

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Two Long-Nosed Bats

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines endangered status for the Mexican long-nosed bat (*Leptonycteris nivalis*) and

Sanborn's long-nosed bat (*L. sanborni*), which are found in the southwestern U.S., Mexico, and Central America. They depend largely on caves for roosting and on the flowers of agaves and cacti for food. Both species evidently have declined in recent years, and remaining populations are jeopardized by disturbance of roosting sites, loss of food sources, and direct killing by humans. This rule implements the protection of the Endangered Species Act of 1973, as amended, to these animals.

EFFECTIVE DATE: October 31, 1988.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Service's Regional Office of Endangered Species, 500 Gold Avenue SW., Room 4000, Albuquerque, New Mexico.

FOR FURTHER INFORMATION CONTACT: Chief, Office of Endangered Species, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-3972 or FTS 474-3972).

SUPPLEMENTARY INFORMATION:

Background

The genus *Leptonycteris* differs strikingly from most other bats that occur in the United States, in having an elongated muzzle with a small nose leaf at the tip. Its long tongue, an adaptation for feeding, measures up to 3 inches (76 millimeters). Head and body length is 2¼ to 3¼ inches (70 to 90 millimeters), the tail is very small, and weight is ½ to 1 ounce (18 to 30 grams). Coloration is usually yellowish brown or grayish above and cinnamon brown below (Wilson 1985a, 1985b).

Leptonycteris contains three species, of which one (*L. curasoae*) is known only from the northern coast of South America and some adjacent islands (Nowak and Paradiso 1983). The other two species, which occur in the southwestern U.S., Mexico, and Central America, are *L. nivalis* (Saussure), the Mexican or "big" long-nosed bat, and *L. sanborni* Hoffmeister, Sanborn's or "little" long-nosed bat. These bats have a rather confusing nomenclatural history, and *L. sanborni* is sometimes called *L. yerbabuena*. Although there is general agreement that *L. nivalis* and *L. sanborni* are distinct species, and while the two can be separated by cranial and dental characters, they are sometimes difficult to distinguish in the field (there is actually little size difference). The most useful external identification characters are the shorter, denser pelage of *L. sanborni*, and the longer, finer hair extending above and beyond the tail membrane of *L. nivalis* (Wilson 1985a, 1985b).

These bats are adapted for life in arid country, and are found mainly in desert scrub habitat in the U.S. parts of their range. Farther south, they sometimes occur at high elevations on wooded mountains. For day roosting sites, they depend almost entirely on caves and abandoned mines and tunnels. Populations in the U.S. and northern Mexico apparently migrate southward in the fall and return in the spring, with groups occupying the same caves, year after year. Thousands of individuals

may roost together at a single site, though large aggregations now seem much rarer than in the past (Wilson 1985a, 1985b).

The bats emerge at night to feed on nectar and pollen, especially of the flowers of paniculate agaves (century plants) and large cacti. An intimate mutual relationship seems to be involved, with the bats depending on the plants for food, and the plants requiring the bats as pollinators. In recent decades, human exploitation of agaves may have contributed substantially to a drastic reduction in populations of *Leptonycteris*, which in turn caused a serious decline in the reproductive rate of certain agaves (Howell 1974, 1976, pers. comm.; Howell and Roth 1981). Fruit, particularly soft and juicy kinds, is also eaten by these bats, especially in the southern parts of their range (Wilson, pers. comm.).

In its Review of Vertebrate Wildlife in the Federal Register of December 30, 1982 (47 FR 58454-58460), the Service included *L. nivalis* in category 2, meaning that information then available indicated that a proposal to determine endangered or threatened status was possibly appropriate, but was not yet sufficiently substantial to biologically support such a proposal. In a revised Review of Vertebrate Wildlife in the Federal Register of September 18, 1985 (50 FR 37958-37967), both *L. nivalis* and *L. sanborni* were placed in category 2. Shortly thereafter, the Service received completed reports (Wilson 1985a, 1985b) of status surveys, which it had initially funded in 1983. These reports, and other information provided to the Service, indicate that the two long-nosed bats have declined, that their remaining populations are jeopardized by several factors, and that they now warrant addition to the List of Endangered and Threatened Wildlife. In the Federal Register of July 6, 1987 (52 FR 25271-25275), the Service published a proposed rule to determine endangered status for these two bats.

Summary of Comments and Recommendations

In the July 6, 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, and other interested parties were contacted and requested to comment. Newspaper notices were published in *The Star* (Tucson, AZ) and the *Alpine Avalanche* (Alpine, TX) on July 30, 1987, which invited general public comment. Six

comments were received and are discussed below.

Five letters of support were received (Arizona Game and Fish Department, Texas Parks and Wildlife Department, Arizona Department of Commerce, the Director of the Oklahoma Museum of Natural History, and a Ph.D. candidate from the University of Arizona), and one letter of opposition (New Mexico Game and Fish Department) was received.

The Ph.D. candidate sent additional location information on Sanborn's long-nosed bat. While important, this information does not change the major conclusions about the status of the bat. The information was incorporated into this final rule.

The New Mexico Game and Fish Department questioned the validity of listing these species based on present evidence. They believe the data base is limited—especially for the ranges south of the United States. Their criticism focused on what they believed to be inadequacies in the 1985 status report of *L. sanborni*. Although the decision to list these two species of *Leptonycteris* was based in part on the status reports by Wilson (1985a, 1985b), the Service did consider information from other sources in making this decision. In addition, although additional survey work should be conducted to aid in the recovery of these bats, the Service believes that the status reports and information from other sources does contain sufficient information to support listing. (See "A" under "Summary of Factors Affecting the Species"). Section 4 of the Endangered Species Act requires that listing determination be made on the basis of the best available scientific information.

Summary of Factors Affecting the Species

After a thorough review and consideration of all available information, the Service has determined that the Mexican long-nosed bat (*Leptonycteris nivalis*) and Sanborn's long-nosed bat (*L. sanborni*) should be classified as endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act of 1973, as amended (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 endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Mexican long-nosed bat (*Leptonycteris nivalis*) and Sanborn's long-nosed bat (*L. sanborni*) are as follows:

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

The species *L. nivalis* originally occurred from southwestern Texas and perhaps southwestern New Mexico, through much of Mexico, to Guatemala. The reported presence in New Mexico is based solely on two specimens collected in 1963 and 1967 in Hidalgo County. The only roosting site in the United States, currently known to be in use, is a cave in Big Bend National Park, Texas. The population there was estimated at 10,650 individuals in 1967 and about 1,000 in 1983 (Wilson 1985a). *L. nivalis* still occurs in Mexico, but there is evidence of a severe decline. The recent Service-funded survey covered nearly all sites in that country, where the species had been reported in the past, and located live individuals at 15 localities, but only in relatively small numbers. An abandoned mine in Nuevo Leon, which had an estimated population of 10,000 *L. nivalis* in 1938, had no sign of the species in 1983. Another mine in that State, which had a ceiling covered with newborn young in 1967, contained only a single bat in 1983. A cave in Morelos that supported large numbers in the 1950's and 1960's had only 30-50 individuals in 1984, and that was about the largest group found in Mexico (Wilson 1985a). Reported occurrence in Guatemala is based entirely on two specimens collected over 100 years ago (Jones 1966).

The species *L. sanborni* originally occurred from central Arizona and southwestern New Mexico, through much of Mexico, to El Salvador (Hall 1981). It evidently was once more common in the U.S. than was *L. nivalis*, but a deterioration in status was noted some years ago. Hayward and Cockrum (1971) reported that populations of many colonies in Arizona and northwestern Mexico had greatly declined and some had completely disappeared. A 1974 survey of all localities in the U.S., from which the species had been reported, found only 135 individuals (Howell and Roth 1981). Until the 1950's, a single roosting colony, at Colossal Cave in Pima County, Arizona, contained as many as 20,000 *L. sanborni*, but that colony has now vanished. The recent Service-funded survey covered every previously known site of occurrence in the U.S., but found the species only in one place, a cave on private property in Santa Cruz County, Arizona, that held about 500 individuals. However, based on reported sightings of bats visiting artificial hummingbird feeders, two additional populations of *L. sanborni* are thought to survive in or near Cochise

County, Arizona, one containing perhaps 300 individuals.

The Service-funded survey also covered nearly all sites in Mexico, from which *L. sanborni* had been reported. Live individuals were found in only three places, and very few in two of those. The third site, a cave on the coast of Jalisco, may have supported 15,000 *L. sanborni* (Wilson 1985b). To the south of Mexico, the species is known only by a single specimen, collected in El Salvador in 1972 (Jones and Bleier 1974).

Since the proposed rule was published, the Service has received several other reports of *L. sanborni*. Most of these, however, appear to be small colonies (less than 50 bats) or a single bat. One unconfirmed report of 2,000-3,000 *L. sanborni* in the Patagonia or Santa Rita Mountains during the fall of 1987 has been received. This area is close to the site where the largest colony was found in 1985 during the status survey. Another report of 800-1000 in a cave in Sonora, Mexico during May, 1986 was received. Both of these colonies were found in different years than the status survey; therefore, they may represent bats counted in the status survey.

The reasons for the evident decline of the two long-nosed bats are not entirely clear, but are probably associated, at least in part, with habitat disruption. The two most important aspects of the bats' habitat involve roosting sites and food sources. A limited number of caves and mines provide a proper roosting environment. While there are no precisely documented cases of roosts being made unusable, such sites are becoming increasingly subject to human destruction and disturbance, particularly in Mexico. The currently known U.S. roosts are thought to be well protected, but because there are so few, the loss of one could be devastating (Wilson 1985a, 1985b). These bats are easily disturbed and readily take flight when approached (Wilson *et al.* 1985).

As mentioned above, the long-nosed bats feed to a considerable extent on nectar and pollen of the flowers of agaves and cacti, especially in that portion of their ranges in the United States and northern Mexico. Their muzzles and tongues, both in length and surface structure, are highly adapted for deep insertion into flowers and collection of pollen particles (Greenbaum and Phillips 1974, Howell and Hodgkin 1986). Paniculate agaves (century plants), which produce showy, easily accessible, night-blooming flowers, the pollen of which is rich in protein, seem to be especially important to the bats. The annual migrations of the

bats are associated to some degree with flowering of agaves in various areas. For example, the June arrival of *L. nivalis* in Big Bend National Park, Texas, coincides with the onset of agave flowering (Wilson 1985a). Unfortunately, the survival of many species and varieties of agaves is in doubt, especially in Mexico, because of human exploitation (for food, fiber, and alcoholic beverages), the spread of agriculture, wood cutting, and livestock grazing (Reichenbacher 1985).

Considerable evidence exists for the interdependence of *Leptonycteris* and certain agaves and cacti (a phenomenon known as chiropterophily) and for the simultaneous decline of the bats and agaves (Howell 1974, 1976, pers. comm.; Howell and Roth 1981). In location, structure, odor, and time of blooming, the flowers of the plants facilitate use by the bats. And in morphology and physiology of their noses, tongues, and dentition, the bats are adapted for feeding on the plants. When a bat visits a flower, it not only laps up some of the nectar and pollen on the spot, but picks up a considerable amount of pollen on its fur for later consumption. Some of this material is transferred to the next flower visited by the bat, and hence the plant is pollinated and reproduction can occur. *Leptonycteris* is thought to be the most important pollinator of some paniculate agaves and of the giant saguaro and organ pipe cacti. When the bats move northward in the late spring and summer, they are largely dependent on these plants. When they turn back south, and are concentrated in northern Mexico, the only blooming plants available to them are agaves. These agaves, however, are being intensively harvested by "moonshiners" for tequila production.

Excess harvest, and other factors resulting in elimination of agaves, may have contributed substantially to the drastic decline in long-nosed bat populations. In turn, the drop in bat numbers over the past several decades has coincided with a decline in the reproductive rate of agaves. For example, herbarium specimens of *Agave palmeri* from the Rincon Mountains of Arizona indicate pollination success of 80-100 percent in 1938-1941, when the area supported the huge Colossal Cave colony of *L. sanborni*. In 1976, after this colony had practically disappeared, the fecundity of *A. palmeri* was 0-10 percent. Other agaves, as well as the saguaro and organ pipe cacti, may also be affected, and there is concern for the future of entire southwest desert ecosystems.

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

Leptonycteris is not known to be taken for commercial purposes, and scientific collecting is not thought to be a problem. However, these bats are killed for fun by vandals. In Mexico, the general public often considers all bats to be vampire bats (which sometimes spread disease to people and livestock), and thus destructive control operations kill all bats in a cave (Wilson 1985a, 1985b).

C. Disease or Predation

Bats are susceptible to various diseases, though none are now known to be seriously affecting populations of *Leptonycteris*. However, if human agency reduces a species to only a few colonies, the vulnerability of that species to natural problems increases.

D. The Inadequacy of Existing Regulatory Mechanisms

In Mexico, there are no regulations protecting bats, other than restrictions on scientific collecting, and thus *Leptonycteris* is killed along with other kinds of bats in the course of control operations (Wilson 1985a, 1985b).

E. Other Natural or Manmade Factors Affecting its Continued Existence

During the recent Service-funded status survey, investigation of a cave in Guerrero, Mexico, revealed the skeletal remains of numerous *L. nivalis*, but no live members of that species. A cave in Sonora contained a recently dead *L. sanborni*, but no live individuals. In contrast, both caves were inhabited by several other kinds of bats, some of them in large numbers. These situations suggest the existence of some unknown agent that is causing a specific die-off of the long-nosed bats (Wilson 1985a, 1985b).

The Service has carefully assessed the best available scientific information regarding past, present, and probable future problems for the species. Based on this evaluation, the preferred action is to list the Mexican long-nosed bat and Sanborn's long-nosed bat as endangered. A decision to take no action would exclude these bats from protection provided by the Endangered Species Act. A decision to propose only threatened status would not adequately reflect the evident drastic decline of these species, the near or total disappearance of most of their known large colonies, and the apparent environmental problems that may lead to further deterioration of their status and that of the ecosystems on which

they depend. For the reasons given below, critical habitat is not being designated.

Critical Habitat

Section 4(a)(3) of the Endangered Species Act, as amended, requires that "critical habitat" be designated "to the maximum extent prudent and determinable," concurrent with the determination that a species is endangered or threatened. The Service finds that designation of critical habitat for the Mexican and Sanborn's long-nosed bats is not prudent at this time. As noted in factors "A" and "B" in the above "Summary of Factors Affecting the Species," both species are easily disturbed, subject to killing by vandals, and reduced to only a few roosting colonies in the United States, the loss of which would be disastrous. Publication of precise descriptions and location maps of these colonies, such as would be involved in a critical habitat determination, could increase the vulnerability of the sites to vandals and could lead to disturbance by well-meaning tourists. The bats' survival could thus be placed in further jeopardy. Critical habitat designation is not applicable to species in areas outside of U.S. jurisdiction.

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. Potential management actions are limited, but the use of artificial feeders and the protection of roost sites may warrant investigation. The protection required of Federal agencies and the prohibitions against taking and harm 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. With respect to the listing of the Mexican and Sanborn's long-nosed bats, there would be no known substantial effects on Federal activities within the United States. An opinion of August 31, 1981, from the Office of the Solicitor, U.S. Department of the Interior, indicates that the jeopardy prohibition of section 7(a)(2) does not apply in foreign countries.

Section 8(a) of the Act authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered species in foreign countries. Sections 8(b) and 8(c) of the Act authorize the Secretary to encourage conservation programs for foreign endangered species, and to provide assistance for such programs, in the form of personnel and the training of personnel.

Section 9 of the Act, and implementing regulations found at 50 CFR 17.21, set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. In some instances, permits may be issued during a specified time to relieve undue economic hardship that would be suffered if such relief were not available.

National Environmental Policy Act

The 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).

Reference Cited

Greenbaum, I.F., and C.J. Phillips. 1974. Comparative anatomy and general histology of tongues of long-nosed bats (*Leptonycteris sanborni* and *L. nivalis*) with reference to infestation of oral mites. *J. Mamm.* 55:489-504.

Hall, E.R. 1981. The mammals of North America. John Wiley & Sons, New York, 2 vols.

Hayward, B.J., and E.L. Cockrum. 1971. The natural history of the western long-nosed bat *Leptonycteris sanborni*. *Western New Mexico Univ. Res. Sci.* 1:75-123.

Howell, D.J. 1974. Bats and pollen: physiological aspects of the syndrome of chiropterophily. *Comp. Biochem. Physiol.* 48A:263-276.

Howell, D.J. 1976. Plant-loving bats, bat-loving plants. *Nat. Hist.* 85(2):52-57.

Howell, D.J., and N. Hodgkin. 1976. Feeding adaptations in the hairs and tongues of nectar-feeding bats. *J. Morphol.* 148:329-336.

Howell, D.J., and B.S. Roth. 1981. Sexual reproduction in agaves: the benefits of bats: the cost of semelparous advertising. *Ecology* 62:1-7.

Jones, J.K., Jr. 1966. Bats from Guatemala. *Univ. Kansas Publ. Mus. Nat. Hist.* 16:439-472.

Jones, J.K., Jr., and W.J. Bleier. 1974. Sanborn's long-tongued bat, *Leptonycteris sanborni*, in El Salvador. *Mammalia* 38:144-145.

Nowak, R.M., and J.L. Paradiso. 1983. Walker's mammals of the world. Johns Hopkins Univ. Press, Baltimore, 2 vols.

Reichenbacher, F.W. 1985. Conservation of southwestern agaves. *Desert Plants* 7:103-107.

Wilson, D.E. 1985a. Status report: *Leptonycteris nivalis* (Saussure). Mexican long-nosed bat. Rept. to U.S. Fish and Wildl. Serv., Albuquerque, 33 pp.

Wilson, D.E. 1985b. Status report: *Leptonycteris sanborni* Hoffmeister. Sanborn's long-nosed bat. Rept. to U.S. Fish and Wildl. Serv., Albuquerque, 35 pp.

Wilson, D.E., D.V. Lanning, and R.A. Medellin. 1985. Bats from northeastern Mexico, with a checklist of species. U.S. Fish and Wildl. Serv., Museum Section, Washington, D.C., 30 pp.

Author

The primary author of this final rule is Alisa M. Shull, Endangered Species Biologist, Ecological Service Field Office, Fritz Lanham Building, Room

9A33, 819 Taylor St., Fort Worth, Texas 76102 (817/334-2961 or FTS 334-2961).

List of Subjects in 50 CFR Part 17

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

Regulations Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, 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 § 17.11(h) by adding the following, in alphabetical order under "MAMMALS," to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *
 (h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
Bat, Mexican long-nosed	<i>Leptonycteris nivalis</i>	U.S.A. (NM, TX), Mexico, Central America.	Entire	E	336	NA	NA
Bat, Sanborn's long-nosed	<i>Leptonycteris sanborni</i> (= <i>L. yerbabuena</i>)	U.S.A. (AZ, NM), Mexico, Central America.	Entire	E	336	NA	NA

Dated: September 22, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 88-22330 Filed 9-29-88; 8:45 am]

BILLING CODE 4310-55-M