BAT INVENTORY OF DEVILS POSTPILE NATIONAL MONUMENT

BACKGROUND — An inventory of bats was done for Devils Postpile National Monument as part of the Sierra Nevada Network's biological inventory program. Little information was available about bats for the monument, and a number of bat species occurring in the Sierra Nevada and surrounding areas are Federal and/or State Species of Concern. A primary goal of this inventory was to fill information gaps on bat distribution and abundance and to inform management decisions that may affect bats using monument lands. Bat inventories were conducted under contract by Drs. Elizabeth Pierson and William Rainey.

Top: *Little brown bat (Myotis lucifugus). Photo by William Rainey.*

Left: *Bats often roost together in colonies during the day.*

OBJECTIVES AND METHODS

Project objectives included:

1. Characterize the distribution and relative abundance of bat species along the Middle Fork of the San Joaquin River and in associated wetlands.
2. Characterize habitats, identify the bats found and document their specific uses of those habitats.
3. Identify species sensitive to disturbance (visitor impacts and management actions) through literature review and/or field data.
4. Make recommendations for long-term monitoring of bat species.

Bat inventories were done in August 2001 and July 2004 using two methods:

Acoustic sampling involved the use of an Anabat Detector System to detect the ultrasonic echolation calls and convert the signals into graphs on a computer. The graph of each call is unique and can often be used to determine the species based on the frequency, call shape, call duration, and intervals of time between calls. This method can detect 7 of the 10 species documented in this inventory.

Mist-net capture involved setting fine-meshed nets over water, meadows, or other known flyways. After capture in the mist-net, the bats were handled to collect data on the reproductive condition, sex, age, and body measurements. Bats were immediately released on-site after these data were collected.

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RESULTS

Ten species of bats were detected: Eight were captured in mist-nets and two were detected only acoustically (see Table 1). Three species have special status. The three most frequently captured species, accounting for 78% of all captures, were big brown, silver-haired, and little brown bats. Hoary bats were the most abundant and widespread species detected acoustically. An additional three species are likely to occur but were not positively identified during the inventory.

Top: *Long-eared bat, western mastiff bat, and silver-haired bat.*

Bottom: *Ponds provide important bat habitat. Photo by William Rainey.*

DISCUSSION

The river, small ponds, and wetlands in Devils Postpile provide both water and insects for bats. The most significant site sampled in Devils Postpile was a small pond: 59% of all bats captured were mist-netted here. Maintaining good water quality and quantity in rivers, streams, and wetlands is important for bats and other wildlife that depend on these water resources. Bats use other areas, such as forests and rocky cliffs, for both foraging at night as well as roosting during the day. National parks likely may play an increasingly important role in sustaining bat populations as pressures on lands outside of parks (such as urban expansion) reduce habitat or increase mortality. Understanding the habitat needs of bats in parks will assist managers in mitigating potential effects of climate change, altered fire regimes, habitat fragmentation, and non-native disease (white nose fungus) on bat populations.

Scientific Name	Common Name	Special Status	Method of Detection
Eptesicus fuscus	Big brown bat	--	Mist net
Euderma maculatum	Spotted bat	CDFG, WBWG	Acoustic
Eumops perotis	Western mastiff bat	CDFG, WBWG	Acoustic
Lasionycteris noctivagans	Silver-haired bat	--	Mist net
Lasiurus cinereus	Hoary bat	--	Mist net, Acoustic
Myotis evotis	Long-eared myotis	--	Mist net
Myotis lucifugus	Little brown bat	--	Mist net
Myotis volans	Long-legged myotis	WBWG	Mist net
Myotis yumanensis	Yuma myotis	--	Mist net
Tadarida brasiliensis	Mexican free-tailed bat	--	Mist net

Table 1 Right: *Bat species documented at Devils Postpile National Monument.*

Special status codes: *CDFG = California Department of Fish and Game's California Special Concern species; WBWG = Western Bat Working Group High Priority species.*

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