

LONG-LEGGED MYOTIS

Myotis volans H. Allen, 1866
(Vespertilionidae)

Global rank G5 (1998-08-04)
State rank S2 (2008-10-14)

State rank reasons

Only five known occurrences in Southeast Alaska, but suspected year-round resident (Parker et al. 1997). Abundance, population trend and distribution relatively unknown but suspected rare. Loss and fragmentation of forest habitat as a result of deforestation is probably the greatest concern regarding this species.

Taxonomy

Taxonomic status of subspecies is unclear; *Myotis volans volans* (from Baja California) may be specifically distinct (it occurs in a different habitat and differs morphologically) from the three mainland subspecies. If this is true, the correct name for the three mainland species should be *M. longicrus*. Mainland subspecies are *M. v. amotus* from Sierra Volcanica Transversal, Mexico, *M. v. interior* from the United States between the 100th and 120th meridians and uplands of northwestern Mexico, and *M. v. longicrus* from southeastern Alaska, British Columbia and Alberta southwest to western California. The original Mole Harbor record in Alaska was included under the subspecies *M. v. longicrus* (Hall 1981).

General description

Short rounded ears that barely reach the nostril when laid forward, small hind feet, distinctly keeled calcar, and fur on the underside of the wing membrane extending from the body to a line joining the elbow and knee. Pelage color variable; dorsally ranges from "ochraceous buff" to dark, reddish or blackish brown. Ventral color ranges from pale buffy to cinnamon brown to smoky brown. Total length (*M. v. volans*), 76-85 mm (Warner and Czaplewski 1984).

Length (cm) 8.5

Weight (g) 10

Reproduction

In New Mexico, copulation was noted to begin in late August; fertilization is delayed over winter and ovulation occurred March-May, parturition May-August (Black 1974). Births probably occur in June or early July in Texas (Schmidly 1991). Litter size: 1. Nursery colonies may include up to several hundred individuals.



Ecology

In many areas this *Myotis* may be the most abundant species; it is the common *Myotis* in the western U.S. Life span of 21 years recorded in the wild.

Migration

Adults and young leave the maternity colonies in fall but nothing is known of their subsequent movements (Barbour and Davis 1969).

Food

Feeds extensively on moths but also consumes a wide variety of other invertebrates: fleas, termites, lacewings, wasps, small beetles, etc. (Warner and Czaplewski 1984). Follows prey for relatively long distances, over and through forest canopy, forest clearings, and over water. In New Mexico, forages primarily in open areas, consumes mainly small moths (Black 1974).

Phenology

Active throughout most of the night. Activity peaks during the first 3-4 hours after sunset (Warner and Czaplewski 1984).

Habitat

Occurs primarily in montane coniferous forests at 2000-3000 m; also riparian and desert (Baja California) habitats. May change habitats seasonally. Uses caves and mines as hibernacula, but winter habits are poorly known. Roosts in abandoned buildings, rock crevices, under bark, etc. In summer, apparently does not use caves as daytime roost site. In some areas crevices beneath bark and hollow trees are the most common nursery sites, but buildings and rock crevices are also used. See Vonhof and Barclay (1996) for information on characteristics of roost trees in British Columbia and Ormsbee

and McComb (1998) for information on characteristics of roost trees in Oregon.

Global range

Western North America from southwestern Alaska, northern British Columbia and central Alberta south to Baja California and central Mexico (Jalisco, Veracruz, Nuevo Leon). Throughout the western United States from the Pacific coast to western North Dakota and western Texas (Barbour and Davis 1969, Western Bat Working Group 1998, Bat Conservation International 1998).

State range

Only five specimens have been collected in Alaska, all from the Alexander Archipelago (Parker et al. 1997, MacDonald and Cook 1999). The first was collected at Mole Harbor, Admiralty Island in 1907; three were collected in Wrangell in 1991; and one was collected in 1993 at Polk Inlet on Prince of Wales Island (Parker et al. 1997).

Global abundance

Abundance information is limited to general comments and estimates. According to Tuttle and Taylor (1994) mine colonies are usually in the hundreds and mines can be used year-round. A total of 700 specimens have been collected in New Mexico (Geluso et al. 1987). Forms large nursery colonies, often numbering in the hundreds (Arizona Game and Fish Department 1997). Based on an extensive 1997 survey, the Nevada Heritage Program estimates at least 600 individuals in Nevada (Carrie Carreno, pers. comm., 1998). The Washington Heritage Program estimates more than 1000 individuals and possibly more than 100,000 individuals in Washington State (John Fleckenstein, pers. comm., 1998).

State abundance

Unknown, but suspected rare. Only five known specimens have been collected in Southeast Alaska (Parker et al. 1997).

Global trend

Range wide population trends are unknown (Western Bat Working Group 1998). However, populations are considered stable by heritage programs in Arizona, Nevada, Washington, and Nebraska (Arizona Game and Fish Department 1997, Carrie Carreno, John Fleckenstein, and Mike Fritz, pers. comm., 1998). Populations in Wyoming are greatly restricted or declining (Mary Neighbours, pers. comm., 1998).

State trend

Unknown.

State protection

Managed in Alaska as a nongame species.

Global threats

May be affected detrimentally by the closure of abandoned mines without adequate surveys, disturbance by humans, and certain forest management practices.

Human disturbance can be extremely detrimental to bat colonies in general, especially to nonvolant young and hibernating adults (New Mexico Department of Fish and Game 1997). Special precautions should be taken when mine and cave surveys are conducted during breeding periods and winter hibernation. Disturbance of breeding colonies can cause young to lose their grasp and fall to their death. Disturbance during hibernation can cause bats to use up stored fat reserves and starve to death.

Residues of DDT and its metabolites have been found in Oregon individuals (Western Bat Working Group 1998).

According to Heritage Programs, the degree of threat is considered moderate in Oregon and Sonora (Mexico), and low in Nebraska, Washington, and Nevada (Eleanor Gaines, Andres Villareal Lazarraga, Mike Fritz, Carrie Carreno, and John Fleckenstein, pers. comm., 1998).

State threats

The distribution of this species in Alaska has only been documented in forested areas (Parker 1996, Parker et al. 1997). Timber harvest in southeastern Alaska may have a significant detrimental effect on *Myotis* species (Parker 1996, Parker et al. 1996). Bat activity is rare in second-growth forests of Southeast Alaska (Parker and Cook 1996). Projected timber harvest plans for the Tongass National Forest (U.S. Forest Service 1991) should be managed to avoid significant elimination of potential roost sites and forest fragmentation. Destruction of karst by recreationalists or mineral extraction could be a concern, as these areas are critical hibernacula.

State research needs

Little is known about this species' biology and ecology in southeastern Alaska. Research is needed to assess reproductive success, foraging

strategies, prey availability, habitat preferences, migration habits, and hibernation ecology. Measure bat use in forest types and in karst caves to identify important habitats (e.g. roosting, breeding, foraging).

Global inventory needs

Determine rangewide distribution of roosts, maternity colonies, and hibernacula. Also determine abundance, migration patterns, threats, and effect of threats. Monitor populations to determine trends.

State inventory needs

Intensive surveys are needed throughout southeastern Alaska to determine the distribution and abundance of this species. Areas proposed for timber harvest should be inventoried. Document distribution and abundance in second growth habitat.

State conservation and management needs

Because some of the most productive forests in southeastern Alaska are on karst, this component of southeastern Alaska's rainforest system is especially important bat habitat. An adequate supply of roosting sites, foraging habitat, and other critical habitat should be maintained. However, due to the overall lack of information on this species distribution in the state, it is impossible to identify specific areas and habitats used by this bat until a rangewide inventory is complete. Planning and environmental assessment processes for public lands should include such information when considering the effects of land-management practices (Parker et al. 1996).

LITERATURE CITED

Arizona Game and Fish Department. 1997. *Myotis volans*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, Arizona. 3 pp.

Banfield, A.W.F. 1974. The mammals of Canada. University of Toronto Press, Toronto.

Barbour, R.W., and W.H. Davis. 1969. Bats of America. Univ. of Kentucky Press, Lexington, KY.

Barclay, R.M.R. and R.M. Brigham. 2001. Year-to-year reuse of tree-roosts by California bats (*Myotis californicus*) in southern British Columbia. Am. Midl. Nat. 146:80-85.

Barbour, R.W., and W.H. Davis. 1969. Bats of America. Univ. of Kentucky Press, Lexington, KY.

Bat Conservation International. 1998. Approximated North American range of the long-eared myotis, *Myotis volans*. Unpublished draft, June 1998.

Black, H.L. 1974. A north temperate bat community: structure and prey populations. J. Mamm. 55:138-157.

Carreno, C. 1998. Nevada Natural Heritage Program. 1550 East College Parkway, suite 137, Carson City, Nevada 89706-7921, U.S.A. tel: (775) 687-4245 fax: (775) 687-1288.

Fleckenstein, J. 1998. Heritage Zoologist, Washington Natural Heritage Program, Department of Natural Resources. P. O. Box 47016, Olympia, WA 98504-7016. (360) 902-1340.

Fritz, M. 1998. Zoologist. Nebraska Natural Heritage Program. Nebraska Game and Parks Commission, 2200 North 33rd Street, P.O. Box 30370, Lincoln, NE 68503. 402-471-5500.

Gaines, E. 1998. Zoologist. Oregon Natural Heritage Information Center. 1322 SE Morrison Street, Portland, OR 97214-2531. Phone and Fax: (503) 731-3070.

Geluso, K.N., J.S. Altenbach, and R.C. Kerbo. 1987. Bats of Carlsbad Caverns National Park. Natural History Association, Carlsbad, New Mexico. 31 pp.

Hall, E.R. 1981. The mammals of North America. 2nd ed. 2 vols. John Wiley and Sons, New York, NY. 1,181 p.

Harris, C. 1998. Zoologist. Idaho Conservation Data Center. Department of Fish and Game, 600 South Walnut Street, Box 25, Boise, ID 83707-0025. 208-334-3402.

Lazarraga, A.V. 1998. Ecology and Zoology Asst. Centro d Datos para la Conservacion de Sonora, Instituto del Medioambiente y Desarrollo Sostenible de Sonora (IMADES), Reyes y Aguascalientes Esq. Col. San Benito

- (antes Escuela Carpio), Hermosillo, Sonora, Mexico 83240.
- MacDonald, S.O. and J.A. Cook. 1999. The mammal fauna of southeast Alaska. Univ. Alaska Museum. 145 pp.
- Neighbors, M. 1998. Former Data Manager. Wyoming Natural Diversity Database. University of Wyoming, Dept. 3381, 1000 E. University Ave., Laramie, WY 82071
- New Mexico Department of Fish and Game. 1997. Fish and Wildlife Information Exchange--VA Tech. Online. Available: <http://www.fw.vt.edu/fishex/nm.htm>. (Accessed 14 April 1998, last update 29 October 1997).
- Ormsbee, P.C. and W.C. McComb. 1998. Selection of day roosts by female long-legged myotis in the central Oregon Cascade Range. *Journal of Wildlife Management* 62:596-603.
- Parker, D.I. 1996. Forest ecology and distribution of bats in Alaska. M. S. thesis. Univ. of Alaska, Fairbanks. 73 pp.
- Parker, D.I. and J.A. Cook. 1996. Keen's long-eared bat, *Myotis keenii*, confirmed in Southeast Alaska. *The Canadian Field-Naturalist*, Vol. 110 pp. 611-614.
- Parker, D.I., J.A. Cook, and S.W. Lewis. 1996. Effects of timber harvest on bat activity in southeastern Alaska's temperate rainforest. Pp. 277-292 In: R.M.R. Barclay and R.M. Brigham (eds.). *Bats and Forests Symposium*, October 19-21, 1995, Victoria, British Columbia, Canada. Research Branch, B.C. Ministry of Forests, Victoria, B.C., Working Paper 23/1996, 292pp.
- Parker, D.I., B.E. Lawhead, and J.A. Cook. 1997. Distributional limits of bats in Alaska. *Arctic* 50:256-265.
- Schmidly, D.J. 1991. *The bats of Texas*. Texas A & M Univ. Press, College Station. 188 pp.
- Tuttle, M.D. and A.A.R. Taylor. 1994. Bats and mines. *Bat Conservation International, Inc.* No. 3. 41 pp.
- U.S. Forest Service. 1991. Tongass land management plan revision. Supplement to the draft environmental impact statement. Summary. U.S. Department of Agriculture, U.S. Forest Service, Juneau, AK. 25 p.
- Vonhof, M.J., and R.M.R. Barclay. 1996. Roost-site selection and roosting ecology of forest-dwelling bats in southern British Columbia. *Canadian Journal of Zoology* 74:1797-1805.
- Warner, R.M. and N.J. Czaplewski. 1984. *Myotis volans*. *Mammalian Species* No. 224. Amer. Soc. Mamm. 4 p.
- Western Bat Working Group. 1998. Ecology, conservation and management of western bat species, bat species accounts (draft). Unpublished document prepared as preliminary information for a group workshop conducted in February 1998. Obtained from Bill Austin, U.S. Fish and Wildlife Service, 520-527-0849.
- Wilson, D.E., and D.M. Reeder (eds). 1993. *Mammal Species of the World: a Taxonomic and Geographic Reference*. Second Edition. Smithsonian Institution Press, Washington, DC. xviii + 1206 pp.

Acknowledgements



State Conservation Status, Element Ecology & Life History Author(s):

Gotthardt, T.A., and C.A. Coray
State Conservation Status, Element Ecology & Life History Edition Date: 24Mar2005

Reviewer(s): Dr. John Hayes, Oregon State University; Julia Boland, Oregon State University.

Life history and Global level information were obtained from the on-line database, NatureServe Explorer (www.natureserve.org/explorer). In many cases, life history and Global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All Global level modifications will be sent to NatureServe to update the on-line version.

NatureServe Conservation Status Factors

Edition Date: 04Aug1998

NatureServe Conservation Status Factors

Author: Clausen, M. K.

Global Element Ecology & Life History Edition

Date: 19Apr1993
