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Myotis leibii

(eastern small-footed myotis)

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2007/02/11 04:02:22.922 US/Eastern

By Jen Blasko

Geographic Range

Myotis leibii are one of the rarest bats in North America. They occur from Ontario and Quebec in Canada southwestward through the Appalachian region to Arkansas and Eastern Oklahoma in the United States. They have been recorded in New England, Georgia, Alabama, Pennsylvania, Virginia, North Carolina, Kentucky, and Oklahoma. Fossil records have been found in Big Bone Cave in Tennessee and in Cumberland Cave in Maryland. The range of *M. leibii* is allopatric with *M. californius*, *M. ciliolabrum* and all other small footed *Myotis* bats with a keeled calcar in North America. (Best & Jennings 1997; Corgan 1975; Davis et al. 1965; Martin 1972; Wilson & Ruff 1999).

Kingdom: [Animalia](#)
 Phylum: [Chordata](#)
 Subphylum: [Vertebrata](#)
 Class: [Mammalia](#)
 Order: [Chiroptera](#)
 Family: [Vespertilionidae](#)
 Subfamily: [Vespertilioninae](#)
 Genus: [Myotis](#)
 Species: **Myotis leibii**

Biogeographic Regions:

nearctic  (native .

Habitat

The Eastern small footed bat occurs in mountainous regions at elevations ranging from 240-1125m. They prefer eastern deciduous and coniferous forests and can roost in buildings, rock bluffs and turnpike tunnels during spring and summer months. (Best and Jennings 1997).

Hibernation sites are in mines and caves only. During hibernation they tend to hang near the entrance where there is low humidity. When the winters become harsh they retreat further back into the caves. They do not shift cave sites and it appears that they hibernate near their summer ranges. These bats have been found to hibernate horizontally under rock slabs possibly due to a more constant temperature and humidity under these conditions. (Barbour & Davis. 1969; Best & Jennings 1997; Davis 1955; Fenton 1972).

Terrestrial Biomes:

forest .

Physical Description

M. leibii are one of the smallest bats in eastern North America. Total body length averages 83mm and tail length averages 36mm. Cranial dimensions average 13.6mm in length, 4.2mm in depth, and 5.1 mm for the maxillary tooth row. Their ears are less than

Mass
 3.20 to 5.50 g; avg. 3.80 g
 (0.11 to 0.19 oz; avg.
 0.13 oz)

15mm long and their hind feet measure less than 8mm, a diagnostic feature of the small-footed *Myotis*. They have a wingspan of 210-250mm with a forearm length of 32.2mm and an average mass of 3.8g. (Best and Jennings 1997).

Eastern small footed bats have soft, thick, glossy fur with a yellowish tan to blackish brown colour and a golden sheen to the surface. The roots of the fur are black with pale brown tips which give the golden sheen. The ventral surface of their body is grey and their face, ears, wings and interfemoral membrane are black. Their ears reach or exceed the tip of their nose when laid forward and their tail extends beyond their naked interfemoral membrane. (Best and Jennings 1997).

Myotis leibii have a keeled calcar. Their skull is small and delicate and their braincase is flattened. The forehead slopes gradually upward from the rostrum, they lack the prominent forehead common to other *Myotis* species. The dental formula is 2/3I 1/1C 3/3P 3/3M for a total of 38 teeth. (Best & Jennings 1997).

Some key physical features:

endothermic ; bilateral symmetry .

Reproduction

There is a 1:1 sex ratio at birth. Mating occurs in autumn before hibernation. Sperm is stored in the female until fertilization in the early spring. Females have 2 mammae and give birth to a single young between late May and July. Females have been found in maternity colonies ranging from 12-20 individuals. The lifespan of *M. leibii* is thought to be between 6-12 years, however they have a low survival rate (0.757 for males and 0.421 for females). (Best & Jennings 1997; Hitchcock et al. 1984; Wilson & Ruff 1999).

During copulation males mount the female from behind, grasping the back of her neck with his teeth and further stabilizing her with his thumbs. The interfemoral membrane does not appear to be an obstacle during copulation due to the free movement of the male's penis. The females role is passive. There are no vocalizations during mating. (Best and Jennings 1997).

Key reproductive features:

gonochoric/gonochoristic/dioecious (sexes separate); sexual .

Behavior

Shortly after sunset *M. leibii* emerges. They can fly slowly, erratically, or regularly, often with characteristic flight patterns which can be used in identification of this species. Flight altitude ranges from 0.3 to 6 m above the ground. They are often seen flying in and out of caves as well as over open fields. They can be caught in mist nets. Vocalizations are normal for this species however specific attributes of their calls are not well understood. (Best and Jennings 1997).

These bats can roost in colonies of up to 145 but instances of solitary or male-female pair roosting have been observed. They are commonly seen in mixed species flocks of migrating bats during the late summer. *Myotis leibii* hibernate late in the fall (mid November) and usually leave hibernation by March, although it has been noted that they may remain active throughout the winter months. During milder winters they have been seen to move in and out of their hibernation caves. During hibernation they lose an average of 16% of their body mass. They can tolerate cold temperatures, often arousing from torpidity below -9 degrees Celsius. (Best & Jennings 1997; Fenton 1972; Hitchcock 1965; Wilson & Ruff 1999).

It has been shown that *M. leibii* have some homing ability as they are able to return to their roost sites when moved from them. (Best and Jennings 1997).

Key behaviors:

motile .

Food Habits

Few details are known about the diet and feeding habits of *M. leibii*, although they appear to be insectivores. They have been seen to forage over water and land collecting insects while in flight. Favorite prey includes small insects such as flies, beetles, and moths which are caught on the wing. (Best & Jennings 1997; Wilson & Ruff 1999).

Economic Importance for Humans: Negative

Myotis leibii are known to commonly roost in human structures and therefore may be considered a nuisance by some. (Best & Jennings 1997).

Economic Importance for Humans: Positive

As insectivores, *M. leibii* may help control insect pests, including mosquitos, which they have been observed catching in the lab. However, because of their small population size there may be little or no noticeable effect. (Best and Jennings 1997).

Conservation Status

Pennsylvania has listed *M. leibii* as threatened and at risk. The United States Fish and Wildlife Service has listed *M. leibii* as a candidate for protection under the Endangered Species Act. (Best & Jennings 1997)

IUCN Red List: [\[link\]](#):
No special status.

US Federal List: [\[link\]](#):
No special status.

CITES: [\[link\]](#):
No special status.

Other Comments

It was originally believed that there were 3 races; *M. leibii leibii*, *M. l. ciliolabrum* and *M. l. melanrhinus*. *Myotis ciliolabrum* was proven to be a separate species from *M. l. leibii* by electrophoretic examination. *Myotis leibii melanrhinus* is more similar to *M. c. ciliolabrum* and therefore is now considered a race of the latter and not of *M. leibii*. (Best & Jennings 1997).

Myotis is from the Greek *mys* meaning "mouse" and *ot* meaning "ear". The species name of "*leibii*" is named fro G. C. Leib who collected the inital specimen. (Best & Jennings 1997).

Contributors

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