

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

RIN 1018-AB38

**Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Plant *Astragalus cremnophylax* var. *cremnophylax* (sentry milk-vetch)**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** The Fish and Wildlife Service (Service) determines *Astragalus cremnophylax* var. *cremnophylax* (sentry milk-vetch), to be an endangered species under the authority of the Endangered Species Act of 1973 (Act), as amended. This plant is known from a single site on the South Rim of Grand Canyon National Park. The entire population consists of fewer than 500 plants. The plant is endangered by previous trampling by park visitors and degradation of habitat. This action will implement Federal protection provided by the Act for sentry milk-vetch. Critical habitat is not being designated.

**EFFECTIVE DATE:** January 4, 1991.

**ADDRESSES:** The complete file for this rule is available for inspection, by appointment, during normal business hours at the Service's Ecological Services Field Office, 3616 West Thomas Road, Suite 6, Phoenix, Arizona 85019.

**FOR FURTHER INFORMATION CONTACT:** Sue Rutman, at the above address (Telephone 602/379-4720 or FTS 261-4720).

**SUPPLEMENTARY INFORMATION:****Background**

*Astragalus cremnophylax* var. *cremnophylax* is a dwarf milk-vetch that is endemic to a single site on the South Rim of Grand Canyon National Park. The plant occurs in crevices and depressions with shallow soils on Kaibab limestone on a broad platform at the rim of the Grand Canyon gorge. This milk-vetch apparently prefers the unshaded, well drained soils or limestone pavement in an opening in the piñon-juniper woodland. The plant appears to occur on one specific layer of Kaibab limestone where the limestone forms a minimum-sized bench or "patio." Dominant species in the surrounding community include *Petrophytum caespitosum* (rock-mat), *Pinus edulis* (pinon pine), *Juniperus osteosperma* (Utah juniper), *Cercocarpus intricatus* (little-leaf

mountain mahogany), *Ephedra viridis* (Mormon tea), *Purshia mexicana* (cliffrose), *Artemisia bigelovii* (sagebrush), *Agropyron smithii* (wheatgrass), and *Poa pratensis* (bluegrass) (Phillips et al. 1982). Sentry milk-vetch and rock-mat are the two dominant species in the dwarf plant community that occurs on this limestone pavement.

*Astragalus cremnophylax* var. *cremnophylax* is usually less than 2.5 cm (1 inch) high and forms a mat 2.5—25 cm (1—10 inches) in diameter (McDougall 1964). The short, creeping stems have compound leaves less than 1.0 cm (0.4 inches) long composed of 5—9 tiny leaflets. The fruit is obliquely egg-shaped and densely hairy. Whitish or pale purple flowers are 0.5 cm (0.2 inches) long and appear from late April to early May. Seeds are set in late May—June (Phillips et al. 1982). The plants appear to be long-lived and have a thick tap root that penetrates the limestone surface to reach a more constant source of moisture.

A thorough count of all plants in 1988 indicated that the population contained 489 plants. A 1989 inventory of the monitoring plots established in 1988 indicated that the population declined by about 10 percent. Data indicate the cause for this decline may have been trampling by park visitors. The effects of trampling on both plants and their habitat may have been amplified by the below average rainfall in 1989. From May 1989 to May 1990, subpopulations experienced from 19 percent to 63 percent mortality, depending on degree of human visitation.

In 1988, the seedling class comprised only 22.2 percent of the population. Given the trampled condition of most mature plants, a likely explanation for the small proportion of seedlings is that they are killed by trampling. Only those seedlings in sites relatively safe from trampling survive. Poor seed dispersal may also affect the number of seedlings.

*Astragalus cremnophylax* was first discovered in 1903 by Marcus E. Jones who reported it as "apparently common at Grand Canyon \* \* \* on sandy ledges." He mistook the plant for *A. humillimus* Gray, of which only Brandegee's imperfect, now flowerless type from Mesa Verde, Colorado, is extant. Both are alike in diminutive stature and similar pubescence but differ in petioles and pods. Barneby and Ripley recollected the species in 1947 at a location west of El Tovar, Grand Canyon National Park. Barneby described it as a new species in 1948. In 1979, Barneby distinguished a new variety, *A. cremnophylax* var.

*myriorrhaphis* after plants were discovered by Ralph Gierisch and associates in 1978 on Buckskin Mountain in Arizona. The typical form then became *A. cremnophylax* var. *cremnophylax*.

On December 15, 1980, the Service published a revised Notice of Review for Native Plants in the **Federal Register** (45 FR 82480); *A. cremnophylax* was included in that notice as a category 1 species. Category 1 species are those for which the Service presently has sufficient information to support the biological appropriateness of their being listed as endangered or threatened species. The 1985 revision (50 FR 39526) of the 1980 notice included *Astragalus cremnophylax* var. *cremnophylax* in category 1, and moved *Astragalus cremnophylax* var. *myriorrhaphis* to category 3C. Category 3C includes taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat. The 1990 Plant Notice of Review (55 FR 6184) listed *A. cremnophylax* var. *cremnophylax* as a proposed endangered species. A proposed rule to determine endangered status for *A. cremnophylax* var. *cremnophylax* was published in the **Federal Register** on October 18, 1989 (54 FR 42820).

#### Summary of Comments and Recommendations

In the October 18, 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, and other interested parties were contacted and requested to comment. Newspaper notices were published in *The Arizona Sun* on November 12, 1989, and *The Phoenix Gazette/Arizona Republic* on November 15, 1989, which invited general public comment. Eight comments were received and are discussed below: Two Federal and two State agencies, and four private conservation organizations and individuals. Comments supporting the listing were submitted by the National Park Service (NPS), The Arizona Nature Conservancy, the Center for Plant Conservation, and two plant taxonomists.

**Issue 1:** The Arizona Commission of Agriculture and Horticulture expressed concerns regarding the effects of listing this plant. They stated that listing would prohibit State pest control programs for gypsy moths or grasshoppers if critical habitat is not designated, could reduce

the amount of grazing land, and would unnecessarily restrict visitor's access to areas of Grand Canyon National Park.

**Service Response:** The sentry milk-vetch is restricted to a single population in Grand Canyon National Park. Listing of this plant would have no effect on pest control programs conducted outside Grand Canyon National Park, whether or not critical habitat is designated. Pest control programs inside park boundaries must have the approval of the National Park Service and the Department of the Interior. With this listing as an endangered species, any State-administered pest control programs that would occur in the vicinity of the single population would have to go through the section 7 consultation process.

Because grazing is not allowed in the vicinity of the site where sentry milk-vetch occurs, there is no anticipated restriction on the amount of grazing land following listing of this plant.

Regarding visitor's access in Grand Canyon National Park, the NPS has rerouted foot traffic around the main part of the sentry milk-vetch population, in a voluntary effort to protect the plants from trampling prior to a final listing decision. However, no other area has been affected, and numerous opportunities for public access exist along the South Rim.

**Issue 2:** The Arizona Commission of Agriculture and Horticulture stated that listing the sentry milk-vetch as endangered is not appropriate because it belongs to a species that occurs in other areas of the State. The U.S. Forest Service questioned the taxonomic status of the two varieties in the species *A. cremnophylax*. The Forest Service suggested that observed morphological differences between the varieties may have been influenced by the effects of trampling on the sentry milk-vetch population. They suggested that chemical analysis or further field investigations be used to evaluate whether unique gene pools are involved, and suggested that cooperative efforts between the Fish and Wildlife Service and the NPS could alleviate impacts to the plants. The Forest Service also questioned the adequacy of survey efforts for this plant, given the abundance of seemingly suitable habitat within the known range of the species.

**Service Response:** The Service believes that *Astragalus cremnophylax* var. *cremnophylax* is a taxonomically valid, rare species that meets the criteria for listing as an endangered species. This plant is a unique taxon that is widely separated geographically from its closest relatives, which are found on the opposite side of the Grand Canyon

(Warren, in litt.). Two highly regarded plant taxonomists, Dr. Rupert Barneby of the New York Botanical Garden (who described the species and varieties), and Dr. Stanley Welsh of Brigham Young University, have concluded that the two varieties of *A. cremnophylax* are distinct. The Service accepts the conclusion of these two experts, and does not believe that chemical analysis is necessary to determine if the two varieties are distinct. Because *A. cremnophylax* var. *cremnophylax* plants that are relatively protected from trampling continue to exhibit morphological differences compared to the other variety, the Service does not believe that trampling causes the noted morphologic differences between the varieties.

Surveys for this plant have been conducted for many miles in each direction from the single known population and no new populations were discovered. In addition, the potential habitat for this species may be far more restricted than previously believed. Both varieties appear to occur on one specific layer of Kaibab limestone where the limestone forms a minimum-sized bench or "patio." Sentry milk-vetch was not found growing on smaller ledges. All sites had shallow or no soil and occurred in an opening in piñon-juniper woodland. The area long the South Rim where these criteria are all present is much smaller than all exposed Kaibab limestone rim areas.

Cooperative efforts between agencies, although desirable, are not legitimately a reason to defer the listing of a species. The service has been working with the NPS to protect this plant. Rerouting of foot traffic around the population by the NPS has reduced the degree of trampling of the plants. However, because of prior habitat degradation and continued decline of the plants in the single known population, sentry milk-vetch meets the criteria for protection under the Endangered Species Act.

#### Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Astragalus cremnophylax* var. *cremnophylax* 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 *Astragalus cremnophylax* var. *cremnophylax* Barneby (sentry milk-vetch) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The population of sentry milk-vetch occurs at a single site in Grand Canyon National Park. Visitors may reach the area by walking or in vehicles. Previously, many visitors trampled any or all of the vegetation while walking to the rim. The 1988 survey showed that 65 percent of all plants in the population had experienced some degree of trampling. More than half of all plants (51.4 percent) experienced severe trampling. Data from 1989 indicate the percent of trampled plants increased, as did the percent of plants showing the effects of severe trampling. From May 1989 to May 1990, the sub-population in the most visited area experienced 63 percent mortality. Other plots in the area experienced about 19 percent mortality. The high centers of the plants are the first to show the effects of trampling.

Trampling may affect the plants and population stability in a number of ways. Observations indicate that foot traffic has uprooted seedlings and decreased the vigor of mature plants. Repeated foot-falls on individual plants may contribute to decreased productivity and decreased flower and fruit production, which may eventually affect recruitment. Degradation of the habitat by foot traffic is evidenced by the informal trails formed by visitors, the smoothness of the limestone caused by the abrasive action of shoes, and the soil loss in the area. Construction activities in the area probably resulted in the loss of habitat and destruction of plants.

The NPS has rerouted foot traffic to restrict access to this site. This action may increase and improve suitable habitat. However, plant vigor is so low from past trampling that the population is still at high risk. In addition, a few park visitors still trample the plants while walking to the rim.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* None known. Because of its rarity, *Astragalus cremnophylax* var. *cremnophylax* is of interest to botanists and other rare plant enthusiasts. Therefore, this is a minor but present threat.

C. *Disease or predation.* None apparent.

D. *The inadequacy of existing regulatory mechanisms.* This species is protected by NPS regulations, as are all plant species within the Park.

Sentry milk-vetch is protected by the Arizona Native Plant Law. 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. However, the law does not provide habitat protection. The Act would provide protection and encourage active management through the "Available Conservation Measures" discussed below.

E. *Other natural or manmade factors affecting its continued existence.* The number of seedlings produced per year seems to be small and their mortality is high. Seedling numbers may be less than predicted for a number of reasons. Seed production may be limited by hard frosts and freezes during the flowering/fruiting period, a situation that occurred in 1988. Poor seed dispersal may also affect the number of seedlings. The tiny orange seeds are inconspicuous and probably not an attractive food item for birds and mammals. Continuing the annual inventory of the monitoring plots may help determine whether or not natural recruitment levels are sufficient to maintain the population.

Any undue publicity directed toward this species could make it susceptible to collection or increased visitation. Many places in the Park have signs telling visitors the names and natural history of certain plants; this type of publicity may be detrimental to the survival of this rare endemic.

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 *Astragalus cremnophylax* var. *cremnophylax* as endangered. With the only known population in decline, the species is in imminent danger of extinction. Endangered status seems appropriate because of the serious threat of trampling that degraded the habitat and contributed to plant mortality. Although the trampling has been reduced by rerouting of foot traffic, it still occurs at a reduced level. The population was so seriously disturbed that recovery is uncertain. Critical habitat is not being designated for the reasons discussed below.

#### Critical Habitat

Section 4(a)(3) of the Act, as amended, requires to the maximum extent prudent and determinable, that 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

presently prudent for this species. No direct attention should be drawn toward the species or its location. Any type of publicity on this species could make it susceptible to increased visitation or collection, which would be detrimental to the survival of this rare endemic (O'Brien 1984). As discussed under Factors A and B in the Summary of Factors Affecting the Species, *Astragalus cremnophylax* var. *cremnophylax* is threatened by 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 the critical habitat description and map would make *A. cremnophylax* var. *cremnophylax* more vulnerable and increase enforcement problems. The NPS has been notified of the location and importance of protecting this species' habitat, and has already initiated recovery actions. 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 *A. cremnophylax* var. *cremnophylax*.

#### 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)(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 NPS has jurisdiction over the only known habitat for this species. Federal activities that could impact *Astragalus cremnophylax* var. *cremnophylax* include, but are not limited to, allowing large numbers of visitors to have access to the population, which would increase the threat of trampling, and possible future construction at the site.

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 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 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 22201 (703/358-2104).

**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**

McDougall, W.B. 1964. Grand Canyon wildflowers. The Museum of Northern Arizona, Flagstaff.  
 O'Brien, S. 1984. Status of *Astragalus cremnophylax* and recommendations to

protect it. Unpubl. report to Grand Canyon National Park. 6pp.

Phillips, A.M., III, B.G. Phillips, N. Brian, L.T. Green III, and J. Mazzoni. 1982. Status report, *Astragalus cremnophylax* Barneby. U.S. Fish and Wildlife Service, Albuquerque, NM. 16pp.

**Author**

The primary author of this final rule is Sonja Jahrsdoerfer, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-3972 or FTS 474-3972).

**List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and record-keeping requirements, and Transportation.

**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. 1531-1544; 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 the family Fabaceae, 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					
Fabaceae—Pea family:						
<i>Astragalus cremnophylax</i> var. <i>cremnophylax</i> .	Sentry milk-vetch	U.S.A. (AZ)	E		NA	NA

Dated: November 1, 1990.

**Bruce Blanchard,**  
 Acting Director, Fish and Wildlife Service.  
 [FR Doc. 90-28483 Filed 12-4-90; 8:45 am]  
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