

the western slopes of the Baboquivari Mountains on the Tohono O'odham (formerly Papago) Indian Reservation in Arizona. The entire population consists of 8 plants and is currently being threatened by habitat degradation from cattle grazing and possibly by insect predation on the seeds. This rule implements the protection provided by the Endangered Species Act of 1973 (Act), as amended, for *Amsonia kearneyana*.

EFFECTIVE DATE: February 21, 1989.

ADDRESS: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Service's Ecological Services Field Office, 3616 W. Thomas Rd., Suite #6, Phoenix, Arizona.

FOR FURTHER INFORMATION CONTACT: Sue Rutman, Endangered Species Botanist, U.S. Fish and Wildlife Service, 3616 W. Thomas Rd., Suite #6, Phoenix, Arizona 85019 (602/261-4720 or FTS 261-4720).

SUPPLEMENTARY INFORMATION:

Background

Amsonia kearneyana is a herbaceous perennial that is endemic to a single west draining canyon in the Baboquivari Mountains, southern Pima County, Arizona. *Amsonia kearneyana* grows in the riparian vegetation zone lining a dry, rocky wash. Plants are rooted in alluvial deposits of small boulders and cobbles along the wash. The species grows in full sun or under the partial shade of *Celtis reticulata* (net-leaf hackberry), *Juglans major* (Arizona walnut), *Quercus oblongifolia* (Mexican blue oak), or *Acacia greggii* (catclaw acacia). The vegetation surrounding the riparian zone is semidesert grassland (Turner and Brown 1982). The single population lies entirely within the Tohono O'odham Indian Reservation.

Amsonia kearneyana has up to 50 erect of ascending stems, giving mature plants a hemispherical form. The stems reach a height of 4 to 8 decimeters (16 to 32 inches) and arise from a thickened, somewhat woody root. Lance-shaped leaves with soft hairs are arranged alternately on the stem. White flowers appear in April or May and are borne in clusters on the ends of branches. Fruits are 3 to 10 centimeters (1 to 4 inches) long, and contain corky seeds about 8 to 11 millimeters (0.5 inches) long.

Currently the population size is small and declining. Twenty five plants were found by Phillips and Brian (1982) during their status survey for the plant. Four years later in 1986, Service botanists, Bureau of Indian Affairs (BIA) personnel, and Steve McLaughlin, a

local expert on the species, located only eight plants.

Two observations suggest that the reproductive success of *Amsonia kearneyana* may be insufficient to maintain the species. First, only one of the 25 plants found in 1982 was a seedling. A greater proportion of seedlings would be expected in a successfully reproducing population. Second, mature reproducing individuals had only a few developing fruits in 1986 and these fruits contained a small number of developing seeds. Possible reasons for the low number of fruits, seeds, and seedlings include: Extreme temperature or soil moisture conditions, lack of pollinators or poor pollinator efficiency, lack of seedling establishment sites due to overgrazing, and trampling of seedlings by cattle.

The first collections of *Amsonia kearneyana* were made by Mr. F. Thackery from its only known locality on May 24, 1926, and again on April 9, 1928. Mr. R.E. Woodson, Jr. described the species using Thackery's material and a 1927 collection by Peebles, Harrison, and Kearney (Woodson 1928). The species was named in honor of Mr. T.H. Kearney, then of the U.S. Bureau of Plant Industry, who supplied much information about the genus in Arizona to Woodson and other botanists. Although Woodson (1928) originally regarded *Amsonia kearneyana* as a sterile hybrid between two species of the subgenera *Articularia* and *Sphinctosiphon* he believed *Amsonia kearneyana* ranked as a distinct species of recent hybrid origin. Subsequently, Woodson (1938) reduced the taxon to synonymy under *Amsonia palmeri* in 1938. He justified the reduction by citing its sterile seeds, its floral similarities with *Amsonia palmeri*, and its locality near the range of *Amsonia palmeri*. In a recent revision of the genus, McLaughlin (1982) recognized *Amsonia kearneyana* as a valid taxon. McLaughlin based his conclusion on his observations that 66 percent of seeds were viable and that the taxon has distinct morphological characteristics.

Federal action involving this species 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 this report as a petition within the context of section 4(c)(2), now section

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of *Amsonia kearneyana* To Be an Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service determines that a plant, *Amsonia kearneyana* (Kearney's blue-star), is an endangered species. This plant is known from a single canyon on

4(b)(3)(A), of the Act and of its intention thereby to review the status of those plants. *Amsonia kearneyana* was included as endangered in the July 1, 1975, petition.

On December 15, 1980, (45 FR 82485) and September 27, 1985, (50 FR 39526), the Service published updated notices reviewing the native plants being considered for classification as threatened or endangered. *Amsonia kearneyana* was included in these notices as a category 1 species, meaning that substantial information was on hand to support the biological appropriateness of proposing to list as endangered or threatened.

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, requires the Secretary to make findings on certain pending petitions within one year of their receipt. Section 2(b)(1) of the Act's Amendments of 1982 further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. Because the 1975 Smithsonian report was accepted as a petition, all the taxa contained in the notice, including *Amsonia kearneyana*, were treated as being newly petitioned on October 13, 1982. On October 13, 1983; October 12, 1984; October 11, 1985; and October 10, 1986 the Service made the one-year findings that the petition to list *Amsonia kearneyana* was warranted, but precluded by other listing actions of higher priority. Biological data, supplied by Phillips and Brian (1982), fully support a listing of *Amsonia kearneyana* as endangered. The July 10, 1987, proposal (52 FR 26030) of *Amsonia kearneyana* to be endangered constituted the final 12-month finding for this species.

Summary of Comments and Recommendations

In the July 10, 1987, 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, the tribe and other interested parties were contacted and requested to comment. A newspaper notice was published in the Tucson Daily Star and the Tucson Citizen on August 25, 1987 which invited general public comment. One comment was received and is discussed below.

The U.S. Forest Service commented that the species does not occur on land within the National Forest System. They had no new information on the species nor did they take a position on the proposal.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service determined that *Amsonia kearneyana* should be classified as an endangered species. Procedures found at 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 were followed. 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 *Amsonia kearneyana* Woodson (Kearney's blue-star) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

The historic and present known ranges of *Amsonia kearneyana* are the same; however, the number of plants in the population has declined significantly from 25 in 1982 to 8 in 1986. The habitat of *Amsonia kearneyana* has been severely modified by cattle grazing. Although the plant does not appear to be eaten by cattle, several indirect effects of grazing may have contributed to a decrease in plant numbers. Severe overgrazing causes a decline in plant species diversity, which may be accompanied by a reduction in pollinator numbers and species. Given the small population size of *Amsonia kearneyana*, pollinator availability and maximum pollen transfer may be critical for the maintenance of genetic variation and adaptive potential.

Loss of plant cover and the disturbance of topsoil are other effects of cattle grazing. Together, these factors increase the potential for erosion and flooding. *Amsonia kearneyana* is very vulnerable to flooding because of its location along a single drainage that periodically floods. A flash flood may have occurred in this drainage in 1983, a year when widespread flooding occurred in southern Arizona. Such a flood would explain the decline in plant numbers from 25 in 1982 to 8 in 1986.

Cattle grazing may negatively affect the number of successfully established seedlings. Grazing causes topsoil disturbance, which can result in a reduction of the number of seedling establishment sites. Seedlings may be killed by trampling.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

No detrimental uses of this plant are known. However, one purposeful act of

vandalism could cause the extinction of this species.

C. Disease or predation.

McLaughlin (1982) suggested that stinkbugs (*Chlorochroa ligata*) could be responsible for the destruction of up to 100 percent of this species' annual seed production. Stinkbugs have been observed damaging seeds of *Amsonia grandiflora*. Although such seed predation has not been documented for *Amsonia kearneyana*, stinkbugs also occur within the range of *Amsonia kearneyana*, and it therefore seems likely that its seeds may also be damaged. McLaughlin (1982) speculated that destruction by stinkbugs accounted for Woodson's (1928) report of zero percent seed viability for *Amsonia kearneyana*.

D. The inadequacy of existing regulatory mechanisms.

Amsonia kearneyana was included in Section 3-901B of the Arizona Native Plant Law, effective February 5, 1986. This law prohibits the collection of this species unless a permit for educational or scientific purposes is granted by the Arizona Commission of Agriculture and Horticulture. The constitution of the Tohono O'odham Tribe grants access to the Reservation and permission to collect plants to tribal members only. However, the Tribal Council may grant access and collection permits to non-members. The Endangered Species Act will provide additional protection and encouragement of active management for this plant through section 7 (interagency cooperation) requirements and through section 9, which prohibits removal and reduction to possession of plants occurring on Federal lands.

E. Other natural or manmade factors affecting its continued existence.

The low numbers and limited distribution of *Amsonia kearneyana* increase the species' vulnerability to natural or man-caused stresses. Further reduction in the number or density of plants could reduce the reproductive capabilities and genetic variability of the species.

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 make this rule final. Based on this evaluation, the preferred action is to list *Amsonia kearneyana* as endangered without critical habitat. Endangered status seems appropriate, because *Amsonia kearneyana* is in danger of extinction throughout its range owing to degradation of its habitat and poor reproduction. Critical habitat is not

being designated for the reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for *Amsonia kearneyana* because its limited distribution makes it vulnerable to the threat of vandalism. Publication of critical habitat descriptions and maps would call attention to this species, making it even more vulnerable to vandalism. The BIA and Tohono O'odham Nation 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 consultation jeopardy standard. Therefore, it would not be prudent to determine critical habitat for *Amsonia kearneyana* at this time.

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. Such actions are initiated by the Service at the earliest opportunity. The protection required of Federal agencies and the prohibitions against taking 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)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed 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.

Amsonia kearneyana occurs on tribal land on the Tohono O'odham Indian Reservation. The BIA is responsible for issuing livestock grazing permits on tribal lands (25 CFR 166.7) and is currently conducting soil and range condition surveys with the Soil Conservation Service to develop the basis for a permitting system (Heuslein, BIA Phoenix, pers. comm., 1986). Federal activities that could impact *Amsonia kearneyana* and its habitat include, but are not limited to, issuance of permits for grazing, range improvements, or any other activities that do not include planning for this species' continued existence. The Service will continue to work with the BIA and the Tohono O'odham Nation to secure protection and proper management of *Amsonia kearneyana* while accommodating agency activities to the extent possible.

The Act and its implementing regulations found at 50 CFR 17.61 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, would make it illegal for any person subject to the jurisdiction of the United States to import or export any endangered plant, transport it in interstate or foreign commerce in the course of a commercial activity, sell or offer it for sale in interstate or foreign commerce, or remove it from areas under Federal jurisdiction and reduce it to possession. Certain exceptions can 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. With regard to *Amsonia kearneyana*, it is anticipated that few, if any, 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 plants and inquiries regarding them may be addressed to the Permit Branch, Office of Management Authority, U.S. Fish and Wildlife Service, Hamilton Building, Room 400, Washington, DC 20240 (703/343-4955).

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

- McLaughlin, S.P. 1982. A revision of the southwestern species of *Amsonia* (Apocynaceae). *Annals of the Missouri Botanical Garden* 69(2):336-350.
- Phillips, B.G. and N. Brian. 1982. Status report on *Amsonia kearneyana*. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, NM. 12 pp.
- Turner, R.M. and D.E. Brown. 1982. Sonoran desert scrub. In D.E. Brown (ed.), *Biotic Communities of the American Southwest-United States and Mexico*. *Desert Plants* 4:181-221.
- Woodson, R.E., Jr. 1928. Studies in the Apocynaceae III. A monograph of the genus *Amsonia*. *Annals of the Missouri Botanical Garden* 15:379-434.
- Woodson, R.E., Jr. 1938. *Amsonia*. *North American Flora*. 29:126-131.

Author

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List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

Accordingly, Part 17, Subchapter B of Chapter 1, Title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

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

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under the family Apocynaceae, 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					
Apocynaceae—Dogbane family:						
<i>Amsonia kearneyana</i>	Kearney's blue-star.....	U.S.A. (AZ).....	E	343	NA	NA

Dated: December 22, 1988.

Becky Norton Dunlop,
 Assistant Secretary for Fish and Wildlife and
 Parks.

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