
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
50 CFR Part 17
Endangered and Threatened Wildlife and Plants; Proposal To Determine *Tumamoca Macdougallii* To Be an Endangered Species
AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine a plant, *Tumamoca macdougallii* J.N. Rose (Tumamoc globe-berry), to be an endangered species. Historically, 16 populations were known from Pima County, Arizona, and northern Sonora, Mexico. Presently, 28 U.S. populations are known and occur on Federal, State, Indian, City of Tucson, and private lands. They are threatened with habitat destruction from increased agricultural development, urbanization, a proposed Central Arizona Project aqueduct, grazing, and collection. One population was recently documented in Sonora, Mexico, however, other formerly known Mexican localities have not been recently confirmed. This proposal, if made final, will implement the protection provided by the Endangered Species Act of 1973, as amended, for *Tumamoca macdougallii*. Critical habitat is not being proposed at this time. The Service seeks data and comments from interested parties on this proposal.

DATES: Comments from all interested parties must be received by July 19, 1985. Public hearing requests must be received by July 5, 1985.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103. Comments and materials received will be available for public inspection during normal business hours, by appointment, at the Service's Regional Office of Endangered Species, 500 Gold Avenue SW., Room 4000, Albuquerque, New Mexico.

FOR FURTHER INFORMATION CONTACT: Peggy Olwell, Endangered Species Botanist, Albuquerque, New Mexico (see ADDRESSES above) (505/766-3972 or FTS 474-3972).

SUPPLEMENTARY INFORMATION:
Background

Tumamoca macdougallii was first collected on July 31, 1908, by D.J. Macdougall, a scientist at the Carnegie Desert Laboratory, on Tumamoc Hill, west of Tucson, Arizona. The specimen was sent to J.N. Rose, a botanist at the U.S. National Herbarium, who described it as the type of a new genus and species in honor of the type locality and its collector (Rose 1912). This plant is a delicate perennial vine in the gourd family. It grows from a tuberous root and has slender annual stems (Toolin 1982). Its thin leaves have three main lobes, each divided into narrow segments. The plant bears small, yellow, male and female flowers and produces small, red, watermelon-like fruits. Flowering and fruit set occurs after the onset of summer rains, normally in August and September. The population biology and ecological requirements are poorly understood (Toolin 1982).

Historically, *Tumamoca macdougallii* has been found in 16 very scattered populations from Pima County, Arizona to northern Sonora, Mexico. Toolin (1982) searched known localities in Mexico and was unable to relocate any Mexican populations. However, a botanist with Arizona-Sonora Desert Museum collected seeds from a plant near Guaymas, Sonora, Mexico in 1983. The status of this population is not known but it is presumed to consist of at least one reproducing adult plant (Reichenbacher, F.W. Reichenbacher and Assoc., Tucson, pers. comm. 1985). Reichenbacher (1984) reported 10 U.S. populations containing a total of 338 adults, 11 juveniles and 126 seedlings. Extensive field surveys of 53,500 acres in Aura Valley conducted from August to November, 1984, increased the known U.S. populations to 28, containing 290 reproducing adults, 65 probable adults, and 1627 juveniles (Reichenbacher 1985; Boyd, Tierra Madre Consultants, Riverside, California, pers. comm. 1984). These populations occur on private, Federal, State, Indian, and City of Tucson lands.

Tumamoca macdougallii occurs in the Arizona Upland Subdivision of the Desert Scrub Formation at elevations of 450-795 meters (1,476-2,608 feet) in rocky to gravelly, sandy, silty, and clayey soils derived from granite, basalt, and rhyolite. The vegetation is palo-verde/cactus shrub and creosote bush/bursage desert scrub. Dominant associated species are creosote bush (*Larrea divaricata*), palo-verde (*Cercidium spp.*), white thorn acacia (*Acacia constricta*), saguaro cactus

(*Carnegia gigantea*), prickly pear (*Opuntia phaeacantha*), cane cholla (*Opuntia versicolor*), mesquite (*Prosopis juliflora*), ironwood (*Olneya tesota*), and triangle leaf bursage (*Ambrosia deltoidea*). No symbiotic relationship is known for the Tumamoc glob-berry; however, it is always found under trees and shrubs, which provide shade and protection, as well as support for the vine. The nurse plants for *Tumamoca maddougallii* are creosote bush, triangle leaf bursage, white thorn acacia, all-scale, and pencil cholla (Reichenbacher 1984).

In the Federal Register of December 15, 1980 (45 FR 82480), the Service published a notice of review covering plants being considered for classification as endangered or threatened. In that notice, *Tumamoca maddougallii* was included in category 1. That category comprises taxa for which the Service has substantial information on biological vulnerability and threats to support the appropriateness of proposing to list the taxa.

The Endangered Species Act Amendments of 1982 required that all petitions pending as of October 13, 1982, be treated as having been newly submitted on that date. The species listed in the December 15, 1980, notice of review were considered to be petitioned, and the deadline for a finding on those species, including *Tumamoca maddougallii*, was October 13, 1983. On October 13, 1983, and again on October 13, 1984, the petition finding was made that listing *Tumamoca maddougallii* was warranted but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act. Such finding requires a recycling of the petition, pursuant to section 4(b)(3)(C)(i) of the Act. Therefore, a new finding must be made on or before October 13, 1985; this proposed rule constitutes the finding that the petitioned action is warranted 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 (16 U.S.C. 1531 *et seq.*) and regulations promulgated to implement the listing provisions of the Act (50 CFR Part 424, October 1, 1984) 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 *Tumamoca maddougallii* J.N. Rose (Tumamoc globe-berry) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The historic range of the Tumamoc globe-berry extended about 193 kilometers (120 miles) west of Tucson, Arizona, to Gunsight, Arizona, and approximately 322 kilometers (200 miles) south to Caborca and Santa Ana, Sonora, Mexico. Much of the former range of *Tumamoca maddougallii* is presently being modified by agricultural expansion (near Caborca, Sonora, and in the Avra Valley, Pima County, Arizona) and urban expansion (on the west side of Tucson, Arizona). The known historic Mexican populations have been not been relocated despite extensive searches (Toolin 1982); however, recent information indicates seeds have been collected from an additional locality 35 miles south of Santa Ana, Sonora, Mexico. The population at Organ Pipe Cactus National Monument has not been relocated (Reichenbacher 1984).

Since 1970 the only *Tumamoca maddougallii* plants collected or observed in the U.S. have been in the Avra Valley (Reichenbacher 1984) which is undergoing rapid development as Tucson expands westward. This valley is considered desirable not only for agricultural use, but also for homes, trailer courts, business development, and accompanying roads, powerlines, pipelines, canals etc.

Presently, there are 28 known U.S. populations containing approximately 355 adults and 1,627 juveniles. Ten populations of *Tumamoca maddougallii* occur on private land; eight on city, State, and university administered land; and 10 are under Federal administration. Seventy-five percent of the plants occupy habitat on non-Federal land and modification of the habitat could occur and result in destruction or damage to these populations. During 1984, 53,500 acres of land in Avra Valley were surveyed for *Tumamoca maddougallii* and Reichenbacher believes there is little chance of any other large populations being found in Avra Valley.

The city of Tucson owns a parcel of land containing 31 plants of *Tumamoca maddougallii*. The land is administered by the Tucson Parks and Recreation Department and is scheduled to become a Native District Park by December, 1985. The Tucson Parks and Recreation Department (TPRD) is aware of the species and indicates it will be taken into consideration when planning the park (Glen Dixon, TPRD, pers. comm. 1984). The development of this park will definitely affect the species' habitat

through an increase in number of people using the area.

The State of Arizona applied for the transfer to State ownership of 2,540 hectares (6,274 acres) of Bureau of Land Management (BLM) administered land in the Avra Valley. Some of this land has already been transferred to the State, including portions of two sections that contain two populations of *Tumamoca maddougallii*. All lands obtained under the State indemnity land selections are subject to disposal in order to generate revenue for the State. Thus, these lands are expected to undergo development; however, before the State leases to anyone with the intention of disturbing the surface, a botanical review is done by the Arizona Agriculture and Horticulture Commission (Randy Brenner, Arizona State Land Department, pers. comm. 1984).

Currently, 22 adult plants and 71 juveniles are scattered throughout developed and undeveloped areas of the West Campus of the Pima Community College. Erosion threatens some of the plants located on an embankment adjacent to the school's firing range. With the increase in growth of the Tucson area and the anticipated growth of the Community College, development of *Tumamoca maddougallii* habitat could occur.

The Pan Quemado population of *Tumamoca maddougallii* on BLM administered land is in the vicinity of a land imprinting and seeding project on the Aqua Blanco Ranch. The project will avoid drainage areas; however, it will imprint the creosote between the drainages. Suitable habitat for the globe-berry exists throughout the 7.5 sections of the land proposed for the project (Mary Butterwick, BLM, pers. comm. 1984). An inventory of 122 hectares (301 acres) disclosed a population of 33 plants on BLM administered habitat (Reichenbacher 1985). Also observed at the Pan Quemado site were 5 plants excavated and eaten by animals, presumably javelina.

The U.S. Forest Service (FS) identified a small population, 9 adults and 32 juveniles, in the Santa Catalina Mountains, east of the Santa Cruz River. This population occurs in the middle of a picnic area which, fortunately, receives little use in the summer and fall when the plants are growing (Reichenbacher 1985).

An additional threat to *Tumamoca maddougallii* and its habitat is the proposed construction of the Central Arizona Project (CAP) aqueduct, a Bureau of Reclamation (BR) water diversion project, through an area

containing a population of the plant. Six adult plants were found in the proposed alignment during the 1983 field survey (Reichenbacher 1984). An intensive field survey was conducted August-November 1984 to search the project area specifically for *Tumamoca maddougallii*. A total of 468 plants (the largest, known population) were located on land to be impacted by the CAP (Reichenbacher 1985).

On the San Xavier and Papago Indian Reservations, habitat is also being lost to agricultural and housing development. A portion of the Central Arizona Project includes the allocation of enough water to farm 1,215 hectares (3,000 acres) of land on the Papago Reservation and 4,453 hectares (11,000 acres) of land on the San Xavier Reservation (Tom Gatz, BR, pers. comm. 1983).

The San Xavier Planned Community involves the development of 93 square kilometers (36 square miles) of land on the San Xavier Indian Reservation. This project is planned to include light industrial complexes, shopping centers, and dense and widely spaced housing developments for 90-100 thousand people over the next 20-30 years. A filed survey of the entire 93 square kilometer (36 square mile) area was conducted in August, 1984 by Tierra Madre Consultants, Riverside, California. The survey identified 104 plants within the proposed project area and several plants within the San Xavier Indian residential area.

The Papago Indian Tribe contracted with Franzoy Corey Engineers to survey 28,000 acres of land for *Tumamoca maddougallii* in 1984. Three populations consisting of 8 adults and 51 juveniles were found in the area planned for agricultural and, possibly, housing development (Reichenbacher, pers. comm. 1985).

Tumamoc Hill, the type locality of *Tumamoca maddougallii*, is a natural resource site administered by the University of Arizona. There are 35 adult plants and 143 juveniles on this property (Reichenbacher 1985). This population is probably the most secure of all the populations because the site was designated a National Historic Landmark in 1975, a National Environmental Study Area in 1976, and a State Scientific and Educational Natural Area in 1981 (Tumamoc Hill Planning Committee 1982). However, with the population of the surrounding area growing, so too will the negative impacts. Damage from domestic dogs and four-wheel drive vehicles has been minor in the past, but with the increasing numbers of people in the area the damage may be intensified.

B. Overutilization for commercial, recreational, scientific, or educational purposes. *Tumamoca maddougallii* is not known to be sought for any of these purposes; however, Reichenbacher (pers. comm. 1984) returned to a known locality and found that a plant had been collected. This species' existence is very vulnerable because of the low number of individual plants and any taking would be detrimental to the populations. Due to its easily accessible locations, vandalism poses an additional threat to *Tumamoca maddougallii*.

C. Disease or predation. Antelope jackrabbits (*Lepus alleni*) have been observed to clip stems, leaves, flowers, and fruits of *Tumamoca maddougallii* (Reichenbacher 1984). Although rodents have not been observed browsing the plant, they are suspected of it (Toolin 1982). Reichenbacher (1985) identified 54 plants excavated by javelina during the 1984 field survey. The javelina foraging pressure varies from population to population. Livestock grazing may not directly affect the *Tumamoca* globe-berry; however, livestock take shelter under trees on warm days and could possibly trample the *Tumamoca*, which are always located in the shade of trees or shrubs.

D. The inadequacy of existing regulatory mechanisms. Presently, there is no Federal or Arizona State law protecting *Tumamoca maddougallii*. The *Tumamoca* globe-berry is on the BLM Sensitive Species List and it is BLM policy to include candidate species for consideration in its environmental assessments. The Endangered Species Act would provide additional protection for this plant through Section 7 (interagency cooperation) requirements and through Section 9, which prohibits removal and reduction to possession of species on Federal lands.

E. Other natural or manmade factors affecting its continued existence. The low numbers (335 adult plants and 1,627 juveniles) and limited distribution of *Tumamoca maddougallii* increase the species' vulnerability to natural or man-caused stresses. Although the reproductive biology is not fully understood, survival of all the seedlings to maturity is doubtful, since periodic droughts are common in this species' range and young plants without well-developed root systems would be vulnerable to drought (Toolin 1982). This seedling mortality is well illustrated by the present ratio of adults to seedling.

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 *Tumamoca maddougallii* as endangered without critical habitat. Endangered status seems appropriate because all populations except one are facing imminent threat from urban and agricultural expansion. Thus, *Tumamoca maddougallii* is in danger of extinction throughout a significant portion of its range and may soon disappear unless appropriate protection is extended. The reasons for not designating critical habitat are 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 any habitat of a species which is considered to be 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 *Tumamoca maddougallii* because its restricted distribution and accessibility make it vulnerable to threats from taking. Publication of critical habitat descriptions and maps would call attention to this species, making it more vulnerable to taking and vandalism. Therefore, it would not be prudent to determine critical habitat for *Tumamoca maddougallii* 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 following listing. 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, and are now under revision (see proposal at 48 FR 29990; June 29, 1983).

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. This protection would now accrue to *Tumamoca macdougallii*. 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 usual results of section 7 consultation, if jeopardy is found, are modification and not cancellation of proposed action.

The Central Arizona Project (CAP)—Tucson Aqueduct Phase B Alignment may affect the Tumamoc globe-berry. The preferred route of the CAP aqueduct would cross the largest known population of *Tumamoca*. Most of the 468 plants occur in the route of the canal or within the periodic inundation zone which is approximately 300 meters wide on the upslope side (Reichenbacher 1985). The degree of impact to this species from CAP construction is dependent upon the route chosen for the CAP Phase B alignment. There are two alternative routes which BR is considering that would avoid the main population entirely (Reichenbacher 1985). The BR is working with the Service to determine the status of *Tumamoca macdougallii* on the CAP route.

The known population as well as potential habitat on BLM administered lands may be impacted by the land imprinting and seeding project or by the possibility of transfer of ownership from BLM to State or private interests. In view of BLM's active transferral of lands program, adequate surveys at appropriate times of the year need to be conducted prior to transfer of land to non-Federal interests.

Proposed projections on BIA administered lands include the San Xavier Planned Community which would impact 105 plants, and the urban and agricultural development on the Papago which could possible impact 310 plants. Surveys have been conducted on both reservations. The BIA, BLM, and BR are all aware of the species on their lands and are actively planning for it. No other Federal activities are known or expected to affect this species.

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 plant species. With respect to *Tumamoca macdougallii*, all trade prohibitions of Section 9(a)(2) of the Act, implemented by 50 CFR 17.61 would apply. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to import, transport in interstate of foreign commerce in the course of a commercial activity, or sell or offer for sale this species in interstate of foreign commerce. 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. International and interstate commercial trade in *Tumamoca macdougallii* is not known to exist. It is anticipated that few permits would ever be sought or issued since the species is not common in cultivation or in the wild.

Section 9(a)(2)(B) of the Act, as amended in 1982, prohibits the removal and reduction to possession of endangered plant species from areas under Federal jurisdiction. The prohibition will apply to *Tumamoca macdougallii*. Permits for exceptions to this prohibition are available through section 10(a) of the Act, until revised regulations are promulgated to incorporate the 1982 Amendments. Proposed regulations implementing this prohibition were published on July 8, 1983 (48 FR 31417), and it is anticipated that these will be made final following public comment. Few collecting permit requests are expected. Requests for copies of the regulations of plants and inquiries regarding them may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (703/235-1903 or FTS 235-1903).

Public Comments Solicited

The Service intends that any final rule adopted will be accurate, and as effective as possible in the conservation of endangered or threatened species. Therefore, any comments or suggestions for the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of 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 *Tumamoca macdougallii*;

(2) The location of any additional populations of *Tumamoca macdougallii*

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 and distribution of this species; and

(4) Current or planned activities in the subject area and their possible impacts of *Tumamoca macdougallii*.

Final promulgation of the regulation on *Tumamoca macdougallii* will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of 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 filed within 45 days of the date of the proposal. Such requests must be made in writing and addressed to the Regional Director (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).

Literature Cited

- Reichenbacher, F.W. 1984. Rare plants of the Central Arizona Project Aqueduct Phase B. Final Report, Arizona Game and Fish Department, Phoenix, Arizona. 61 pp.
- Reichenbacher, F.W. 1985. Field surveys of *Tumamoca macdougallii*. Draft Final Report, F.W. Reichenbacher and Associates, Tucson, Arizona. 69 pp.
- Rose, J.N. 1912. *Tumamoca*, a new genus of Cucurbitaceae. Contributions from the U.S. National Herbarium 16:21.
- Toolin, L.J. 1982. Status report on *Tumamoca macdougallii*. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, New Mexico. 11 pp.
- Tumamoc Hill Advisory Committee. 1982. Tumamoc Hill Policy Plan. University of Arizona, Tucson, Arizona. 70 pp.

Author

The primary author of this proposed rule is Peggy Olwell, Endangered Species Staff, U.S. Fish and Wildlife Service, Department of the Interior, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-3972 or FTS 474-3962). The editor is LaVerne Smith, Office of Endangered Species, Washington, D.C. 20240 (703/235-1975 or FTS 235-1975).

Status information was provided by Dr. L.J. Toolin, Arizona Natural Heritage Program, Tucson, Arizona, and by Frank Reichenbacher, F.W. Reichenbacher and Associates, Tucson, Arizona.

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, 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: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 98-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. It is proposed to amend § 17.12(h) by adding the following, in alphabetical order by family 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					
Cucurbitaceae—Gourd family:						
<i>Tumamoca macdougalii</i>	Tumamoc globe-berry	U.S.A. (AZ), Mexico (Sonora).	E		NA	NA

Dated: May 9, 1983.

Susan Rocce,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 85-12092 Filed 5-17-85; 8:45 am]

BILLING CODE 4310-55-M