# Mexican Long-nosed Bat

Scientific Name: *Leptonycteris nivalis*

Federal Status: Endangered, 9/30/88 • State Status: Endangered

## Description

The Mexican Long-nosed Bat is a relatively large bat compared with most U.S. bat species. It measures about 2.75 to 3.75 inches in total length, can be dark gray to "sooty" brown in color, and has a long muzzle with a prominent nose leaf at the tip. Its long tongue, an adaptation for feeding on flower nectar, can be extended up to 3 inches and has hair-like papillae on its tip. It has a minute tail that may appear to be lacking.

*Mexican Long-nosed Bat*


## Distribution and Habitat

The Mexican Long-nosed Bat has been found in southwestern New Mexico, the Big Bend area of Texas, the Chinati Mountains of Presidio County, Texas and southward to central Mexico. The species was first discovered in the United States in 1937 in a cave in the Chisos Mountains of Big Bend National Park. In Texas and northern Mexico, at the northern part of their range, these bats are found in desert scrub vegetation dotted with century plants (agaves), mesquite, creosotebush, and a variety of cacti. In Big Bend National Park, long-nosed bats are associated with five distinct vegetation types at various elevations. These include the arroyo-mesquite-acacia (1800-4000 ft.), lechuguilla-creosotebush-cactus (1800-3500 ft.), deciduous woodland (3700-7800 ft.), pinyon-juniper-oak woodland (3700-7800 ft.), and cypress-pine-oak (5800-7200 ft.).

For day roosting sites, Mexican Long-nosed Bats depend on cool caves, crevices, abandoned mines, tunnels, and old buildings. These highly colonial bats are frequently found near the entrances of caves and other roosts, in the twilight zones. The bats often occupy the same roosts from year to year. Throughout their range, thousands of individuals may roost together at a single site, although the number of caves with large aggregations is less common today than in the past.

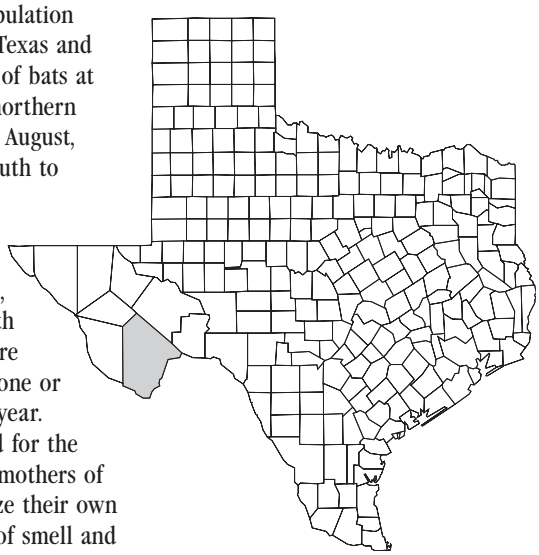
## Life History

Although movement patterns are not well known, Mexican Long-nosed Bats are thought to move from central Mexico into northern Mexico each year, with part of the population crossing the border into Texas and New Mexico. The colony of bats at Big Bend occupies their northern roosts from June through August, after which they move south to winter in central Mexico.

The young are born in Mexico during April, May and early June, then move northward with their mothers. Females are believed to give birth to one or perhaps two young each year. Although not documented for the Mexican Long-nosed Bat, mothers of other bat species recognize their own young by a combination of smell and distress cries made by their offspring. Young bats nurse for about one month and are generally capable of flying by five weeks of age. Few adult males have been recorded in Texas and northern Mexico suggesting that males and females may segregate geographically, with males rarely appearing in the most northerly part of the species' range. From late October to December, adult males and females congregate in a cave near Cuernavaca, Morelos (central Mexico) to copulate.

The feeding ecology of the Mexican Long-nosed Bat is of great importance in understanding its life history and recent decline. These bats are nectar feeders, emerging at night to feed on the showy flowers of plants such as agave or century plants (*Agave* spp.). They are very strong, highly maneuverable fliers, and like hummingbirds, are able to hover in flight while they feed. A mutual relationship exists, with the bats depending on the plants for food, and the plants benefiting from the bats as pollinators.

Agaves flower by sending up a green stalk supporting numerous flower clusters that produce large quantities of nectar each night. In addition to consuming the nectar, the bats also ingest pollen, picked up inadvertently on their fur as they feed and later ingested during grooming. The pollen provides vitamins and minerals and is rich in protein. Agave nectar is at least 17-22% sugar and the pollen is about 50% protein. The Mexican Long-nosed Bat and a similar species, the Lesser Long-nosed Bat (*Leptonycteris curasoae*), are the main pollinators of several agave species, including *Agave angustifolia* (mezcal plant), *A. salmiana* (pulque plant), and *A. tequilana* (tequila plant). The Mexican Long-nosed Bat



prefers higher and cooler places in parts of New Mexico, Texas, and Mexico; whereas, the Lesser Long-nosed Bat generally inhabits lower elevations in New Mexico, Arizona, Mexico, and parts of Central and South America. In some areas, the two species are found together.

Mexican Long-nosed Bats, with their long muzzles and tongues, are well adapted to feeding on nectar and protein-rich pollen. Adapted for specialized feeding, they migrate to follow the bloom periods of a number of agave and cacti species. In Big Bend National Park, agaves begin blooming in mid-May at lower elevations and early June at higher altitudes. The bats arrive in Texas about one month after flowering of agaves has begun. After spending most of the summer in Big Bend, they leave the United States in late summer or early fall as the agaves go out of bloom. They follow later-blooming agaves southward through Mexico. By November, they are several hundred miles into Mexico, where they feed on the blooms of subtropical trees and cacti. They spend the winter in the lush Central Valley of Mexico, feeding on a large variety of flowers. In the spring, they work their way back north, following the bloom times of various cacti and agaves.

## Threats and Reasons for Decline

Although the Mexican Long-nosed Bat occurs throughout much of Mexico, there are indications of substantial population decline both in the United States and Mexico. Compared to the Lesser Long-nosed Bat, the Mexican Long-nosed Bat was considered a rare species in mammal collections based on the taxonomic review of Arita and Humphrey in 1988. The population at one of only two known roosting sites in the United States, a cave in Big Bend National Park, fluctuates widely in numbers from one year to the next. Yearly estimates of population size range from zero to as many as 10,650 individuals. Reasons for these fluctuations are unknown but survey methods varied throughout the years making defining trends uncertain.

Population declines in Mexico have also been documented. An abandoned mine in Nuevo Leon, Mexico, which had an estimated population of 10,000 Mexican Long-nosed Bats in 1938, had no sign of the species in 1983. Another mine in Nuevo Leon had a ceiling covered with newborn bats in 1967, but only one bat was found in 1983. Considering this information, the U.S. Fish and Wildlife Service added this bat, along with its close relative the Lesser Long-nosed Bat, to the list of endangered species in 1988.

The reasons for these population declines are not entirely understood, but are thought to be associated with loss of roosting sites and food sources. Food resources are lost by both land use change and wild agave harvesting. Colonial roosting species, such as many bats, are particularly vulnerable to disturbance and destruction of roosting habitat, since this can result in the displacement of large numbers of animals at one time. Just a few roost sites are known for this species that provide the proper roosting environment including temperature and humidity. While the roost site in the United States is protected within Big Bend National Park, the bats spend most of the year in Mexico, where human disturbance and destruction of roost sites is a common occurrence. In Mexico, a country with 137 species of bats, there are few laws protecting bats or their roosts. However, in 1994 the Mexican government listed three bat species (*Choeronycteris mexicana*, *Leptonycteris nivalis*, and *L. curasoae*) as threatened.

In tropical Mexico where vampire bats are a problem, ranchers and the public often consider all bats to be vampire bats, which sometimes spread diseases to livestock and people. Thus, destructive control practices targeted for vampire bats often kill beneficial species.

Loss of food sources may be another threat contributing to the decline of the Mexican Long-nosed Bat. Agaves are an important food source, and are the primary blooming plants available in northern Mexico during their northern migration in the spring, and again in August when they move south. Harvest of agaves for the production of liquor, and in northeastern Mexico, for preparation of "quiote," a traditional sweet, may be contributing to the decline of this important food source. However, the extents to which these harvest activities affect the bats in unknown.

Agave plants are harvested just before they bloom by removing the "cabeza" or carbohydrate-rich meristem (actively growing tissue) and leaf base at the center of the plants. When agaves are harvested, not only are they removed from the bats' present food supply, but future generations of agave plants also are eliminated. This is especially critical, since a single plant grows for 10 to 20 years and flowers only once then dies. Other factors, such as wild fires and clearing of rangeland areas in northern Mexico may also reduce the food supply and thus affect bat populations, although the degree to which these activities affect the bats is unknown.

*Agave plants in bloom*


## Recovery Efforts

Research is currently underway to better understand the life history, habitat requirements, limiting factors, and management practices affecting the Mexican Long-nosed Bat and the plants that provide their food. Efforts by scientists to locate roosting sites are currently being initiated in Mexico. Periodic surveys are conducted to assess population status at one of the two only known roosting

site in the United States, located in Big Bend National Park.

Recovery efforts also include planting agaves along roadways in Northern Mexico. More than 50,000 agaves had already been planted in Tamaulipas, in the last three years. Agaves are very important plants to control soil erosion, and help to speed up the natural succession process in degraded areas. Finally, recovery efforts include providing information to the general public and school children concerning the great diversity and importance of bats.

*Mexican Long-nosed Bat in flight*


## Where To Learn More About the Mexican Long-nosed Bat

Visit Big Bend National Park to learn more about the Mexican Long-nosed Bat and its habitat. Read about Texas bats in *The Bats of Texas* by David Schmidly and *Texas Bats* by Merlin Tuttle. Bat Conservation International, a nonprofit organization located in Austin, can provide additional information on Texas bats.

## How You Can Help

If you enter a cave or other place where bats are present, be aware that these mammals are very sensitive to human disturbances. Maternity colonies and hibernating bats should be avoided, since even slight disturbances can be harmful. It is best to leave the area immediately. Viewing of bats is best done by waiting outside the roost site until the bats emerge to feed in the evening. Also, because the Mexican Long-nosed Bat depends on agave plants for its food, please do not cut or otherwise disturb these plants. If you live in an area where these bats may occur you can plant cultivated agaves and leave them to bloom.

You can be involved in the conservation of Texas' nongame wildlife resources by supporting the Special Nongame and Endangered Species Conservation Fund. Special nongame stamps are available at Texas Parks and Wildlife Department (TPWD) field offices, most state parks, and the License Branch of TPWD headquarters in Austin. Part of the proceeds from these sales is used to protect habitat and provide information concerning endangered species.

You can become involved in the Texas Master Naturalist Program to learn more about bats and other wildlife and then volunteer for bat conservation.

You can help by supporting bat conservation efforts in the United States and in Mexico. Conservation organizations in Texas also welcome your participation and support.

## For More Information Contact

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www.batcon.org
or
U.S. Fish and Wildlife Service
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758
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www.fws.gov

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