



ENDANGERED SPECIES

Status: Rare

FRINGE-TAILED MYOTIS

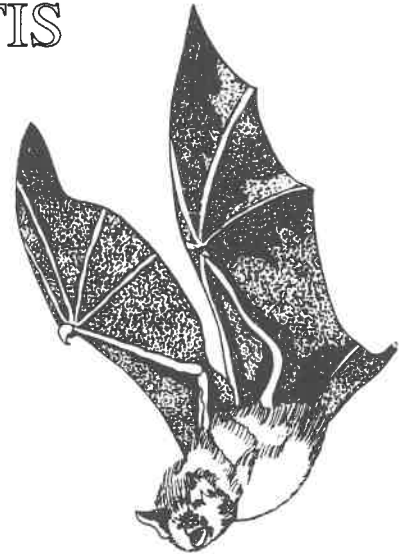
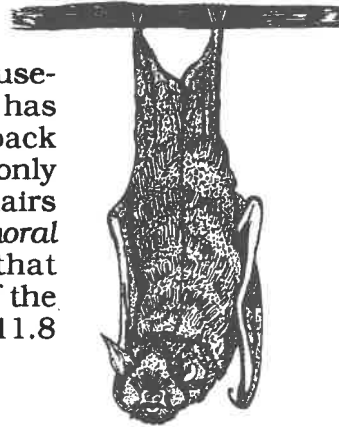
(*Myotis thysanodes pahasapensis*)

Description

The genus name, *Myotis*, means mouse-eared. The fringe-tailed myotis bat has reddish to dark brown fur on its back and is paler underneath. This is the only myotis with a distinctive fringe of hairs along the back edge of its *interfemoral membrane*, the expanse of skin that stretches from the ankles to the tip of the tail. The average wingspan is 10.4 to 11.8 inches (265-300 mm).

Distribution

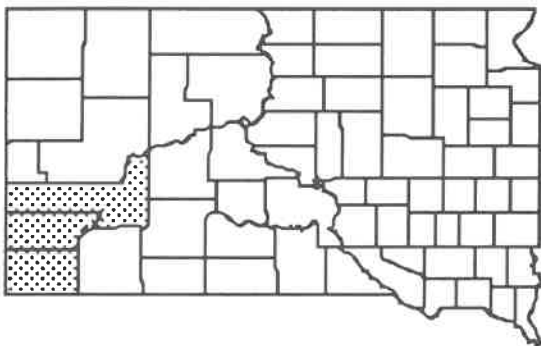
The fringe-tailed myotis occurs in mountainous areas of southwestern Canada, the western United States, and Mexico. A geographically isolated population in southwestern South Dakota, eastern Wyoming and western Nebraska is considered a separate subspecies, *M. t. pahasapensis*. Its relatively long ears



(17-21 mm), short forearms and smaller, narrower skull distinguish it from the other subspecies. In South Dakota, *M. t. pahasapensis* occurs primarily in caves in the Black Hills and Badlands. It has been reported in Custer, Fall River and Pennington counties.

Natural History

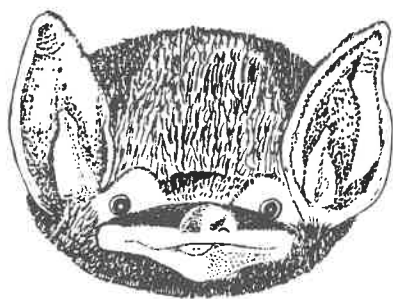
Bats are mammals, and as such possess all of the typical mammalian characteristics including the presence of fur and the production of milk. Compared with other groups of mammals, certain aspects of a bat's anatomy and physiology are sufficiently different so that they are placed in an order of their own. This order, *Chiroptera*, means "winged-hand." Almost one in every four mammalian species is a bat.



Species Distribution

The body of the fringe-tailed myotis is perfectly suited for flying. It has lightweight bones, a small body, and wings made of a skin-like membrane. This skin, thinner than the thickness of a plastic bag, covers the fingers and forearms and stretches to the hind legs and feet. These winged-hands serve as a means of propulsion as well as the lifting surface required for flight. Bats are the only mammals that truly fly. Even the so-called flying squirrels and lemurs, which possess expanded flaps of skin, are not capable of undertaking powered flight, they simply glide.

The wings of the fringe-tailed myotis are multiple use structures. Insect eating bats catch their prey with their wings. The wings are also used as a blanket or wrap during hibernation, which is usually from September to May. The fringe-tailed myotis hibernates in caves and abandoned mines. These sites have the right temperature, ventilation and humidity needed for hibernation. If disturbed prematurely, the bat might die, not because of the energy it expends on slowly waking and warming, but because it will not be able to find food to replace the spent energy.



Like many other bat species, the fringe-tailed myotis emits short, high-pitched sounds or cries through its mouth and/or nose. These cries are as high pitched as 100,000 cycles per second and when translated to frequencies for hu-

mans to hear, they sound like a series of short clicks. These cries bounce back as echoes from insects or solid objects. The echoes return to the bat's ears and give them a precise *aural* description of the immediate area, including shapes and any detection in movement. This system, called echolocation, is a sophisticated ultrasonic system that allows the fringe-tailed bat to navigate in total darkness and is a tactic it uses to hunt its prey.

A fringe-tailed myotis can distinguish the echoes of its own cries from those of other individuals. This is important because these bats often hunt in groups, and such accuracy allows them to do so with great maneuverability and without confusion. It should be mentioned, that not all bats echolocate. Some species rely on sight and smell to find food. They don't need to echolocate because they don't hunt moving prey.

Many of the "facts" about bats are myths. For example, most bats are not rabid, bat guano is not a source of tuberculosis, bats are not filthy and infested with parasites, nor do they get tangled in women's hair. As with many myths, these are based mostly on ignorance.

Significance

It is beneficial for people to co-exist with the fringe-tailed myotis as well as with other bats. This bat is an *insectivore* that eats up to half its body weight in insects nightly, a significant service, considering that an adult myotis weighs between 5.5 and 8.5 grams. Their prey consists of mosquitoes, gnats, moths, and beetles. By controlling these various insect populations, the fringe-tailed myotis plays an essential role in the ecosystem.

Bats, in general, are extremely valuable in medical research. They are commonly sought for research because they use highly sophisticated sonar, are exceptionally long-lived and disease resistant, and the females can store sperm to delay fertilization. Bats have contributed to the development of navigational aids for the

blind, birth control and artificial insemination techniques, vaccine production, drug testing, and perfecting of low temperature surgical procedures.

Conservation Measures

Many bat species the world over are threatened and endangered for several reasons. Firstly, bats are, for their size, the world's longest lived mammals, individuals surviving more than 30 years. Their unusually slow reproductive rate, often just one pup per year, makes adaptation to habitat changes extremely difficult. In addition, their *maternity colonies* are in readily accessible places, such as caves and abandoned mines.

Many young bats die when their mothers are disturbed at summer nursery roosts, a serious problem between June and July. Since bats are secretive and nocturnal, they are feared and misunderstood, thus, bats are relentlessly persecuted.

Because of its very limited geographic range, *M. t. pahasapensis* is extremely susceptible to extinction. This subspecies of the fringe-tailed bat needs to be inventoried and studied throughout its total range. Posting and access restrictions to caves and mines may be necessary to assure protection of this unique bat.

Glossary

Aural - pertaining to the ear.

Chiroptera - an order of mammals having the forelimbs modified as wings.

Insectivore - insect-eating.

Interfemoral membrane - a skin-like membrane that stretches from the ankles to the tip of the tail and contributes to highly maneuverable flight as well as acting as a pouch to entrap prey during flight.

Maternity colonies - groups of female bats that roost together to raise their young.

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Resources For Teachers

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Milwaukee Public Museum, Milwaukee, Wisconsin 53233.

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