

Fish and Wildlife Service**50 CFR Part 17**

RIN 1018-AB36

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Mimulus glabratus* var. *michiganensis* (Michigan monkey-flower)**AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

SUMMARY: The Service determines *Mimulus glabratus* var. *michiganensis* (Michigan monkey-flower) to be an endangered species under the authority of the Endangered Species Act of 1973, as amended (Act). This semi-aquatic perennial plant is known from only twelve sites in Michigan, eight of which contain fewer than 10 individual plants. The plant is endangered by habitat loss due to recreational and residential development. This action will implement Federal protection provided by the Act to *Mimulus glabratus* var. *michiganensis*. Critical habitat is not being designated.

EFFECTIVE DATE: July 23, 1990.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal hours at the Service's Regional Office of Endangered Species, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111.

FOR FURTHER INFORMATION CONTACT: Ronald L. Refsnider, Acting Endangered Species Coordinator (see ADDRESSES section) at 612/725-3276 or FTS 725-3276.

SUPPLEMENTARY INFORMATION:**Background**

Mimulus glabratus var. *michiganensis* (Michigan monkey-flower) was first recognized as a separate taxon by Pennell (1935) in his monograph of the Scrophulariaceae. He identified it as a subspecies, while Fassett (1939) assigned it varietal status. Some researchers have noted considerable morphological overlap with other taxa. However, recent studies (Bliss 1983, Minc 1989) of floral characters of closely related taxa showed distinct morphometric differences between *M. glabratus* var. *michiganensis*, *M. glabratus* var. *fremontii* and *M. guttatus*.

Statistical analyses of measurements of corolla length, corolla width, pistil length, style length, and ovary length demonstrated that *M. glabratus* var. *michiganensis* is consistently and distinctively intermediate between the other two taxa: smaller than *M. guttatus*, but larger than *M. glabratus* var. *fremontii*. As Minc (1989) reports, the two *M. glabratus* varieties are readily distinguished by differences in flower size, while some size overlap occurs between *M. glabratus* var. *michiganensis* and *M. guttatus*. However, the latter two taxa differ in the shape of the floral characters. These studies confirmed the validity of recognizing this taxon at least as a distinct variety and perhaps as a separate species.

Mimulus glabratus var. *michiganensis* is an aquatic or semi-aquatic glabrous, perennial herb with lax stems averaging 36 centimeters (14 inches) in length. It roots at the lower stem nodes to produce clones of up to several hundred stems. The rotund, coarsely-toothed leaves are opposite and evenly distributed along the stem. The plant blooms from about mid-June to mid-July and occasionally to mid-August. However, pollen viability is low, suggesting that var. *michiganensis* is primarily dependent on vegetative reproduction. The yellow tubular flowers range from 16 to 27 millimeters (.63 to 1.1 inches) long (Bliss 1983, Minc 1989) and emerge from upper leaf axils on slender stalks. The flowers have two-lobed upper lips and three-lobed lower lips, with the lower lip and tube irregularly red spotted. The ranges of var. *michiganensis* and var. *fremontii* overlap, though these plants have not been found to co-occur at any site.

Mimulus glabratus var. *michiganensis* can be distinguished from var. *fremontii* by flower size. The smaller var. *fremontii* flowers are 8 to 18 millimeters (.32 to .71 inches) long. Pistil length is 11 to 21 millimeters (.43 to .83 inches) for var. *michiganensis*, and 5 to 10 millimeters (.2 to .39 inches) for var. *fremontii*. Although their ranges are not presently known to overlap, *Mimulus glabratus* var. *michiganensis* is generally smaller than *M. guttatus* and can be distinguished from this taxon by the larger opening in the corolla throat and the shape of the calyx lobes.

Crispin and Penskar (1989) report that var. *michiganensis* 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 what were the ancient shorelines of the Great Lakes. Northern white cedar (*Thuja occidentalis*) is

usually dominant in the overstory. The Michigan monkey-flower grows in muck or mucky sand that is saturated or inundated by cold, flowing spring water. Typical associates include *Impatiens biflora* (touch-me-not), *Myosotis scorpioides* (forget-me-not), *Nasturtium officinale* (watercress), *Mentha arvensis* (spearmint), and *Conocephalum conicum* (liverwort). Other species frequently present are *Caltha palustris* (buttercup), *Mitella nuda* (miterwort), *Cystopteris bulbifera* (bulblet fern), *Eupatorium maculatum* (joe-pye-weed), *Equisetum arvensis* (scouring-rush), and *Thuidium delicatulum* (feather moss).

Many of the earliest herbarium specimens of *Mimulus glabratus* var. *michiganensis* were not initially identified beyond the species level. They were subsequently identified as var. *jamesii*, var. *fremontii*, and finally var. *michiganensis*. The first reported collection of var. *michiganensis* was by Charles F. Wheeler in Harbor Springs, Emmet County, Michigan in July 1890. However, the specimen was not identified as var. *michiganensis* until 1980. The type specimen was collected in July 1925 by J. H. Ehlers along the banks of Niger Creek near Topinabee, Cheboygan County, Michigan. Whereas the *Mimulus glabratus* complex ranges from Canada to southern Chile, historical records and recent surveys have shown that var. *michiganensis* has a very narrow range, restricted to the Mackinac Straits and Grand Traverse regions of Michigan, specifically in Benzie, Cheboygan, Emmet, Leelanau and Mackinac Counties. The plant is no longer extant at four of the 16 known historical locations (including the type locality and the site of first collection). Two existing sites contain only one or two plants. Almost two-thirds of the extant occurrences are on privately-owned lands. The var. *michiganensis* also 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 Michigan Nature Association, a private state-wide conservation organization.

Federal Government action on this plant began as a result of section 12 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*) which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct. This report (Ayensu and DeFillippis 1978), designated as House Document No. 94-51, was presented to Congress on January 9, 1975. *Mimulus glabratus* var. *michiganensis* was listed as

"threatened" in that document. On July 1, 1975, the Service published a notice in the *Federal Register* (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) of the Act (now section 4(b)(3)) and of its intention to review the status of plant taxa named within. On June 16, 1976, the Service published a proposed rule in the *Federal Register* (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94-51 and the July 1, 1975, *Federal Register* publication.

Mimulus glabratus var. *michiganensis* was included in the July 1, 1975, notice of review and the June 16, 1976, proposal. General comments received in relation to the 1976 proposal were summarized in the *Federal Register* on April 26, 1978 (43 FR 17909). On December 10, 1979, the Service published a notice (44 FR 70796) withdrawing the portion of the June 16, 1976 proposal that had not been made final, along with four other proposals that had expired due to a procedural requirement of the 1978 Amendments to the Act. On December 15, 1980 (45 FR 82479), November 28, 1983 (48 FR 53640), and September 27, 1985 (50 FR 39525), the Service published revised notices of review for native plants in the *Federal Register*.

Mimulus glabratus var. *michiganensis* was included as a category 1 species in the 1980 notice. Category 1 species are those for which biological information in the Service's possession warrants their listing as endangered or threatened. In the 1983 and 1985 notices, var. *michiganensis* was dropped to category 2 when it became evident that further biological research and surveys were needed to determine its status and taxonomic validity. Since that time, additional research (Minc 1989) and an updated status survey (Crispin and Penskar 1989) were completed, which clarified the taxonomic distinctness of the plant and demonstrated more clearly the biological threat and the need for protection under the Act.

The Endangered Species Act Amendments of 1982 required that all petitions pending as of October 13, 1982, be treated as having been submitted on that date. The deadline for a finding on those species, including *Mimulus glabratus* var. *michiganensis*, was October 13, 1983. On October 13, 1983, and again in 1984, 1985, 1986, 1987 and

1988, the petition finding was that listing of *Mimulus glabratus* var. *michiganensis* was warranted pending finding of further information but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act. Such a finding requires that the petition be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. A final finding to the effect that the petitioned action was warranted was incorporated in a proposed rule to determine endangered status for *Mimulus glabratus* var. *michiganensis* issued in the *Federal Register* of October 2, 1989 (54 FR 40454).

Summary of Comments and Recommendations

In the October 2, 1989, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, landowners, and other interested parties were contacted and requested to comment. Notices inviting public comment were published in the following Michigan newspapers between October 23 and 27, 1989: *The Cheboygan Daily Tribune*, *Traverse City Record Eagle*, *St. Ignace News*, and *Petoskey News-Record*. Five comments supporting the listing were received and are discussed below.

Two of the comments were from the National Park Service, who advised that a population of *Mimulus glabratus* var. *michiganensis* is found within the boundaries of Sleeping Bear Dunes National Lakeshore, and is well protected. The Michigan Technical Plant Committee recommended additional surveys be conducted in Mackinac County around the Epoufette and Cut River areas where *M. glabratus* var. *michiganensis* is found, and expressed concern about the sand mining operation in the area that might affect the temperature and availability of ground water, which is necessary for the plants survival. Another commenter, concerned about the increasing pressures on the Michigan monkey-flower as a result of development along the Great Lakes shorelines, believes other plant species requiring cold water habitat will also benefit once the Michigan monkey-flower is protected under the Endangered Species Act. Another person, who has published her findings on the distinctness of var. *michiganensis* from var. *fremontii*, reaffirms that position, and notes that she found all but one of the known populations of var. *michiganensis* to be

sterile. None of the commenters were able to provide additional occurrence information.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Mimulus glabratus* var. *michiganensis* (Pennell) Fassett should be classified as an endangered species. Procedures found at section 4(a)(1) of the Act and regulations promulgated to implement the listing provisions of the Act (50 CFR part 424) were followed. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Mimulus glabratus* var. *michiganensis* are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* *Mimulus glabratus* var. *michiganensis* is restricted to the current and what was the historical Great Lakes shorelines in the Mackinac Straits and Grand Traverse regions in Michigan. These areas are rapidly being developed for recreational and residential purposes. The major threat to var. *michiganensis* is the destruction and adverse modification of its habitat. Since most populations lie along lakeshores and streams, the plant is particularly vulnerable to increasing vacation home development in its range (Crispin and Penskar 1989). Of the 16 extant and historical populations, three have been extirpated and at least two additional sites have been severely impacted by residential and other developments. The plant has been extirpated at an additional site (the type locality) due to unknown causes.

Mimulus glabratus var. *michiganensis* appears to be highly dependent on continuous supplies of cold spring water. Two of the smaller populations have survived artificial disturbances, such as overstory thinning, and cutting and pulling in spring-fed rivulets that have been maintained adjacent to lakeside residences. Therefore, the plant may be impacted by both direct destruction of its habitat as well as by disturbance to its water supply. Upstream water supply may be impacted by roads and other activities which divert water from the small drainages which support the plant. Excessive pumping of groundwater upgradient of the sites may reduce stream base flows. The plant may therefore be inadvertently impacted by offsite activities. One recent extirpation

of a population appears to have been due to such a disturbance to its water supply.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Commercial trade of this plant is not known to exist, but collection could reduce populations in more accessible sites. Some incidental commercial use has occurred. One population was discovered after a botanist was served a sprig of *Mimulus glaberratus* var. *michiganensis* as a garnish on his restaurant dinner plate.

C. *Disease or predation.* None known that affects this taxon.

D. *The inadequacy of existing regulatory mechanisms.* *Mimulus glaberratus* var. *michiganensis* is listed as threatened by the State of Michigan. It is illegal to take, possess, transport, import, export, process, sell, buy, collect, pick, cut, dig up, or destroy in any manner any listed plants or plant parts, without a permit. Although the State Endangered Species Act does not provide protection for habitat, State and Federal wetland laws regulate many activities within the streamside/wetland habitat of *Mimulus glaberratus* var. *michiganensis*. However, there is no guarantee for preservation of this habitat nor the plant's water supply without the protection of the Act and subsequent recovery actions including development of specific management plans. The Endangered Species Act offers possibility for additional protection of this taxon through section 6 cooperation between the States and the Service, and through section 7 (interagency cooperation) requirements.

E. *Other natural or manmade factors affecting its continued existence.* Periodic high water levels of the Great Lakes impact the shoreline habitat of *Mimulus glaberratus* var. *michiganensis*. Recent record high water levels and strong winter storms reshaped many shoreline areas, redirecting seepage streams which supported the plants and opening the overstory by felling cedars. At least one site occurrence listed as extant has not been resurveyed since these storms. Therefore, its present status is unknown. Other shoreline colonies appear to have survived the recent high water levels.

Mimulus glaberratus var. *michiganensis* is particularly vulnerable because of the low numbers of individuals occurring at most sites and its limited capability for sexual reproduction. Since the plant roots at the lower stem nodes to produce new stems, it is impossible to distinguish the number of genetic individuals in each colony. However, if one assumes that each "clump" of stems is one individual plant, only four of 12

extant sites contain more than 10 plants. In addition, if, at Crispin and Penskar (1989) surmise, the largely clonal colonies have low genetic diversity, *Mimulus glaberratus* var. *michiganensis* may have limited ability to survive or adapt to environmental change. Margaret Bliss (Groundwater Technology, Inc., personal communications, December 1989) advises that in her research she found *M. glaberratus* var. *michiganensis*, to be sterile in all but one population. With the limited number of colonies and individuals in existence, and the limited gene pool, the loss of any individuals would appreciably reduce the chances of survival and recovery.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this taxon in determining to make this rule final. Based on this evaluation, the preferred action is to list *Mimulus glaberratus* var. *michiganensis* as an endangered species, because of its restricted range, the limited number of populations and individuals, its limited capability for sexual reproduction and hence its limited gene pool, and the severe threats to its habitat. Critical habitat is not being designated for reasons listed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary propose critical habitat at the time the species is determined to be endangered or threatened. The designation of critical habitat is not considered to be prudent when such designation would not be of net benefit to the species involved (50 CFR 424.12). In the present case, the Service believes that designation of critical habitat would not be prudent because no net benefit to the species can be identified that would outweigh the potential threat of vandalism or collection, which might be exacerbated by the publication of a detailed critical habitat description. The limited number of populations and individuals of *Mimulus glaberratus* var. *michiganensis* make this plant particularly vulnerable to taking, an activity difficult to enforce against and only regulated by the Act with respect to plants in cases of (1) Removal and reduction to possession of listed plants from lands under Federal jurisdiction, or their malicious damage or destruction on such lands; and (2) removal, cutting, digging up, or damaging or destroying in knowing violation of any State law or regulation, including State criminal trespass law. Such provisions are difficult to enforce,

and publication of critical habitat descriptions and maps would make *Mimulus glaberratus* var. *michiganensis* more vulnerable and increase enforcement problems. The principal landowners have been notified of the location and importance of protecting this species' habitat. Protection of this species' habitat will be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, it would not now be prudent to determine critical habitat for *Mimulus glaberratus* var. *michiganensis*.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. The National Park Service (NPS) has jurisdiction over one *Mimulus glaberratus* var. *michiganensis* site in Leelanau County, Michigan. Currently, no activities to be permitted, funded, or carried out by any Federal agency, are known to exist which would affect this

taxon. The NPS intends to conduct additional surveys for the species within Sleeping Bear Dunes National Lakeshore in the summer of 1990 (M. Holden, NPS, personal communications, 1990).

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. In addition, for listed plants, the 1988 amendments (Pub. L. 100-478) to the Act prohibit the malicious damaging or destruction on Federal lands, and the removal, cutting, digging up, or damaging or destroying of listed plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances.

It is anticipated that few trade permits would ever be sought or issued because *Mimulus glabratus* var. *michiganensis* is

not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 3507, Arlington, VA 22203 (703/358-2093).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Ayensu, R.E., and R.A. DeFillipps. 1978. Endangered and threatened plants of the United States. Smithsonian Institution and World Wildlife Fund. 403 pp.
 Bliss, M. 1983. A comparative study of the two varieties of *Mimulus glabratus* (Scrophulariaceae) in Michigan. M.S. thesis. University of Michigan, Ann Arbor. 58 pp.
 Crispin, S.R., and M.R. Penskar. 1989. Rangewide status survey of *Mimulus glabratus* var. *michiganensis* (Pennell) Fassett, the Michigan monkey-flower. Michigan Natural Features Inventory, unpublished report. 12 pp. and appendices.
 Fassett, N.C. 1939. Notes from the herbarium of the University of Wisconsin. *Rhodora* 14:524-525.
 Minc, L.D. 1989. A morphometric comparison of *Mimulus glabratus* var. *michiganensis*,

M. glabratus var. *fremontii*, and *M. guttatus* based on floral characters. Unpublished report prepared for the Michigan Natural Features Inventory. 20 pp.
 Pennell, F.W. 1935. The Scrophulariaceae of eastern temperate North America. Monograph I, Academy of Natural Sciences, Philadelphia. 650 pp.

Author

The primary author of this rule is William F. Harrison (see **ADDRESSES** section) (612/725-3276 or FTS 725-3276).

List of Subjects in 50 CFR Part 17

Endangered or threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1543; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500 unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under Scrophulariaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

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 (h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Scrophulariaceae—Snapdragon family:						
<i>Mimulus glabratus</i> var. <i>michiganensis</i>	Michigan monkey-flower	U.S.A. (MI)	E	392	NA	NA

Dated: May 16, 1990.
 Richard N. Smith,
 Acting Director, Fish and Wildlife Service.
 [FR Doc. 90-14412 Filed 6-20-90; 8:45 am]
 BILLING CODE 4310-55-M