

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).

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 Cummings, K.S., C.A. Mayer, L.M. Page, and J.M. Berlocher. 1987. Survey of the Freshwater Mussels (Mollusca: Unionidae) of the Wabash River Drainage, Phase I: Lower Wabash and Tippecanoe Rivers. Technical Report 1987(5). Illinois Natural

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Author

The primary author of this proposed rule is Richard G. Biggins, U.S. Fish and Wildlife Service, Asheville Field Office, 100 Otis Street, Room 224, Asheville, North Carolina 28801 (704/259-0321 or FTS 672-0321).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, 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. It is proposed to amend § 17.11(h) by adding the following, in alphabetical under CLAMS, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *
 (h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Clams							
Mussel, fanshell	<i>Cyprogenia stegaria</i> (= <i>irrorata</i>).	U.S.A. (AL, IL, IN, KY, OH, PA, TN, VA, and WV).	NA	E		NA	NA

Dated: September 19, 1989.
 Richard N. Smith,
 Acting Director, Fish and Wildlife Service.
 [FR Doc. 89-23055 Filed 9-29-89; 8:45 am]
 BILLING CODE 4310-55-M

50 CFR Part 17

RIN 1018-AB36

Endangered and Threatened Wildlife and Plants; Endangered Status Proposed for *Mimulus glabratus* var. *michiganensis* (Michigan monkey-flower)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to list *Mimulus glabratus* var. *michiganensis* (Michigan monkey-flower) as 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 less than 10 individual plants. The plant is endangered by habitat loss due to recreational and residential development. This proposed rule, if made final, will extend Federal protection provided by the Act to *Mimulus glabratus* var. *michiganensis*. Critical habitat is not proposed for this plant. The Service seeks data and comments from the public.

DATES: Comments from all interested parties must be received by December 1, 1989. Public hearing requests must be received by November 16, 1989.

ADDRESSES: Comments and materials concerning this proposal should be sent to: Endangered Species Program, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: James M. Engel, 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 DeFillipps 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. The present proposal constitutes the final finding that the listing is warranted. The Service proposes to implement the petitioned action in accordance with section 4(b)(3)(B)(ii) of the Act.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act and regulations promulgated to implement the listing provisions of the Act (50 CFR part 424) set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species 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* (Pennell) Fassett (Michigan monkey-flower) 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 baseflows. 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 glabratus* 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 glabratus* 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 glabratus* 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 glabratus* 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 glabratus 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, as Crispin and Penskar (1989) surmise, the largely clonal colonies have low genetic diversity, *Mimulus glabratus* var. *michiganensis* may have limited ability to survive or adapt to environmental change. 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 species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Mimulus glabratus* var. *michiganensis* as endangered. Endangered status appears to be appropriate due to the restricted range of this taxon, the limited number of populations and individuals, its limited capability for sexual reproduction and hence its limited gene pool, and the severity of threats facing the species. Critical habitat is not being proposed 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 proposed to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. The limited number of populations and individuals of *Mimulus glabratus* 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 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 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 damage 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 glaberratus* 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).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited.

Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) The location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by Section 4 of the Act;

(3) Additional information concerning the range, distribution, and population size of this species;

(4) Current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulation(s) on this species will take into consideration the comments and any additional information received by the Service, and such communications may lead to a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal. Such requests must be made in writing and addressed to Regional Director, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111.

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 glaberratus* (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 glaberratus* 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* 41:524-525
- Minc, L.D. 1989. A morphometric comparison of *Mimulus glaberratus* var. *michiganensis*, *M. glaberratus* 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 proposed rule is Margaret T. Kolar, U.S. Fish and Wildlife Service, 1405 S. Harrison Road, East Lansing, Michigan 48823 (517/337-6650 or FTS 374-6650).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, 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. It is proposed to 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.

* * * * *
(h) * * *

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

Dated: September 14, 1989.
Bruce Blanchard,
 Acting Director, Fish and Wildlife Service.
 [FR Doc. 89-23057 Filed 9-29-89; 8:45 am]
 BILLING CODE 4310-55-M

50 CFR Part 17
RIN 1018-AB31

Endangered and Threatened Wildlife and Plants; Proposal To Determine Threatened Status for the Puritan Tiger Beetle and Endangered Status for the Northeastern Beach Tiger Beetle

AGENCY: Fish and Wildlife Service, Interior.
ACTION: Proposed rule.

SUMMARY: The Service proposes to determine threatened status for the Puritan tiger beetle (*Cicindela puritana*) and endangered status for the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), two shore-dwelling beetles of the family Cicindelidae. The former was known historically from the Connecticut River in New Hampshire, Massachusetts and Connecticut, and from along the Chesapeake Bay in Maryland; it is now restricted to Maryland and one site in Massachusetts. The latter once occurred commonly along coastal beaches from Cape Cod Massachusetts, to central New Jersey and along the Chesapeake Bay, from Calvert County, Maryland, south; it is now evidently extirpated north of Maryland. Both tiger beetles are threatened by rapid human population

increase and development in the areas they occupy. Population and range reductions undergone by both make them more prone to chance extinctions; more vulnerable to the effects of winter storms, predators, and parasites; and less able to recolonize areas previously occupied. This proposal, if made final, will implement protection provided by the Endangered Species Act of 1973, as amended, for these beetles. Critical habitat is not proposed. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by December 1, 1989. Public hearing requests must be received by November 16, 1989.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Annapolis Field Office, U.S. Fish and Wildlife Service, 1825 Virginia Street, Annapolis, Maryland 21401. Comments and materials will be available for inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Judy Jacobs at the above address or by telephone (301/269-5448).

SUPPLEMENTARY INFORMATION:

Background

Tiger beetles (genus: *Cicindela*) are day-active, predatory insects that capture small arthropods in a "tiger-like" manner, grasping prey with their mandibles (mouthparts). Tiger beetle larvae, which live in permanent burrows in the ground, are also voracious predators, fastening themselves by

means of abdominal hooks near the tops of the burrows and rapidly extending from their burrows to seize passing invertebrate prey. Over 100 species and many additional subspecies of tiger beetles occur in the United States (Boyd 1982). Because of their interesting behavior and variety of forms and habitats, tiger beetles have received much study; a journal devoted exclusively to these beetles, "Cicindela," has been published since 1969. The Puritan tiger beetle (*Cicindela puritana*) and the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), both associated with beach habitats, have until recently received little ecological study.

The Puritan tiger beetle is brownish-bronze above with a metallic blue underside and measures under 11.5 mm (½-inch) in total length. Each elytron (wing cover) is marked with narrow marginal and transverse white bands. It is distinguished from more common, similarly marked tiger beetles by the uneven or minutely broken edges of the middle band (Glaser 1984). Originally described by G. Horn (1876), *C. puritana* was later considered a subspecies of *Cicindela cuprascens* (Leng 1902, Horn 1930) and a subspecies of *Cicindela macra* (Vaurie 1951). Most recently, Willis (1967) established separate species status for these three taxa. The range of *C. puritana* is separated by several hundred miles from the overlapping ranges of *C. macra* and *C. cuprascens*.

Historically, the Puritan tiger beetle occurred in scattered localities along the Connecticut River in Connecticut, New