

by Ronnie Sidner

A Bat Boom at Fort Huachuca



Springtime in southern Arizona brings the spectacular blooming of the saguaro cactus (*Carnegiea gigantea*) to the Sonoran Desert. At the same time, two species of nectar-feeding bats migrate in from Mexico. One of these is the lesser long-nosed bat (*Leptonycteris curasoae*), an endangered species. It arrives in the low elevation desert community in April, gives birth in May, and raises its single young through June. During this period, the species feeds on the nectar and pollen of flowering saguaros and organ pipe cactus (*Stenocereus thurberi*), contributing to the successful pollination of these succulents.

A lesser long-nosed bat swoops down to feed on, and at the same time pollinate, the flower of a Palmer agave.

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In June and July, the cacti offer fruit that provide nutrition and moisture to untold numbers of desert creatures. Lesser long-nosed bats and their growing young eat the fruit and disperse the seeds, providing another service in the reproductive cycle of the cactus. In July, the bats move higher in elevation toward the arid grasslands of southeastern Arizona, where they enlist the help of the U.S. Army at Fort Huachuca. There the bats change their diet and feed on the nectar and pollen of "century plants," primarily the species known as the Palmer agave (*Agave palmeri*).

Historically, lesser long-nosed bats were known to inhabit two cave roosts on Fort Huachuca, but little was known about their population numbers. Collection reports from the 1950s-1970s listed no more than 20 individuals at either of the roosts. However, visitors had reported exit flights of large bat colonies at one of these sites, known as the "PY" roost. After the lesser long-nosed bat was placed on the endangered species list in 1988, the Army immediately began assessing the status of the bat at all roosts on the fort, and began determining ways to protect the bats and their potential food plants.

Across the fort, biologists conducted surveys of potential roosts and initiated a monitoring program. From the beginning, they used low-disturbance methods to perform research at roost sites. This meant that only a single bat biologist

ventured into roosts when bats were present, and only a brief visit to the interior was undertaken when necessary to determine bat presence and species identity. Dim, red lights, night vision goggles, or infrared lights were used inside roosts, and bats were not captured inside their roost caves.

Most estimates of population numbers were performed outside of the roosts by an observer who counted individual bats as they exited the cave for the evening foraging flight. When bats were not present, roost sites were searched for bone material. From skeletal evidence, biologists discovered that a third cave on the post was used by lesser long-nosed bats at some time in the past. Skeletal material also was found during the initial survey at the PY roost, but only one live bat was observed there during the first 6 years of monitoring. This site is a large cave that has been popular with recreational cavers. Protection for the bats requires that the potential roost sites be closed from May through October when bats are present, but the sites can be reopened after the bats migrate south in the fall.

Before 1991, the Army began many other protective actions at Fort Huachuca, such as removing obstructions at cave entrances, posting closure signs, and fencing roost sites and the roads leading to them. Following these actions, there was an immediate increase in numbers of cave myotis (*Myotis velifer*), an insect-feeding bat that shares the roosts of lesser long-nosed bats.

The Army, in coordination with the Fish and Wildlife Service, soon took action to prevent damage to agaves at Fort Huachuca, thus ensuring a continued food supply for the endangered bats. Because there are two species of nectar-feeding bats on the fort, it was necessary to document that lesser long-nosed bats used these plants for food. This was accomplished by photographing and netting both species as they foraged at the Palmer agave flowers.

Biologists determined bat feeding rates at the agaves on Fort Huachuca by

counting the number of feeding strikes during 15-minute periods. Upon analysis, bat feeding rates varied among years, even when the numbers of bats in southern Arizona appeared to be relatively stable. On the fort, average foraging rates during one 4-year period ranged from 1 to 53 feeding strikes per 15 minute period. It was possible one year for an observer to simply invest 15 minutes of patience at any blossoming agave on the fort to be guaranteed an exciting display of bat feeding at the flowers.

Each year, 6 to 14 exit counts have been conducted outside each roost to determine the period of roost occupancy and the maximum number of bats residing at any roost. We have been pleased to note sustained growth in population numbers of both the cave myotis and the endangered lesser long-nosed bat. In the past 2 years, lesser long-nosed bats recolonized the old PY roost and increased in abundance to more than 70 times the maximum number of bats first observed (before protective actions were initiated). In 1999, bats also remained at the roost until the first week in November, the latest date this species has been recorded anywhere in the U.S.

Overall, bat population numbers at protected roosts at Fort Huachuca have stabilized or increased over the past 10 years, and we are hopeful that the recovery of bats and their desert food plants will continue.

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Mountain and grassland habitats are conserved for a variety of wildlife species at Fort Huachuca.
Photo by Robert Anderson