
DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB83

Endangered and Threatened Wildlife
and Plants; Proposed Rule to Delist
the Plant *Tumamoca Macdougalii*

AGENCY: Fish and Wildlife Service,
Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service
(Service) proposes to remove the plant

Tumamoca macdougalii (Tumamoc globeberry) from the Federal List of Endangered and Threatened Plants (50 CFR 17.12). The range of this species includes south-central Arizona and extends southward into southern Sonora, Mexico. Given the large range of the species, its non-specific habitat requirements, the number of known populations, the remote nature of much of the habitat, and the ability of the species to withstand some habitat degradation, the Service believes Tumamoc globeberry is not in danger of extinction throughout all or a significant portion of its range. The service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by October 20, 1992. Public hearing requests must be received by October 5, 1992.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, Ecological Services Field Office, U.S. Fish and Wildlife Service, 3616 West Thomas Road, Suite 6, Phoenix, Arizona 85019. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

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

SUPPLEMENTARY INFORMATION:

Background

Tumamoca macdougalii was first collected on Tumamoc Hill, west of Tucson, Arizona, on July 31, 1908, by D.J. Macdougal, a scientist at the Carnegie Desert Laboratory. The specimen was sent to J.N. Rose, a botanist at the U.S. National Herbarium, who described it as a new genus and species in honor of the type locality and collector (Rose 1912). *Tumamoca macdougalii* remains the only species in its genus.

Tumamoca is a delicate perennial vine in the gourd family (Cucurbitaceae). The plants are found under trees or shrubs, which act as nurse plants and provide physical support for the vines. The stems arise from a large underground tuber, begin growth during the late summer in response to summer rains, and continue growing until the onset of cool weather and short days in November. The thin leaves have three main lobes, each divided into narrow segments. The flowers are small and pale greenish-yellow, with both male and female flowers occurring on a plant. The majority of flowers are produced in August. Mature fruits are spherical to ovoid, succulent, and bright red

(Reichenbacher 1985a, Reichenbacher 1990).

When the species was listed as endangered in 1986, thirty isolated populations of *Tumamoca* had been located in Pima County, Arizona and five were known from Sonora, Mexico. The total number of known individuals was 2,300 in the United States and 60 in Mexico (51 FR 15906). All populations were found in the Arizona Upland Subdivision of the Sonoran Desertscrub Biotic Community. The eastern and western limits of the United States range of the species were known to include the Tucson area and extend west about 193 km (120 miles) to the vicinity of Organ Pipe Cactus National Monument. The exact northern and southern range boundaries were unknown but extended about 400 km (250 miles) south of the U.S./Mexico border to the vicinity of Guaymas, Sonora.

Surveys and studies completed after the May, 1985, publication of the proposed rule to list *Tumamoca* have improved our understanding of the range and ecology of this species (Reichenbacher 1985a, Reichenbacher 1985b, Tierra Madre Consultants and Cornett & Associates 1985, Reichenbacher 1987, Biosystems Analysis 1988). Numerous surveys have been conducted on smaller tracts of land. The locations of most populations are contained in the Non-Game Data Management System of the Arizona Game and Fish Department.

Our understanding of *Tumamoca* was greatly increased by a survey and study in the U.S. and Mexico contracted by the Bureau of Reclamation (Reichenbacher 1990). The study was required by a June 30, 1988, jeopardy biological opinion under Section 7 of the Endangered Species Act on the Central Arizona Project (pipeline and canal) and was conducted during the summers of 1988 and 1989. The report summarized the current range, distribution, and ecological information on *Tumamoca*.

The U.S./Mexico survey extended the northern and southern boundaries of the known range of *Tumamoca* (Reichenbacher 1990), although the eastern and western boundaries were essentially unchanged. The southern boundary, while not yet fully defined, was extended south to within 80 kilometers (50 miles) of the northern border of Sinaloa, Mexico. The northern boundary was extended north to include southern Pinal and Maricopa Counties, Arizona. The distance between the northern and southern boundaries is more than 643 km (400 miles). Reichenbacher (1990) estimated the potential habitat of *Tumamoca* in the

U.S. and Mexico to be 72,862 square kilometers (27,959 square miles).

Tumamoca is less habitat specific than was believed at the time it was listed. The species occurs below 900 meters (3,000 feet) elevation in a variety of desert habitats and vegetation types, including the Arizona Upland, Lower Colorado Valley, Plains of Sonora, and Central Gulf Coast Subdivisions of the Sonoran Desertscrub Biotic Community and the Sinaloan Thornscrub Biotic Community (biotic communities defined by Turner and Brown 1982). It is found associated with a variety of nurse plants and in soil types ranging from sandy soils of valley bottoms to rocky soils of upper bajada slopes (Reichenbacher 1990). In the United States, *Tumamoca* occurs in isolated, discrete populations separated by large areas of apparently suitable but unoccupied habitat (Reichenbacher 1985a, Reichenbacher 1990). In Mexico, the species is widely scattered at a relatively low frequency throughout suitable habitat, with some areas of higher density (Reichenbacher 1990). Depending on the site, habitat conditions range from excellent or good to severely degraded or modified.

Surveys of potential habitat in the U.S. and Mexico showed the species to be more common than known at the time it was listed. Less than one percent of the potential habitat in the U.S. and Mexico was searched in 1988 and 1,242 plants were located (Reichenbacher 1990). This search involved 444 quadrats in Sonora and 261 in Arizona. All quadrats were approximately 8 hectare (20 acre) rectangles. *Tumamoca* was found in 6 Arizona quadrats (2 percent) and 89 Sonora quadrats (20 percent). The new *Tumamoca* localities in Mexico were scattered fairly evenly throughout a 52,800 square kilometer (20,300 square mile) region. A statistically reliable extrapolation of the U.S.-Mexico survey data cannot be made due to sampling constraints; however, many more plants and populations almost certainly exist. When *Tumamoca* was listed, only five populations were known in Mexico.

Reichenbacher (1990) estimates that only 2-3 percent of *Tumamoca* habitat has been lost to agriculture and urban expansion. This estimate does not include desertscrub habitat in Mexico converted to livestock pasture. A substantial number of quadrats in Mexico had to be relocated from their originally intended sites because of unmapped, presumably recently developed, livestock pasture. Nevertheless, the large range of *Tumamoca* and the extreme remoteness of much of the habitat in both the U.S. and Mexico strongly suggests that

significant portions of the range are secure for the foreseeable future.

Javelina (*Dicotyles tajacu*) dig up the moisture-rich tubers of *Tumamoca* and are an important source of mortality. Although this may produce local population declines, it is unlikely javelina can seriously impact a species with such a broad range and widely scattered populations.

Federal government actions on this species began on December 15, 1980, when the Service published in the *Federal Register* (45 FR 82480) a notice of review covering plants being considered for classification as endangered or threatened. In that notice, *Tumamoca macdougallii* was included in Category 1. Category 1 species are those for which the Service presently has on file sufficient information on biological vulnerability and threats to support proposals to list them as threatened or endangered species.

Section 4(b)(3)(B) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*), requires the Secretary to make certain findings on 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. Because the species included in the December 15, 1980, notice of review were considered under petition, all the taxa contained in the notice, including *Tumamoca macdougallii* were treated as being newly petitioned on October 13, 1982. In 1983 and 1984, the Service found that the listing of *Tumamoca macdougallii* was warranted but precluded by other listing actions of higher priority and that additional data on vulnerability and threats were still being gathered. A proposed rule published May 20, 1985 (50 FR 20806), constituted the next required finding that the petitioned action was warranted in accordance with section 4(b)(3)(B)(ii) of the Act. The final rule listing *Tumamoca macdougallii* as endangered was published in the *Federal Register* on April 29, 1986 (51 FR 17806). No critical habitat was designated.

Federal involvement with *Tumamoca* subsequent to listing has included population surveys, life history and biology studies, a transplanting project, and monitoring. These projects mostly resulted from Federal activities requiring either informal or formal consultation with the Service under section 7 of the Act. Bureau of Reclamation (BR) construction of the Central Arizona Project, Tucson Aqueduct. Phase B has been the most significant Federal activity involving

Tumamoca. To comply with reasonable and prudent alternatives of a jeopardy biological opinion for this project issued by the Service June 30, 1986, BR purchased a 32 hectare (80 acre) preserve for *Tumamoca*, transplanted plants in the path of the aqueduct into the preserve, and monitored the success of the transplants for five years (Reichenbacher and Perrill 1991). After initial high mortality in the transplanted population, the rate of mature plant deaths declined to a number similar to the control population. Additionally, recruitment is occurring in the transplanted population and a prediction matrix analysis indicates the population should continue to rebound through the year 2000 when it will be 125 percent of the original 403 transplanted plants.

Surveys for *Tumamoca*, most often to comply with section 7 requirements, have been conducted throughout the predicted range of the species in the U.S. and Mexico. These surveys have shown *Tumamoca* to be more common and much more evenly distributed across its range than previously supposed.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Act 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. The same procedures apply to reclassifying a species or removing it from the 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 *Tumamoca macdougallii* J.N. Rose (*Tumamoc* globeberry) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* *Tumamoca* populations are scattered throughout an estimated 72,862 square kilometers (27,959 square miles) of habitat in five different vegetation types. As might be expected, some habitat loss and degradation is occurring within this area. However, Reichenbacher (1990) estimated less than three percent of *Tumamoca* habitat has been lost to agriculture and urban expansion. These losses tend to be concentrated along major watercourses or drainages, and urban centers such as Hermosillo, Sonora, and Tucson, Arizona.

Habitat loss from the Central Arizona Project was mitigated by the purchase of preserves, their fencing, and the transplanting and monitoring of plants that would have been lost to canal

construction. The transplanting effort and subsequent monitoring have yielded valuable information on *Tumamoca* biology.

The Service has no information to indicate *Tumamoca* is negatively affected when habitat is destabilized and erosion is accelerated. In fact, *Tumamoca* populations are apparently stable (C. Button, Bureau of Land Management, pers. comm., 1991) in the Avra and Vekol valleys where habitat conditions are poor and erosion is a serious problem.

Some areas in southern Arizona and Sonora are being converted from desertscrub to monotypic stands of buffelgrass (*Cenchrus ciliaris*) to provide livestock forage. Buffelgrass outcompetes native plant species, including *Tumamoca*. Conversely, natural grassy areas, especially savanna grasslands in central Sonora, have been denuded and replaced by desertscrub that may actually provide better habitat for *Tumamoca* than do grasslands (Reichenbacher 1990). This pattern of shrub encroachment due to overgrazing and conversion of desertscrub to pasture is expected to continue. Despite this habitat alteration, the future of *Tumamoca* should be secure in the large areas of undisturbed habitat that remain.

Recreation, which occurs mostly near large urban areas, has probably caused a small amount of habitat loss or degradation, most of this from off-road vehicles. A popular picnic area in the Coronado National Forest contains a population of *Tumamoca*. Despite heavy recreational use of this area, the population appears to be stable (Reichenbacher 1989).

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* The final rule to list this species identified scientific collecting as a potentially significant threat due to the rarity of the species and the small size of many populations. *Tumamoca* is now more common than previously believed, and the amount of damage that could be caused to the species from possible scientific collecting is, therefore, proportionately less. No commercial, recreational, scientific or educational overuse of any populations of this species is known to have occurred.

C. *Disease or predation.* Javelina uproot *Tumamoca* tubers to eat the succulent tissues, which either kills the plant or reduces its vigor and reproductive output. Significant damage is also done by rabbits and/or rodents. Many plants are found with their stems clipped at or above ground level. This is likely seldom fatal, but undoubtedly

affects the ability of the plant to store photosynthate and moisture for the next growing season (Reichenbacher 1985a). These predators are all native species and *Tumamoca* has undoubtedly evolved to cope with the level of damage inflicted. Perhaps the scattered populations and absence of plants in apparently suitable habitat is, in part, a response to pressure from predators.

D. *The inadequacy of existing regulatory mechanisms.* *Tumamoca* currently receives the protection of the Arizona Native Plant Law and the Endangered Species Act. It is considered a Sensitive Species by the U.S. Forest Service and the Bureau of Land Management (BLM), a provision which offers some management protection. If *Tumamoca* is removed from the Endangered Species List, the Forest Service and BLM have indicated the species will remain on their Sensitive Species lists.

E. *Other natural or manmade factors affecting its continued existence.* When *Tumamoca* was listed, low numbers and limited range were thought to make it vulnerable to natural stresses such as prolonged drought. With our present knowledge of distribution and abundance it seems doubtful any natural stresses would affect *Tumamoca* in more than a portion of its range.

The regulations at 50 CFR 424.11(d) state that a species may be delisted if (1) it becomes extinct, (2) it recovers, or (3) the original classification data were in error. The Service believes that the data supporting the original classification were incomplete. After conducting a review of the status of the species, the Service believes the best scientific and commercial data available at present show that removing *Tumamoca macdougallii* from the List of Endangered and Threatened Plants is warranted.

The Service believes the species is not in danger of extinction throughout all or a significant portion of its range, nor is it likely to become an endangered or threatened species within the foreseeable future throughout all or significant portion of its range. Given the large range, number of known populations, remote habitat, ability to withstand some habitat degradation, and non-specific habitat needs, the Service believes *Tumamoca macdougallii* does not warrant the protection of the Act.

Effect of Rules

The proposed action would result in removal of this species from the List of Endangered and Threatened Plants. Federal agencies would no longer be required to consult with the Service to insure that any action authorized,

funded, or carried out by such agency is not likely to jeopardize the continued existence of *Tumamoca*. Federal prohibitions under section 9 of the Act would no longer apply.

To fulfill the requirement to monitor the species for five years following delisting, a Service contractor would visit selected sites with known Tumamoc globeberry populations throughout the U.S. and Mexico. At each site, the contractor would note whether or not the population is still extant, take photographs of the surrounding landscape, and note whether or not any significant land use changes have occurred in the area during the monitoring period. The sites would be chosen to represent a variety of habitat types and be spread across the range of the species. A form for use by field workers would be prepared by the contractor, in cooperation with the Service. Visits would occur during years one, three, and five of the monitoring period. Aerial photographs would be used to evaluate land use changes and their effects on Tumamoc globeberry habitat.

The BLM has established permanent plots to monitor Tumamoc globeberry and is committed to continuing this monitoring effort during the five-year post-delisting period. These plots are located on BLM-managed lands in the Avra and Vekol Valleys. The Coronado National Forest will continue to collect demographic data for the population in the Santa Catalina Mountains, which is the only population on National Forest lands.

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. The Service particularly requests any information that would support retaining this species as an endangered 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 the Field Supervisor (See ADDRESSES).

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

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- Tierra Madre Consultants and Cornett & Associates. 1985. San Xavier planned community biological survey and impact assessment. Prepared for Santa Cruz Properties, Inc., Cathedral City, California. 42 pp.
- Turner, R.M. and D.E. Brown. 1982. Sonoran desertscrub. Pages 181-222. In Brown, D.E. (ed.). Biotic communities of the American Southwest—United States and Mexico. Desert Plants 4(1-4).

Author

The primary author of this proposed rule is Susan Rutman (See ADDRESSES).

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; Public Law
99-625, 100 Stat. 3500; unless otherwise noted.

§ 17.12 [Amended]

2. It is proposed to amend § 17.12(h)

by removing the entry "*Tumamoca
maddougali*" under CUCURBITACEAE,
from the List of Endangered and
Threatened Plants.

Dated: August 7, 1992.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 92-19897 Filed 8-20-92; 8:45 am]

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