ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AMACC01140
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Myotis ciliolabrum* (Merriam, 1886)
COMMON NAME: Western Small-footed Bat; Small-footed Bat; Least Brown Bat; Small-footed Myotis
SYNONYMS: *Vespertilio ciliolabrum* Merriam 1886, *Myotis subulatus subulatus, Myotis subulatus melanorhinus*
FAMILY: Vespertilionidae

AUTHOR, PLACE OF PUBLICATION: *Vespertilio ciliolabrum* Merriam, Proc. Biol. Soc. Wash., 4:2, 17 December 1886. *Myotis ciliolabrum* C. G. van Zyll de Jong. 1984. Canadian J. Zool. 62:2519-2526.

TYPE LOCALITY: United States, Kansas, Trego Co., near Banner, about 1 mi. (1.5 km) from Castle Rock, bluff on Hackberry Creek (Wilson and Reeder, 2005).

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: One of 27 North American species in genus (Hall, 1981); one of 9 *Myotis* species found in Arizona.

According to NatureServe (August 2010), "*Myotis ciliolabrum* formerly was included in *M. leibii* but was recognized as a distinct species by van Zyll de Jong (1984); electrophoretic data support this separation (Herd 1987); Jones et al. (1992) listed *M. leibii* and *M. ciliolabrum* as distinct species. Koopman (in Wilson and Reeder 1993) did not recognize *ciliolabrum* as a distinct species, but Baker et al. (2003) and Simmons (in Wilson and Reeder 2005) did.

Two subspecies have been recognized, based on color of pelage: *M. c. ciliolabrum* and *M. c. melanorhinus* (Holloway and Barclay 2001). Simmons (in Wilson and Reeder 2005), citing support by van Zyll de Jong (1984), recognized *M. ciliolabrum* and *M. melanorhinus* as distinct species, but other authors have not done so."

NatureServe (August 2010) retains *melanorhinus* as a subspecies of *M. ciliolabrum*, pending resolution of existing taxonomic uncertainties. "A phylogenetic study based on mtDNA sequence divergence data did not recover distinct lineages of *M. californicus* and *M. ciliolabrum* as recognized by morphology (i.e., analysis of molecular data failed to support the hypothesis that *M. californicus* and *M. ciliolabrum* are monophyletic species (Rodriguez and Ammerman 2004). These results suggest that (1) *M. californicus* and *M. ciliolabrum* have recently diverged or (2) they are one phenotypically variable species. Additionally, *M. leibii*

was included within clades containing both *M. californicus* and *M. ciliolabrum* (Rodriguez and Ammerman 2004). Further data from *M. leibii* are necessary to validate its phylogenetic relationship *to M. ciliolabrum* and *M. californicus* (Rodriguez and Ammerman 2004). Comparisons among outgroups (*M. yumanensis*, *M. lucifugus*, and *M. evotis*) found sufficient support for specific status of *M. leibii*, but sequence divergence between *M. evotis* and the *leibii* group was small (2.9%) and within the intraspecific range. Further sampling of *M. evotis* is necessary to establish the level of divergence between *M. evotis*, as well as other long-eared *Myotis*, and the *leibii* group (Rodriguez and Ammerman 2004). Rodriguez and Ammerman (2004) did not address the status of *M. ciliolabrum* versus *M. melanorhinus* (all of their samples were from within the range of *melanorhinus*)."

DESCRIPTION: Small bat with a tiny foot 6.0 mm. Females tend to average larger than males in most characters. The total length ranges from 7.6-9.0 cm (3.0-3.5 in), short forearm 3.0-3.6 cm (1.2-1.44 in), wingspan 21.0-25.0 cm (8.27-9.84 in), and weight 2.8-7.1 gm (0.1-0.25 oz). This bat has a keeled calcar, black ears and a black facial mask. Its' pelage is often bicolored rather than tricolored, usually brown but ranges from pale yellow or tan to dark brown dorsally, too nearly white ventrally. Individual hairs blackish basally, succeeded by pale intermediate section and flaxen tips. Their fur is relatively long and silky, with a glossy sheen. It has a flattened cranium, and lacks a distinct forehead.

AIDS TO IDENTIFICATION: Keeled calcar distinguishes *M. ciliolabrum* from all Myotis but *M. californicus* and *M. volans*. Distinguished from *Myotis californicus* by slope of forehead (flattened in *M. ciliolabrum* and rises more abruptly in *M. californicus*). Fur of *M. ciliolabrum* glossy in contrast to the dull fur of *M. californicus*. *M. ciliolabrum* distinguished from *M. volans* by overall smaller size, but especially by forearm length (3.1-3.6 cm in *M. ciliolabrum* and 3.7-4.2 cm in *M. volans*). *M. ciliolabrum* does not have fur to the elbow on underside of the wing as does *M. volans*.

ILLUSTRATIONS:

B&W photos (Barbour and Davis 1969:102)
Color photos (Barbour and Davis 1969: plate X)
B&W photo (Ingles 1954:74)
Color photos (Whitaker 1980: plate 167)
Color photo (Wilson 1999)
Color photo (Harvey 1999)
Color photo (BCI *in* http://www.batcon.org/discover/species/mycilio.html)

TOTAL RANGE: In western North America from southern Saskatchewan, southern Alberta, and southern British Columbia (all provences of Canada), south through western United States (west of the 100th meridian but not including coastal areas north of southern California) into central Mexico (Holloway and Barclay 2001, Western Bat Working Group 1998, Bat Conservation International 1998). (NatureServe, 2010).

RANGE WITHIN ARIZONA: Found in Cochise, Coconino, Graham, Mohave, Pinal, and Yavapai counties. In winter, found in central Mohave County, and south of the Gila River in southeastern Arizona.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: One of the last bats to hibernate. *Myotis ciliolabrum* and *Myotis californicus* co-exist by spatially partitioning of the available food resource. Known maximum lifespan is 12 years, with an average life span of around 5-7 years. Adults molt in June or July; males molt before reproductively active females.

REPRODUCTION: They mate in the fall; store sperm over the winter and fertilization follows ovulation in the spring. Females produce one, sometimes two young. The young are born between May and July and begin to fly about one month later. Small maternity colonies (up to 20 individual females with young) occur in buildings and tree cavities. Survival rates are significantly lower for females (42%) than for males (76%).

FOOD HABITS: Feeds on flying insects. Analysis of stomach contents revealed flies and other insects, including fragments of ants. A study of 8 *M. ciliolabrum* from near Flagstaff showed the bats were feeding primarily on Lepidopterans, Coleopterans and Dipterans. Neuropterans, Hymenopterans and Hemipterans were also present, though to a lesser extent. Prefers to hunt over rocks instead of water. During the warmer months, it leaves the daytime roost shortly after sunset. Foraging activity peaks between 10 –11 pm and 1-2 am.

HABITAT: *Myotis ciliolabrum* is more common in montane and coniferous forests, rarely occurring below the level of ponderosa pine. It occurs in moister areas than *M. californicus*, and its kidney morphology and urine concentrating ability shows that it is not a true arid land dweller. (Wilson and Ruff, 1999). Microhabitat - roosts singly or in small groups in cracks and crevices in rock, caves, mines, under tree bark, in abandoned swallow nests, and in buildings. Hibernates in winter as single individuals or in small groups in cracks and crevices in mines and caves. They do not appear to be active in winter, unlike M. californicus, which often is active at low temperatures. (Wilson and Ruff, 1999). Generally tolerates colder and dryer hibernacula than other small bats. According to Tuttle and Taylor (1994 in NatureServe), "They rely heavily on mines for hibernation, even though a large proportion of their populations are normally not found in any one mine."

ELEVATION: In Arizona, found at elevations from 2,100 – 8,670 feet (640- 2644 m) (unpublished data *in* HDMS, AZ Game and Fish Department 2011). In New Mexico, found at elevations of 1,578-2,134 meters (5177-7001 ft) (New Mexico Department of Game and Fish 1997, *in* NatureServe 2010).

PLANT COMMUNITY: Montane and coniferous forests with chaparral, oak-juniper, and riparian areas.

POPULATION TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1994]

STATE STATUS: None

OTHER STATUS: Not BLM Sensitive (USDI, BLM AZ 2008)
[Bureau of Land Management Sensitive (USDI, BLM AZ 2000, 2005)]

MANAGEMENT FACTORS: Threats to this species include wanton killing, human disturbance of hibernacula, recreational caving, pesticides, and disturbance of breeding colonies.

PROTECTIVE MEASURES TAKEN: The Arizona Game and Fish Department and Arizona Bat Resource Group are in the process of preparing a Bat Management Plan for the State that will address concerns for this species. The Virgin River-Pakoon Basin and the Paria-Kanab Creek Habitat Management Plans provide general objectives for bat management, though neither specifically addresses this species. (Herder, date unknown).

SUGGESTED PROJECTS: Little is known of the specific habitat requirements and basic biology of the Western Small-footed Myotis. The use of trees especially as roost sites needs to be studied. Further inventory and survey work is needed to accurately document its range and attempt to assess population trends.

LAND MANAGEMENT/OWNERSHIP: BIA, Kaibab Paiute Tribe (Indian Reservation); BLM - Arizona Strip Field Office; DOD - Fort Huachuca Military Reservation; NPS – Fort Bowie Historical Site, Chiricahua and Pipe Springs national Monuments; USFS – Coronado, Apache-Sitgreaves and Kaibab National Forests; State Land Department; Hualapai Mountain County Park; AMNH Southwestern Research Station; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Revised: 1991-08-13 (RBS)
1994-03-25 (DCN)
1997-03-04 (SMS)
2003-03-28 (AMS)
2011-01-19 (SMS)