# Interpreting Bat Calls

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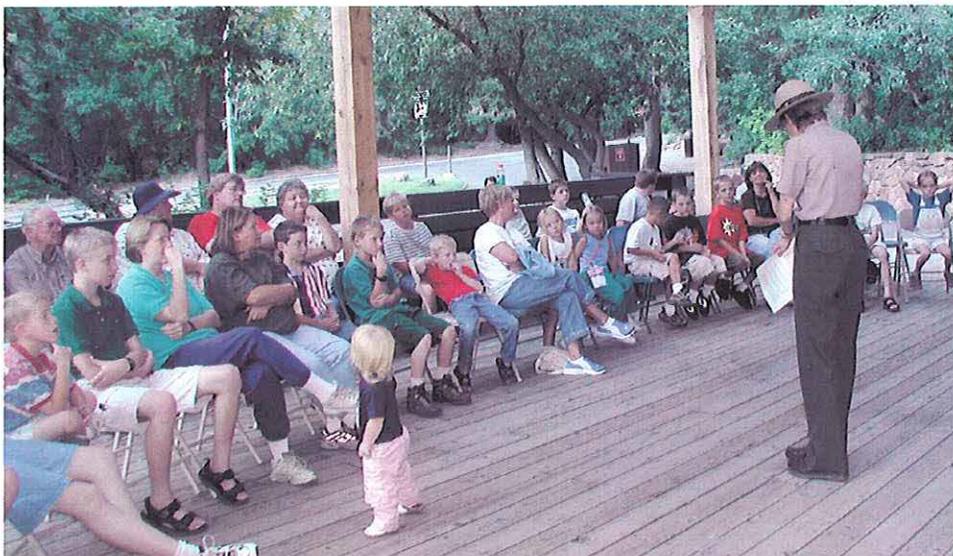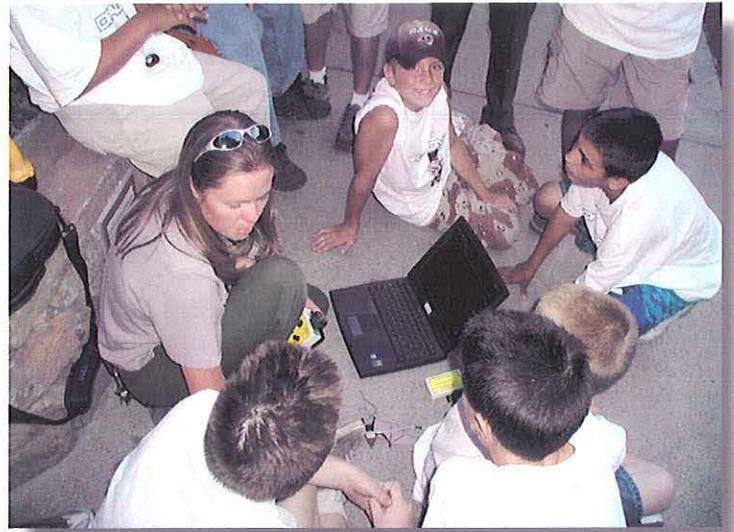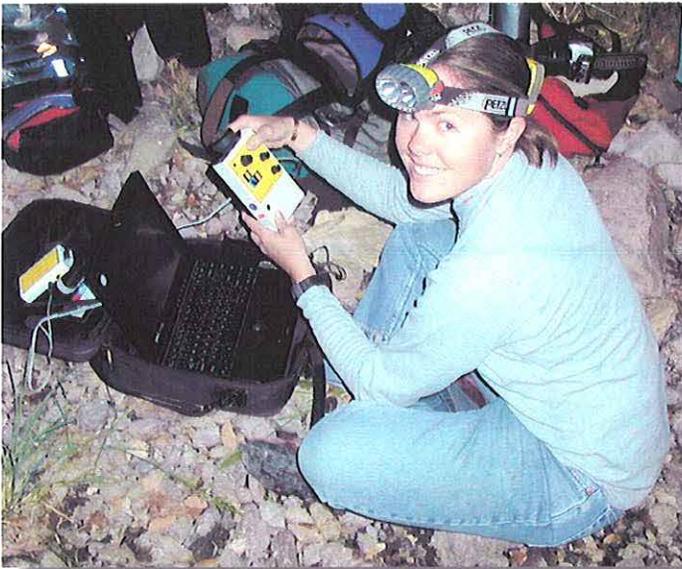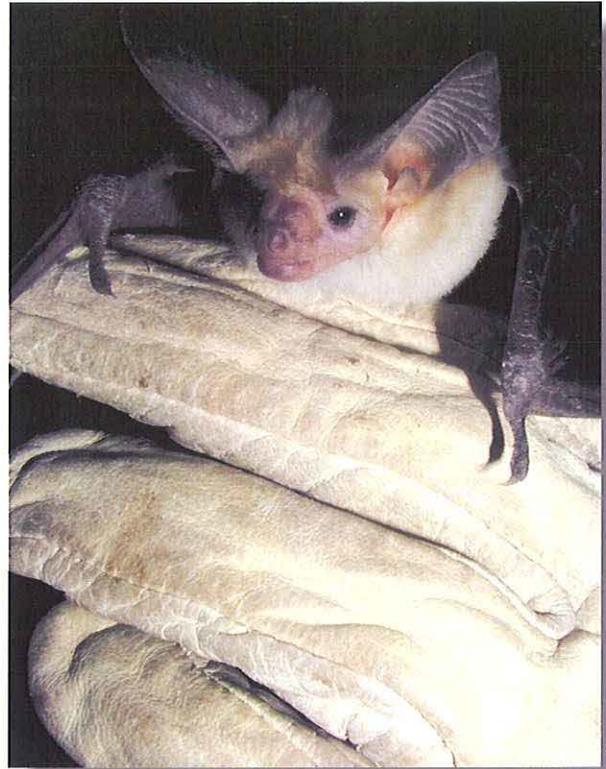
INTERPRETING BAT CALLS
TIMPANOGOS CAVE NATIONAL MONUMENT

Introduction

Bats are valuable to our ecosystem. They control insect populations by eating more than half their body weight in insects each night. Bats also are important for pollination and seed dispersal with many plant species depending almost entirely on bats for reproduction. Without bats, the health of our ecosystem would be greatly compromised. Unfortunately bats are still greatly unappreciated and misunderstood. Due to this lack of understanding and poor management, bat populations are declining throughout the United States. Of the 45 bat species in the United States, 6 species are listed as endangered and 20 species are listed as Species of Concern (Harvey *et al* 1999).

Timpanogos Cave National Monument proposed a project to gather information about the Monument's bats and to educate visitors about bats importance to the environment. Since over half of the bat species in the United States are threatened, it is important to know what species are present at Timpanogos Cave N.M., what kind of habitat the monument provides, and to increase awareness by educating the public on bats. Three bat species of special concern were thought to inhabit the monument: the Spotted Bat (*Euderma maculatum)*, Western Small-footed Myotis (*Myotis ciliolabrum*), and Townsend's Big Eared Bat (*Corynorhinus townsendii*).

Methods

Bats hunt and navigate by producing high-frequency sounds, this is called echolocation. The sound spreads as it travels and when it strikes an object, it is reflected back as an echo. By emitting this sound and listening to the echo, a bat can determine the size, shape, and path of the object of interest (Hill *et al* 1992).

Using an Anabat detector, scientists can identify bats by their unique calls. These detectors convert the echolocation calls into an audible sound. A computer connected to the detector then records and graphs the call (see figure 1), and by analyzing the graph, the particular bat species can be determined. Through
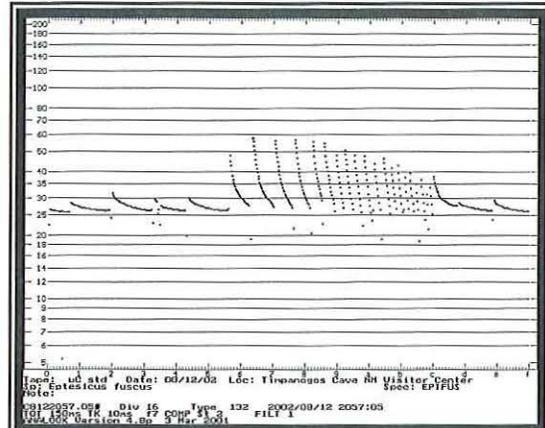

Figure. 1 Example of echolocation call recorded by an Anabat detector.

this process we are able to determine the presence of bat species in the Monument and to provide hands-on learning experience for visitors about the importance of bats.

Results

During evening programs at the monument's visitor center, researchers and visitors recorded 55 bat calls (Figure 2.). The bat calls were analyzed and six species of

Figure 2. Ranger demonstrates the use of Anabat Detectors.

bats were identified. The recorded calls were identified as a Little Brown Bat (*Myotis lucifugus*), Townsend's Big Eared Bat (*Corynorhinus townsendii*), Western Long-eared Bat (*Myotis evotis*), Big Brown Bat (*Eptesicus fuscus*), Hoary Bat (*Lasiurus cinerus),* and

Western Small-footed Bat (*Myotis ciliolabrum*). The NPS Inventory and Monitoring mammal crew conducted mist netting operations over a three night period in front of the visitor center captured 3 bats; a Little Brown Bat (*Myotis lucifugus*) and two Western

Long-eared Bat (*Myotis evotis*). These captures confirm that the calls for these two bat species were correctly identified.

While the number of bats recorded at the cave was small, new, more bat-friendly gates are being installed at the cave entrances, which should help increase the use of the caves by bats. Significantly, a Townsend Big-eared Bat (*Corynorhinus townsendii*) was recorded using the Anabat Detectors in the entrance to Hansen Cave on November 6 and was later seen roosting in the area.

Conclusion

Through this project, the beginnings of a long-term bat-monitoring program have been established at Timpanogos Cave National Monument. Researchers at the Monument will be able to continue to monitor for other species and bat habitat, as well as continuing to increase pubic education. By improving monument knowledge of bats and their habitat, we are better equipped to maintain and sustain a healthy bat population.