

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB66

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Plant *Isoetes louisianensis* (Louisiana quillwort)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to list a plant, *Isoetes louisianensis* (Louisiana quillwort), as an endangered species under the authority contained in the Endangered Species Act (Act) of 1973, as amended. *Isoetes louisianensis* is currently only known from a localized portion of the Mill Creek drainage, and a single site in Miller Creek, Washington Parish, Louisiana. These two populations are threatened by timber harvest, gravel mining, or any other activity that would affect the hydrology or stability of the streams in which the plant occurs. This proposed rule, if made final, will extend the Act's protection to *Isoetes louisianensis*. The Service seeks data and comments from the public on this proposed rule.

DATES: Comments from all interested parties must be received by December 20, 1991. Public hearing requests must be received by December 5, 1991.

ADDRESSES: Comments and materials concerning this proposal should be sent to the U.S. Fish and Wildlife Service, 6578 Dogwood View Parkway, Jackson, Mississippi 39213. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Paul Hartfield at the above address (601/965-4900 or FTS 490-4900).

SUPPLEMENTARY INFORMATION:

Background

Isoetes louisianensis is a small, grasslike, aquatic herb in the quillwort family. Quillworts are seedless vascular plants which reproduce by spores and are closely related to ferns. Their slender quill-like leaves arise from a short fleshy stem (corm) that is shallowly rooted in the substrate. The leaves are rounded, hollow and swollen at their base. The sporangia (spore-containing structures) are embedded in the broadened bases of the leaves. Quillworts are heterosporous producing both megasporangia and microsporangia. Megaspore morphology and habitat preference are primary characters for the identification of *Isoetes* species (Taylor *et al.* 1989).

Isoetes louisianensis was described in 1973 from Thigpen Creek, a tributary of Mill Creek in the Bogue Chitto drainage, Washington Parish, Louisiana (Landry and Thieret 1973). Distinctive characters on which the species was based included brown-spotted sporangial walls and megaspores with high reticulate ridges producing a spiny effect. The leaves are numerous, varying in length from 15 to 40 centimeters (6-16 inches) depending on water depth (Kral 1983). *Isoetes louisianensis* has been reported to sporulate twice a year, producing megaspores in the spring and microspores in the fall (Landry and Thieret 1973).

In 1982, Brian Boom reduced the specific status of the Thigpen Creek population of *Isoetes* to a hybrid. He considered the population's distinctive characters (sporangial wall coloration, megaspore ornamentation, sporulation frequency) to be intermediate between *I. engelmannii* and *I. melanopoda*, although these two species are not known to co-occur. Luebke and Taylor (1986) questioned the hybrid parentage proposed by Boom for this as well as other purported hybrid crosses. They noted the absence of the putative parents from the hybrid localities; a lack of cytological evidence supporting the proposed crosses; and the uniformity of spore morphology in the putative hybrids and their viability. Hybrid spores are typically abortive and are not normal in appearance, and primary laboratory produced *Isoetes* hybrids are usually sterile.

Taylor *et al.* (1989) treat *Isoetes louisianensis* as a distinct species in an unpublished manuscript for the Flora of North America project. They acknowledge that while *I. louisianensis* may be of hybrid origin (it is tetraploid, $2n=44$) with *I. engelmannii* as one of its parents, the species' spores are uniform in size and texture and readily

germinate in culture. Based on the lack of information supporting Boom's hybrid concept, and Taylor *et al.*'s recognition of the taxon, the Service recognizes the taxonomic validity of *Isoetes louisianensis*.

Isoetes louisianensis is a semi-aquatic plant known from only four small streams in the Bogue Chitto River drainage, Washington Parish, Louisiana. A report of the species from Worth County, Georgia (Bruce *et al.* 1980) was in error (Snyder *in litt.* 1988). The plant is found in a 1.25 km (0.75 mile) reach of Thigpen Creek, an 0.5 km (0.3 mile) reach of Clearwater Creek and in a 1.0 km (0.6 mile) reach of Mill Creek in the Mill Creek drainage, and at a single site in Miller Creek (McInnis 1991). These streams are typically small to medium sized, shallow and with clear, tannic acid colored water, running through narrow riparian forest communities. Substrates are stable mixtures of silt, sand and gravel.

Isoetes louisianensis occurs predominately on sand and gravel bars on accreting sides of streams and in moist over flow channels. The species is found less commonly on low sloping banks near, and occasionally below, the low water level. Plants are regularly inundated as much as 50 cm (20 inches) following rains, and may be inundated for long periods in wet seasons. Corm depth has been found as great as 3 cm (1.2 inches), indicating a tolerance for deposition of material. Plants can be found singly or in numbers of several hundred in the Mill Creek drainage. Only four plants are known from Miller Creek. Close herbaceous associates are *Viola primulifolia*, *Scirpus divaricatus*, *Justicia lanceolata*, *Hypoxis leptocarpa*, *Xyris* sp., *Carex* sp., and the liverwort *Pallavicinia lyellii*.

It is possible that the species was once more widespread. However, numerous small stream riparian habitats with similar physiognomy and vegetational composition have been searched in the Bogue Chitto River drainage in Louisiana and Mississippi, and in other drainages across south Mississippi without finding *Isoetes louisianensis* (Rosso 1987, McInnis 1991). McInnis (1991) noted that the numerous small streams that were unsuccessfully searched differed from known localities in type or stability of substrate, steepness of banks, absence of sand or gravel bars, seasonal lack of flow, or habitat alteration that has resulted in siltation, erosion, pollution, etc. Other wetland habitats surveyed without result included bottomland hardwood forests, pitcher plant seeps, large stream riparian zones, edges of

ponds and gravel pits, ditches, mudholes, and wet areas along roadsides and utility rights-of-ways.

Federal actions involving *Isoetes louisianensis* began with Section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27823) of its acceptance of the report of the Smithsonian Institution as a petition within the context of Section 4(c)(2), now section 4(b)(3)(A), of the Act and of its intention thereby to review the status of those plants. 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. *Isoetes louisianensis* was included in the Smithsonian petition and the 1976 proposal. General comments received in relation to the 1976 proposal were summarized in an April 26, 1976 **Federal Register** publication (43 FR 17909).

The Endangered Species Act Amendments of 1978 required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. In the December 10, 1979, **Federal Register** (44 FR 70796), the Service published a notice of withdrawal of the June 16, 1976, proposal, along with four other proposals that had expired. *Isoetes louisianensis* was included as a category 2 species in a revised list of plants under review for threatened or endangered classification published in the December 15, 1980, **Federal Register** (45 FR 82480). This species was maintained in category 2 in the Service's updated plant notices of September 27, 1985 (50 FR 39526) and February 21, 1990 (55 FR 6184). Category 2 species are those for which there is some evidence of vulnerability, but for which there are not enough data to support listing proposals at this time. The Service funded a status survey for this plant species in 1990. Field surveys were conducted during the summer and early fall of that year. A final report was received and approved by the Service in early 1991. This report (McInnis 1991) and other information support the proposed listing.

Section 4(b)(3) of the Endangered Species Act, as amended in 1982, requires the Secretary to make certain findings on pending petitions within 12

months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Isoetes louisianensis* because of the acceptance of the 1975 Smithsonian report as a petition. In October of 1983, and succeeding years, the Service found that the petitioned listing of *Isoetes louisianensis* was warranted, but that listing this species was precluded due to other higher priority listing actions and additional data were being gathered. Publication of the present proposal constitutes the final 1-year finding that is required.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act 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 *Isoetes louisianensis* Thieret (Louisiana quillwort) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The primary threats to *Isoetes louisianensis* are activities that would affect the hydrology or stability of the streams in which the plant occurs. Thigpen and Clearwater Creeks converge to form Mill Creek. Any natural or human disturbance that would affect either tributary would also impact the Mill Creek portion of the population.

Timber removal can lead to an increase in surface runoff and contributes to stream erosion and/or siltation. All known stream habitat supporting this species is associated with a well developed stream canopy. Canopy removal would alter the light regime under which the species is currently known to exist. Timber harvest has occurred at various locations along all streams supporting the taxon (McInnis 1991). Extensive clearcuts have been made along portions of Clearwater Creek. Portions of the bayhead forests in the headwaters of Thigpen and Clearwater Creeks are currently being clearcut and replanted with pine seedlings.

Isoetes louisianensis is generally associated with stable coarse sand and gravel substrates. Although the plants

are occasionally found in finer soils in overflow channels, the substrate is always firm and stable (McInnis 1991). Sand and gravel mining along Clearwater Creek is affecting the hydrology, water quality and substrate stability of that stream and Mill Creek. Portions of Clearwater Creek have been completely cleared, channelized or re-routed by sand and gravel mining activities (McInnis 1991). The headwaters of Thigpen and Clearwater Creek have been ditched to direct surface drainage away from the mining operation.

An application for a permit to discharge produced waters from a natural gas compressor station into the upper Thigpen Creek is currently under review by the Louisiana Department of Environmental Quality (McInnis 1991). The nature and amount of discharge, and the potential effects to *Isoetes louisianensis* are unknown.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Due to the limited distribution and easily accessed habitat of *Isoetes louisianensis*, indiscriminate collecting of any nature could seriously affect this species and perhaps result in its extinction. Overcollecting is not known to occur at this time.

C. Disease or Predation

This plant species is not known to be threatened by disease or predation.

D. The Inadequacy of Existing Regulatory Mechanisms

This species is not recognized by any existing Federal or State regulation. Without listing, it would not be considered during project impact evaluation under other environmental laws.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Isoetes louisianensis is extremely vulnerable because of its restricted range and limited population size. Only 2.75 km (1.65 miles) of continuous habitat for the species exists in the lower portions of Thigpen and Clearwater Creeks and the upper portion of Mill Creek. Only four plants are known from a single site in the Miller Creek drainage. This restricted range makes the species vulnerable to any loss of individuals from its limited gene pool.

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 *Isoetes louisianensis* as endangered. Endangered status is appropriate due to the plants small populations, restricted range, and continuing threats to its habitat. An endangered species, as defined by the Act, is threatened with extinction throughout all or a significant portion of its range. Critical habitat is not being designated for reasons discussed in the following section.

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 the designation of critical habitat is not presently prudent for this species. As discussed under Factor B in the Summary of Factors Affecting the Species, *Isoetes louisianensis* is potentially threatened by taking. It is not protected by any existing State regulation. In addition, take is regulated by the U.S. Endangered Species Act with respect to plants only in cases of (1) removal and reduction to possession of endangered 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. The two known populations of this species are located only on private land. Therefore, if this species is listed under the Act, it will not receive protection from taking. While listing under the Act increases the public's awareness of the species' plight and conservation needs, it can also increase the desirability of a species to collectors. *Isoetes louisianensis* is a rare and unusual species, existing in only two populations. Publication of critical habitat descriptions and maps in the Federal Register and local newspapers would considerably increase the vulnerability of *Isoetes louisianensis* to collectors.

As discussed above, it would not now be prudent to designate critical habitat for *Isoetes louisianensis*. All involved parties, including Federal and State agencies and 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.

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.

Federal involvement may include the following agencies: the Environmental Protection Agency through the Clean Water Act's provisions for pesticide registration and waste management actions, the Corps of Engineers relative to wetlands permits, and the Federal Highway Administration in case of impacts from federally funded bridge and road construction. Continuing urban development within the drainage basins where the plant occurs may also involve the Farmers Home Administration and their loan programs.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general 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 endangered 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 endangered 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 the species is not common in cultivation or in the wild. Requests for copies of the regulations on listed plants and inquiries regarding prohibitions and permits may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, room 432, Arlington, Virginia 22203 (703/358-2104).

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; and

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

Final promulgation of the regulation 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 Complex Field Supervisor (see ADDRESSES section).

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

Boom, B.M. 1982. Synopsis of *Isoetes* in the southeastern United States. *Castanea* 47:38-59.

Bruce, J.G., S.B. Jones, and N.C. Coile. 1980. The Pteridophytes of Georgia. *Castanea* 45:189.
 Kral, R. 1983. A report on some rare, threatened or endangered forest-related vascular plants of the South. USDA, Forest Service, Tech. Pub. R8-TP2. 1305 pp.
 Landry, G. and J.W. Thieret. 1973. *Isoetes louisianensis* (Isoetaceae), a new species from Louisiana. *SIDA* 5(2):129-130.
 Luebke, N.T. and W.C. Taylor. 1986. Investigation of interspecific hybrids of *Isoetes* from the southeastern United States. *Am. Jour. Bot.*, Vol. 73:737-738.
 McInnis, N.C. 1991. Status survey for *Isoetes louisianensis* Thieret. Report to The Nature Conservancy, Arlington, Virginia. 7 pp.
 Rosso, S.W. 1987. Field and taxonomic studies of *Parnassia* spp. and *Isoetes* spp. Tech. Report to Mississippi Nat. Her. Prog., Jackson, Mississippi. 18 pp.
 Taylor, W.C., N.T. Luebke, D.M. Britton, and R.J. Hickey. 1989. Isoetaceae, H.G.L. Reichenback-Quillwort Family. Unpublished manuscript. Milwaukee Public Museum, Milwaukee, Wisconsin. Pp. 2 & 24.

Author

The primary author of this proposed rule is Paul Hartfield (see ADDRESSES section) 601/965-4900 or FTS 490-4900.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

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. 1531-1544; 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 Isoetaceae, 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					
ISOETACEAE—Quillwort family:						
<i>Isoetes louisianensis</i>	Louisiana quillwort	U.S.A. (LA)	E		NA	NA

Dated: September 3, 1991.
 Richard N. Smith,
 Acting Director, Fish and Wildlife Service.
 [FR Doc. 91-25221 Filed 10-18-91; 8:45 am]
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