sexes are attracted to appropriate carrion at night. Any vertebrate carrion between 50 and 200 grams is acceptable. These individuals then bury the carrion and construct a brooding chamber. The female lays eggs on the carrion and adults emerge after 50 days. Adults probably overwinter singly in the soil.

HABITAT

Biologists are unsure about habitat requirements for the American Burying Beetle. The availability of deep humus suitable for burying carrion is essential. It was once believed that mature climax forests were the preferred habitat. Habitat occupied by known populations include shrub thickets, grassland and pastureland.

The cause of the precipitous decline of the range of the American Burying Beetle is unknown, although chemical contamination by pesticides is one possibility. In addition, the black lights on "bug-zappers" are known to attract males. Although biologists expect to discover remnant populations in various states, the status of this species is considered critical.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

KARNER BLUE BUTTERFLY
(*Lycaeides melissa samuelis*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

W. H. Edwards first described the Karner Blue Butterfly in 1861 at Karner, New York. Karner Blue is considered a subspecies of the more common Melissa Blue Butterfly. Historically, the Karner Blue occurred as shifting clusters of populations across fire-swept, prairie-like portions of eastern Minnesota, Wisconsin, Illinois, Indiana, Michigan, New York and Ontario.

The current distribution of the Karner Blue is very discontinuous and generally follows the northern limits of wild lupine. In Michigan, it's range has declined to six counties. The Allegan State Game Area contains the largest population of Karner Blue with other populations on national forest property, power company rights-of-way and other private lands.

IDENTIFICATION

The Karner Blue is a medium-sized butterfly with a wingspan of .85-1.25 inches. The male is silvery blue or dark blue above with narrow white margins while the female is grayish brown with irregular bands of orange inside a narrow black border. Both sexes are slate gray below with orange bands and black spots circled with white.

This butterfly usually has two broods each year. The adults developed from overwinter eggs emerge in very late May when wild lupine is in bloom. Females lay eggs on or near lupine plants. The second brood of adults appear in the second or third week of July. The overwintering eggs are laid among plant litter at the base of the lupines. By early August, no adults remain.

HABITAT

The habitat of the Karner Blue is characterized by the presence of wild lupine (*Lupinus perennis*). This plant is the only known larval host plant for the Karner Blue. The habitat is typically grassy openings in oak savanna or jack pine areas with dry sandy soils.

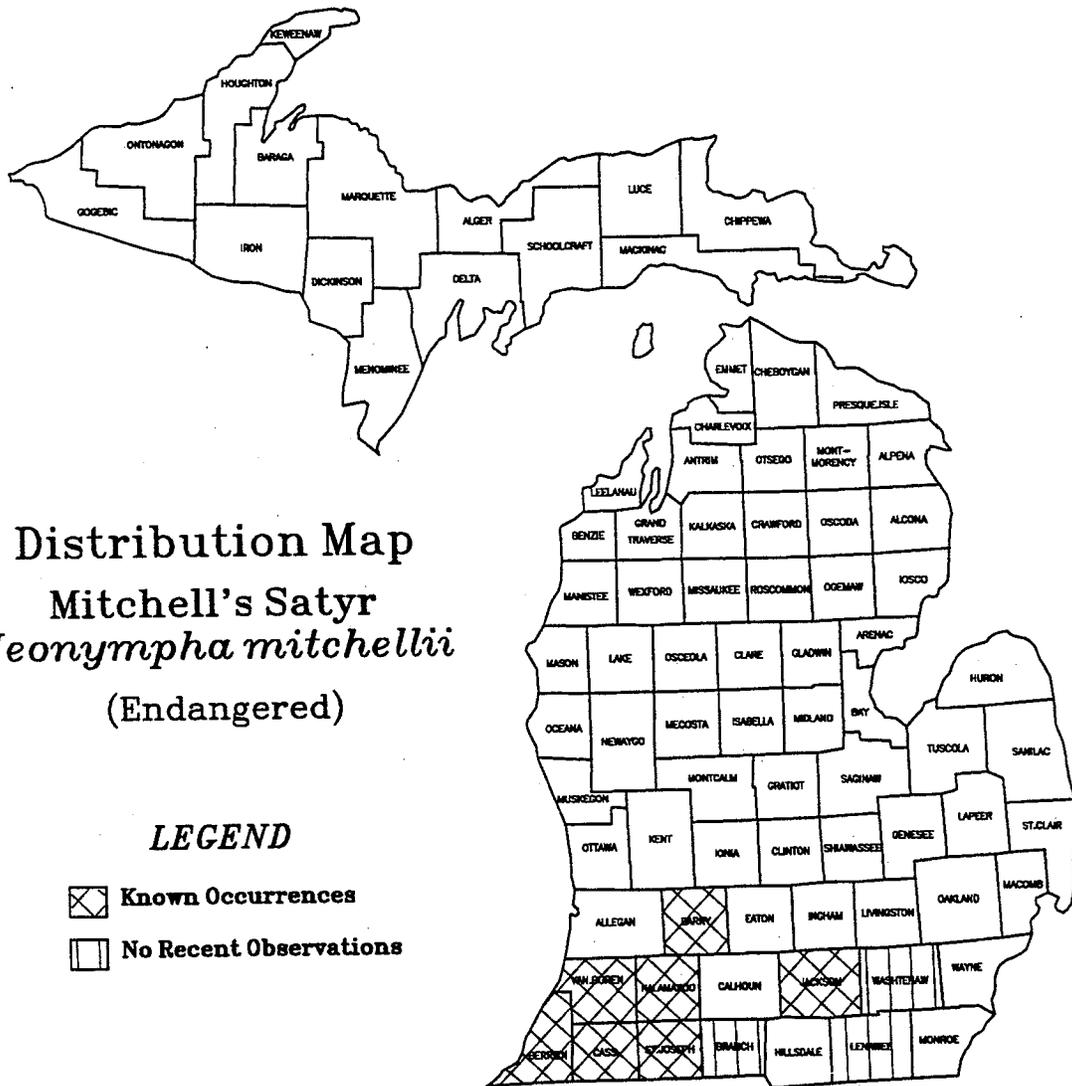
In Michigan, the major cause of this butterfly's decline has been the degradation and loss of habitat as a result of succession and development. Habitat has been affected by fire suppression, agricultural and residential development and off-road vehicles.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

MICHIGAN



50 0 50 STATUTE MILES



October 1991

MITCHELL'S SATYR
(*Neonympha mitchellii mitchellii*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

Like most satyrs, Mitchell's satyr is a medium sized butterfly, brownish in color with eye spots on the wings. This satyr is actually a subspecies of *Neonympha mitchellii*. Another closely-related subspecies (*Neonympha mitchellii francisci*) was recently discovered in North Carolina but is now believed to be collected to extinction. Mitchell's satyr is one of the most geographically restricted butterflies in North America. Historical records indicate that this species once ranged over 37 counties in southern Michigan and northern Indiana and Ohio with several disjunct populations in New Jersey. After intensive searches, this butterfly is currently believed to exist in only nine counties in southern Michigan and northern Indiana.

Mitchell's satyr exhibits relatively sedentary behavior and slow, very low-level flights. This species has only one single flight period per year, lasting approximately one week per individual and for about three weeks for the population as a whole. Because of these characteristics, the species is very susceptible to local extinction.

IDENTIFICATION

Mitchell's satyr is a medium sized butterfly with an overall rich brown coloration. A distinctive series of yellow-ringed black eyespots with silvery centers is found on the lower surfaces of both pair of wings. The number of eyespots on the forewings varies between the sexes. The eyespots are accented by two orange bands along the posterior wing edges as well as two fainter orange bands across the central part of each wing.

HABITAT

Mitchell's satyr is found solely in fens. Fens are an uncommon wetland type characterized by calcareous soils which are fed by carbonate-rich water from springs and seeps. Fens are frequently components of larger wetland complexes and usually resemble bogs in appearance.

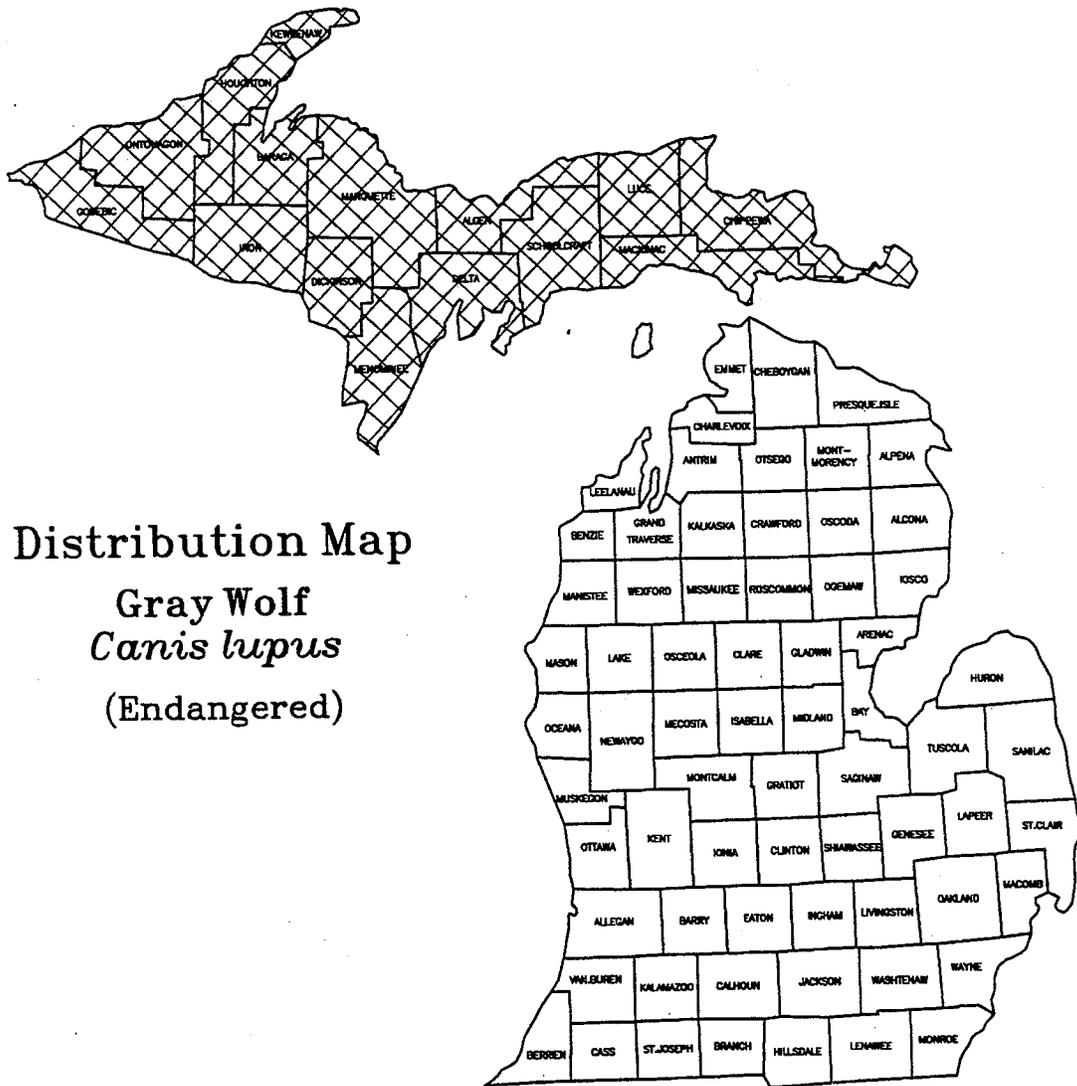
The primary threats to this butterfly include habitat degradation from commercial and residential development, agricultural drainage and excessive collection. This species has long been considered a prize by butterfly collectors. Fens are vulnerable to adjacent activities. For example, nearby drainage ditches may alter the hydrologic regime in the fen. Potential fen habitats should be protected from disturbance.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

MICHIGAN



50 0 50 STATUTE MILES



Distribution Map
 Gray Wolf
Canis lupus
 (Endangered)

October 1991

GRAY WOLF
(*Canis lupus*)

INTRODUCTION

There are numerous subspecies of the Grey Wolf, also known as the timber wolf. The grey wolf was once widespread in wild areas of North America, Asia and northern Europe. Human efforts to eliminate them have been the overwhelming cause of their decline. The grey wolf is still relatively abundant in Alaska and western Canada. Approximately 1200 grey wolves inhabit north-eastern Minnesota with a small population in northern Wisconsin and Michigan. The most famous population in Michigan is on Isle Royale. However, a small pack of wolves is known to travel between the western upper peninsula and Wisconsin.

IDENTIFICATION

The grey wolf resembles a large dog. Adult males average approximately 95 pounds and adult females 80 pounds. The wolf is usually grey with black speckles and a yellowish underbelly but its markings vary with both habitat and season. Entirely black or white wolves also occur. The grey wolf is strongly territorial and typically hunts in packs. However, in areas of small populations, it is typical for wolves to be found alone. Life in a pack is highly organized with a distinct hierarchy. The grey wolf is a carnivore and is a primary predator on large, hoofed mammals such as moose, elk, or deer. The disciplined pack is able to identify the weaker member of the population, separate it from the herd, then encircle it and eventually kill it. When large prey is unavailable, wolves will feed on smaller animals such as beaver, rodents, domestic livestock or carrion.

HABITAT

Wolves prefer large areas of natural habitat which provide populations of large, hoofed mammals. The grey wolf is far ranging in its search of prey and may cover up to 100 miles. When hunting, wolves seek shelter in rocky crevices or thick underbrush. Young are born in dens.

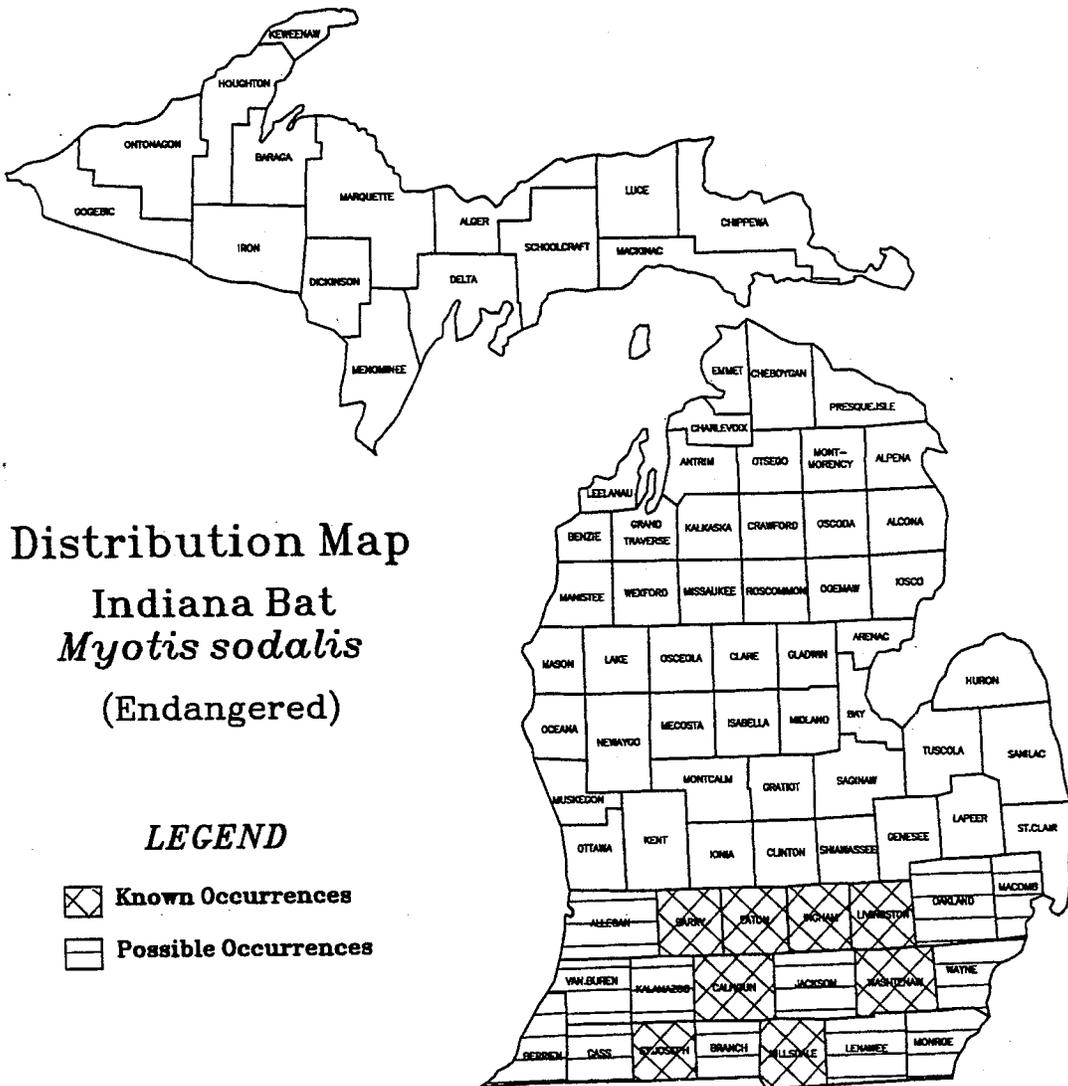
The primary threat to this mammal is efforts by humans to eliminate them. In the past, wolves were hunted and trapped for bounty and strychnine was used as a poison. Management for the grey wolf consists of protection from humans, maintaining large areas of wilderness and reintroducing wolves back into potential habitat.

FEDERAL ENDANGERED SPECIES STATUS- THREATENED IN MINNESOTA, ENDANGERED IN OTHER COTERMINOUS STATES.

MICHIGAN



60 0 60 STATUTE MILES



October 1991

INDIANA BAT
[Myotis sodalis]

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The Indiana Bat is a summer visitor to Michigan. This bat is a medium-sized mammal which hibernates during the winter in caves in Indiana, Kentucky and Missouri and forms nursery colonies in Michigan from May through August. Fully 85 percent of the total population hibernates in seven caves. Historically, the Indiana Bat was found throughout most of the eastern and midwestern U.S.

IDENTIFICATION

The Indiana bat closely resembles the little brown bat [Myotis lucifugus]. The Indiana bat has a dull grayish chestnut colored fur rather than bronze. Underparts are pink to cinnamon. The length of the Indiana bat's forearm is about 1.6 inches while its head and body length extends to 2 inches. Another unique feature of the Indiana bat is that its wings attach along the side of its foot rather than at the ankle.

HABITAT

Maternal colonies are formed in riparian and flood plain forests, along small and medium-sized streams. The bat's optimum foraging habitat is along streams where mature trees overhang the water on both sides. Stream banks that have been cleared of trees do not provide usable habitat.

Like most bats, the Indiana bat is insectivorous, feeding on butterflies, moths and aquatic insects.

During the summer, females roost together in small brood colonies, living in hollow trees or under loose tree bark. Pregnant females give birth to a single young.

Hibernating habitat consists of caves or abandoned mines which have stable temperatures below 50 degrees F. While hibernating, this bat forms large dense clusters of bats on the cave ceiling usually just inside the entrance.

The primary threat to this species is human disturbance of hibernating bats. Bats enter hibernation with only enough fat reserves to last through winter and if aroused, use up these important reserves.

Summer foraging and brooding habitats should be protected from forestry practices which disturb riparian areas.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

Tech Note, BIOLOGY MI-11, March 1992

BALD EAGLE
[Haliaeetus leucocephalus]

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

Records show that bald eagles once nested in most of North America. Currently Alaska is home for the largest population in North America with another large population in Canada's western provinces. The midwestern population of Bald Eagles is concentrated in Minnesota, Wisconsin and Michigan. Between 1960 and 1973, nesting bald eagles disappeared from 18 of 44 Michigan counties.

Most bald eagles move south in the winter. Michigan has bald eagles throughout the year but winter birds are usually limited to areas where open water is present.

IDENTIFICATION

The bald eagle is a majestic bird of prey with a barrel - shaped body between 32 and 40 inches long and a wingspan that may reach 7.5 ft. Adult birds are dark brown to black with a white head and tail. Immature bald eagles develop the characteristic white head in their fourth year. Until then, they are easily mistaken for a golden eagle. This eagle feeds primarily on fish but also eats rodents, small mammals and carrion. Bald eagles nest in the fork of a tall tree. The nest is a massive structure of sticks, branches and forage and is used and added to year after year.

HABITAT

The habitat for the bald eagle varies greatly throughout its range. Generally nesting eagles prefer mature, secluded forests where there are flowing streams, areas of open water and abundant fish. Winter range includes forested wetlands with nearby open water and abundant fish. Warm water discharge areas may also attract bald eagles.

The primary threats to this eagle include pesticide contaminants, especially DDT, habitat disturbance and illegal shooting.

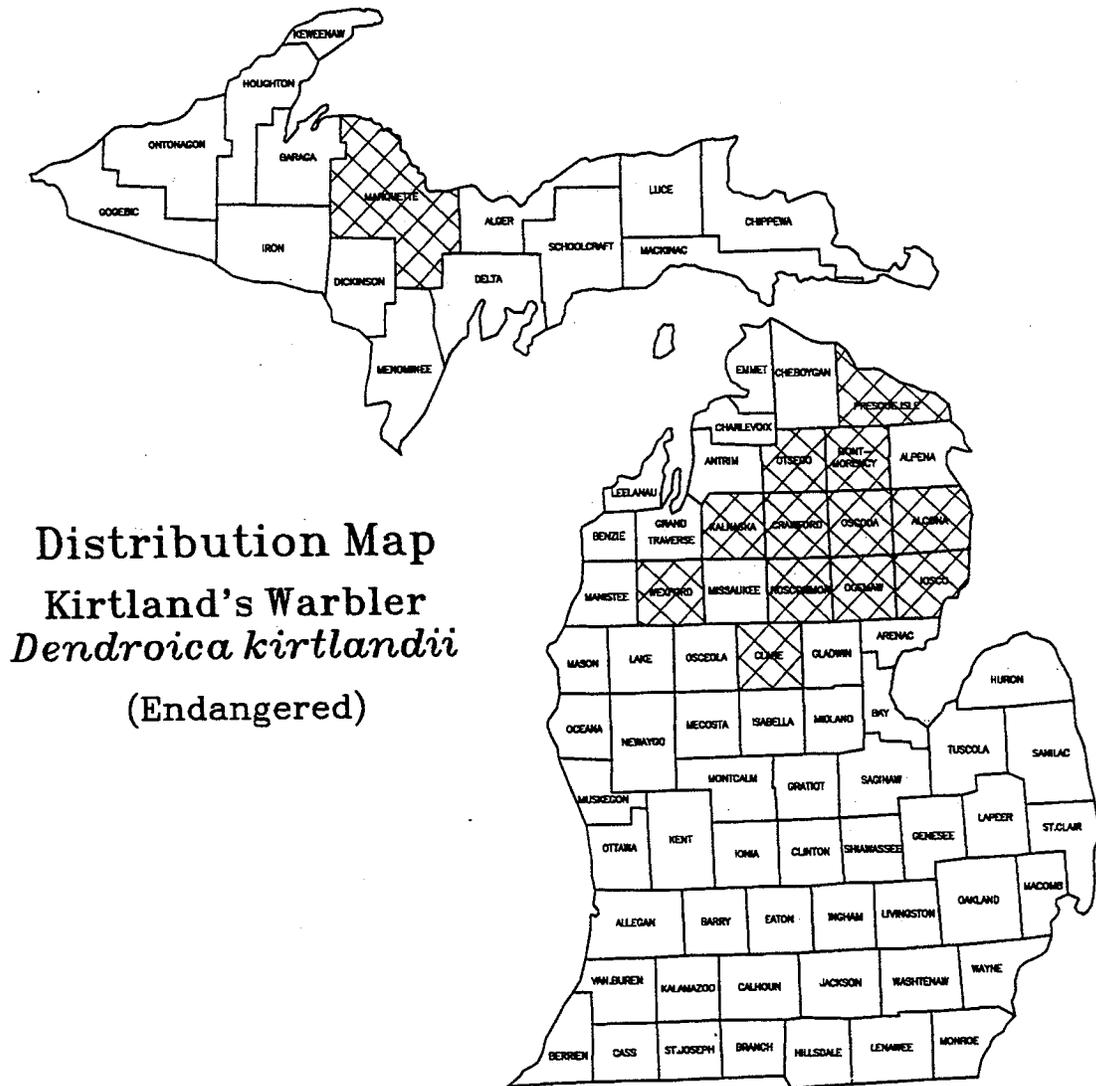
Bald eagle populations have been increasing significantly within the past 10 years. The Fish and Wildlife Service is in the process of reclassifying the bald eagle for Endangered to Threatened in parts of the United States.

FEDERAL ENDANGERED SPECIES STATUS

MICHIGAN



50 0 50 STATUTE MILES



Distribution Map
 Kirtland's Warbler
Dendroica kirtlandii
 (Endangered)

October 1991

KIRTLAND'S WARBLER
(*Dendroica kirtlandii*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

The narrow habitat requirements of the Kirtland's Warbler has probably always restricted its range. The Kirtland's Warbler is a migratory songbird which nests in the conifer zone on the sandy outwash plains of the Wisconsin Glaciation and winters in the Bahamas and Dominican Republic.

The central part of the Lower Peninsula of Michigan provides all the current nesting habitat of the Kirtland's Warbler. Recent studies have identified stray males at jack pine stands in Wisconsin and Minnesota but there is no evidence of nesting. Virtually all nesting occurs in Crawford, Oscoda and Ogemaw counties.

IDENTIFICATION

The Kirtland's Warbler is a small warbler approximately six inches long. It is blue-grey above and yellow below with spotting on the breast and sides. Males have a black spot on the cheek, which in females is gray. Kirtland's Warbler has a white eye ring which is broken by a dark eye line. It is the only eastern tail-wagging warbler which has a grey back. This warbler is almost never seen during migration.

HABITAT

Ideal breeding habitat of the Kirtland's Warbler consists of homogenous thickets of five and six year old jack pine interspersed with grassy openings. The bird builds its nest on the ground beneath pine trees. The nest consists of strips of bark, grass and other fibers and is lined with finer grasses. The warbler requires enough ground cover to conceal its nest but avoids areas that are overgrown. A tract of jack pine must be at least 80 acres in size to attract Kirtland's warbler. Just about all nests have been found on Grayling sand. Grayling sand is found in 29 lower peninsula counties, corresponding closely with natural stands of jack pine.

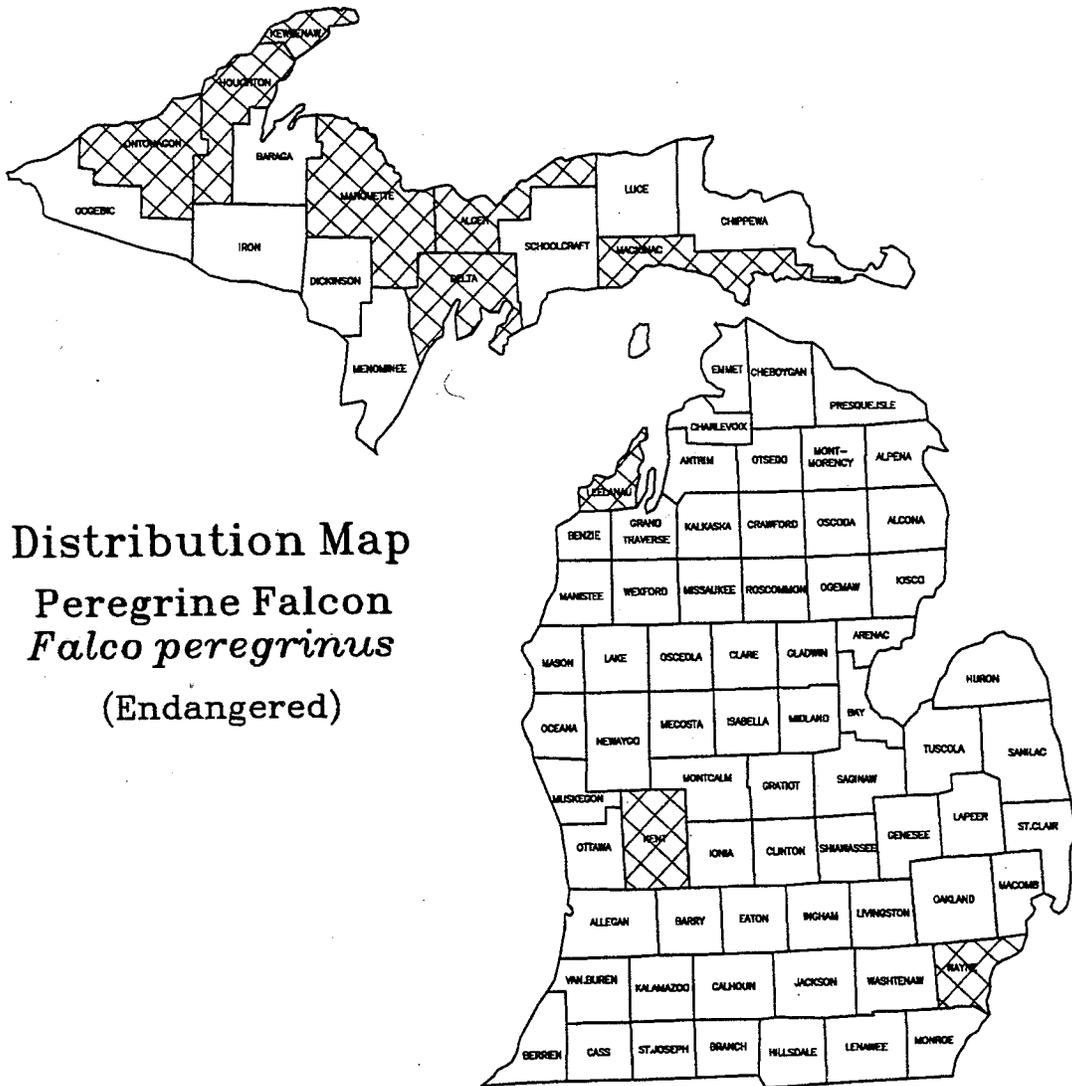
The primary threats to this songbird are nesting habitat conversion, forest fire control, natural succession and cowbird parasitism. Management practices include prescribed burning, jack pine plantings and cowbird removal. In potential nesting areas, practices which encourage young jack pine stands interspersed with grassy openings should be recommended.

FEDERAL ENDANGERED SPECIES ACT STATUS - ENDANGERED

MICHIGAN



50 0 50 STATUTE MILES



Distribution Map
 Peregrine Falcon
Falco peregrinus
 (Endangered)

October 1991

AMERICAN PEREGRINE FALCON
(*Falco peregrinus anatum*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

Fossil records indicate that the peregrine falcon has been present in the U.S. for at least 30,000 years. Historically, the American peregrine falcon nested from central Alaska across north central Canada and south to Central Mexico. This species was probably only locally common throughout the U.S. By the mid 1960s this bird was extirpated from the eastern U.S. as a breeding species. This falcon has been successfully reintroduced to Michigan with nests located on tall office buildings in lower Michigan and natural cliffs in the upper peninsula.

IDENTIFICATION

The Peregrine Falcon is a very fast flying bird of prey. It is 15 to 21 inches long and has a wingspread of about 3.75 feet. While flying, the bird shows sharply pointed wings and a narrow tail. The peregrine is dark slate above with a black cap and nape. It has a white throat and upper breast. Immature birds are dark brown above and heavily streaked below.

Traveling at speeds of up to 60 mph, this bird preys on a wide variety of birds, striking victims from above after a high speed dive. Peregrines are far ranging birds and may nest states apart from one year to the next.

HABITAT

Peregrines are found in a great diversity of habitats including open meadows, grasslands and open country. They prefer cliffs for nesting and will nest on tall office buildings near a large population of pigeons.

The primary threats to the peregrine falcon are pesticide contaminants, especially DDT, and illegal shooting.

FEDERAL ENDANGERED SPECIES STATUS - ENDANGERED

PIPING PLOVER
(*Charadrius melodus*)

HABITAT IDENTIFICATION CRITERIA

INTRODUCTION

By 1900, the piping plover, described by early naturalists as a common resident of the Atlantic Coast and along the Platte River in Nebraska, had been greatly reduced by year round shooting. In 1912, the bird was a common summer resident along the Great Lakes shoreline. Currently, it is estimated that the Great Lakes watershed population consists of only 17 breeding pairs and is considered endangered. The northern Great Plains harbor the largest number of piping plovers in North America. In the Great Plains, the piping plover is considered threatened

IDENTIFICATION

The piping plover is a migratory bird which breeds along the Atlantic Coast, Great Lakes and northern plains into Canada. Birds from the Great Lakes Area winter along the Gulf Coast. The piping plover is one of the earliest migratory birds to return in the spring, usually arriving in March. It is a stocky, short-billed shorebird approximately 7 inches long. In breeding plumage, it has a black chest band and black crown patch. The bill is orange and tipped with black. In winter, the bird loses its black markings and the bill is all black. Breeding season is from late March to August.

HABITAT

The piping plover nests on sand or pebble beaches, normally associated with large bodies of water. When nesting inland, the plover seeks out small islands or flats along major rivers. The nest consists of a depression on the beach. The female lays four pear-shaped, buff-colored, white eggs, marked with small dark spots. Both parents incubate the eggs for about 30 days. After hatching, family groups stay together until the chicks fledge. The piping plover's diet consists of crustaceans, mollusks and other small marine creatures supplemented by insects.

The primary threats to piping plovers consist of habitat disturbance by beachfront development and nest disturbance by beach hikers, off-road vehicles and natural predators such as racoons, gulls and unleashed pets.

FEDERAL ENDANGERED SPECIES STATUS-ENDANGERED IN GREAT LAKES AREA

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