

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Myotis volans* (H. Allen, 1866)
COMMON NAME: Long-legged Myotis, Hairy-winged Myotis
SYNONYMS: *Leuconoe volans*
FAMILY: Vespertilionidae

AUTHOR, PLACE OF PUBLICATION: H. Allen, 1866. Proc. Acad. Nat. Sci. Phil., 18:282.

TYPE LOCALITY: Cabo San Lucas, Baja California, Mexico.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: There are 88 species of *Myotis* worldwide, 9 within Arizona. Four subspecies of *Myotis volans* are currently recognized including *M. v. volans* (Baja California peninsula), *M. v. amotus* (Sierra Volcanica Transversal, Mexico), *M. v. interior* (United States between 100th and 120th meridians and uplands of northwestern Mexico), and *M. v. longicrus* (southeastern Alaska, British Columbia and Alberta southwestward to western California). According to NatureServe (2001), *M. v. volans* (Baja California) may be specifically distinct (it occurs in different habitat and differs morphologically) from the three mainland species. If this is correct, the correct name for the three mainland species is *M. longicrus*. Based on genetic work done by Ruedi and Mayer (2001, in Wilson and Reeder 2005), *M. volans* is apparently closely related to *M. lucifugus* (Little Brown Myotis) and *M. thysanodes* (Fringed Myotis).

DESCRIPTION: One of the larger species of *Myotis*, the peninsular subspecies is smaller than the mainland subspecies. For the species, total length is 7.6-10.6 cm (3.00-4.17 in), length of forearm 3.5-4.2 cm (1.38-1.65 in), length of tail 29-49 mm, wingspan 25-30 cm (9.84-11.81 in), and weight 5-10 g (0.176-0.352 oz). Its calcar is distinctly keeled and short (14 mm). The ears are rounded and short, 11-15 mm; tragus 6-8 mm long and pointed. The fur is long, soft, and varies dorsally from dark brown to reddish buff. On the underside of the wing membrane between the elbow and the knee, the fur is longer and denser, compared to other *Myotis* in North America. The ears and wing membranes are blackish. (Wilson and Ruff, 1999). Wing membranes attach to the hind foot at the middle of the metatarsus. Characteristics of the skull include a short rostrum, steep forehead, broad interorbital region and a globose brain case. Sexual dimorphism occurs with the female having a slightly larger forearm and condylocanine lengths (Warner and Czaplewski 1984).

AIDS TO IDENTIFICATION: Short, rounded ears that barely reach the nostril when laid forward, small hind feet, distinctly keeled calcar. According to Findley (1987), there is a "thin covering of hair on the ventral wing membrane extending from the side of the body to about the level of the elbow." Warner and Czaplewski (1984) state that "Several other species of *Myotis* have hair on the underwing, but usually it is not as long, dense, or extensive as in *M. volans*."

ILLUSTRATIONS:

B&W photos (Barbour and Davis 1969:96-98, Figs. 51-53)
B&W drawing (Hoffmeister 1971:2)

B&W diagram (Ingles 1954:72)
B&W photos (Warner and Czaplewski 1984:1-2, Figs. 1-3)
Color photo (Harvey 1999)
Color photos (Wilson and Ruff 1999)
Color photo (Barbour *in* <http://www.enature.com/fieldguide/>)
Color photo (Whitaker 1996)

TOTAL RANGE: Inhabits Jalisco to Veracruz (Mexico); Alaska panhandle (USA) to Baja California (Mexico), east to Nuevo León (Mexico), South Dakota, and C Alberta (Canada). (Wilson and Reeder, 2005).

RANGE WITHIN ARIZONA: In forested mountains of Apache, Cochise, Coconino, Gila, Greenlee, Mohave, Navajo, and Yavapai counties. Absent from desert and desert mountains of southwestern part of the state.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The long-legged myotis is a strong, direct flier, which is capable of speeds of 15-17 km/hr. Echolocation calls of this bat consists of FM sweeps from 80-40 kHz with most of the energy at 46 kHz, these calls are from 1-10 ms in length. Calls shortened during pursuit. When several bats of the same species are feeding in the same area, it may become difficult for them to distinguish the echoes of their own call from those of a neighbor. As a result, when they seem to be on a collision course they may “honk” at each other by lowering the frequency in the terminal portion of an FM sweep.

M. volans is active throughout most of night, but activity peaks 3 or 4 hours after sunset. Known to live at least 21 years. This bats ability to fly at cool temperatures may enable this species to extend the pre-hibernation period of activity. They commonly forage over water such as creeks, large ponds and earthen tanks, and lakes. They have been observed roosting in mines, under bark of large snags, and in bat boxes.

REPRODUCTION: Copulation begins in late August, sperm stored over winter in female's reproductive tract. Ovulation occurs between March and May, parturition from May through August. One young born each year. They form large nursery colonies, often numbering in the hundreds. In the Southwest, They give birth to single young earlier in the season than most other bats.

FOOD HABITS: Considered by Findley (1987) to be an “aerial pursuer.” Commonly forages 10-15 ft high over water and in openings in woods. Flies more slowly and less erratically than *M. lucifugus* and *M. yumanensis*. Can be recognized in flight when feeding. *M. volans* consumes primarily moths but has also been observed taking flies, termites, lacewings, wasps, small beetles and other insects. Pursues prey over fairly long distances around, under, and over the forest canopy. Believed to use the same “feeding route” every evening. Apparently an opportunistic forager, taking appropriate prey in approximate proportion, to their availability in the environment.

HABITAT: Although primarily a coniferous forest bat, it can also be observed in riparian and desert habitats. This species utilizes a variety of roosts including abandoned buildings, cracks in the ground, crevices in cliff faces and spaces behind exfoliating tree bark. Caves and mine

tunnels are used as hibernacula. In the summer, they apparently do not use caves as a daytime roost site.

ELEVATION: In Arizona, elevation ranges from 4,360 – 8,800 ft (1329-2682 m), with one observation near Roosevelt Lake near 2,200 ft (671m). (unpublished data, HDMS Arizona Game & Fish Department, 2011).

PLANT COMMUNITY: Often found roosting and foraging near water in Subalpine meadow, and mixed conifer forests; to a lesser extent, found at lower elevations in desert scrub and agave habitats. Mixed conifer habitats observed in include ponderosa pine, ponderosa pine/grassland, ponderosa pine-juniper, ponderosa pine-gambel oak, aspen-ponderosa pine, and pinyon-juniper. (unpublished data, HDMS, AZ Game & Fish Department, 2011).

POPULATION TRENDS: According to NatureServe (2002), range-wide populations are unknown. However, populations are considered stable by Heritage programs in Arizona, Nevada, Washington and Nebraska. Populations in Wyoming are greatly restricted or declining.

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: Because of the bat's non-selective feeding habits, DDT is a major threat. They also may be affected detrimentally, by the closure of abandoned mines without adequate surveys, disturbances by humans and certain forest management practices.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: No information is known on the acceptance of bat gates. More information is needed on roosting and foraging requirements.

LAND MANAGEMENT/OWNERSHIP: BIA – Kaibab Paiute Tribe (Indian Reservation); BLM - Arizona Strip and Kingman Field Offices; NPS - Grand Canyon National Park, Chiricahua and Pipe Springs National Monuments; USFS - Coconino, Coronado, Apache-Sitgreaves, Tonto and Kaibab National Forests; State Land Department; AGFD Lamar Haines Memorial Wildlife Area and Cunningham Tracts; Hualapai Mountain County Park; AMNH Southwestern Research Station; TNC – Portal Preserve; Private.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

The genus name *Myotis* means mouse-eared and the species name *volans* means flying.

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