

KEEN'S MYOTIS

Myotis keenii Merriam, 1895
(Vespertilionidae)

Global rank G2G3 (1996-11-04)

State rank S1S2 (2008-10-14)

State rank

Only three occurrences known from Southeast Alaska; one collected at Wrangell Island in 1887, the other two more recently (1993 and 1994) (Miller and Allen 1928, MacDonald and Cook 1999). Abundance and population trend unknown but suspected rare. Discovery of Keen's myotis on the north coast of the nearby Queen Charlotte Islands and at Telegraph Creek in British Columbia, lends strong support that species probably occurs in Alaska (West 1993). Potential threats include habitat loss and fragmentation of coastal forests due to logging and disturbance (Thomas 1988, Carey 1989, Norse 1990, Firman et al. 1992).

Taxonomy

M. septentrionalis was formerly included in this species; van Zyll de Jong (1979, 1985) and Jones et al. (1992) regarded *M. keenii* and *M. septentrionalis* as separate species; Koopman (in Wilson and Reeder 1993) included *septentrionalis* in *M. keenii*. Most literature references to *M. keenii* actually pertain to *M. septentrionalis*.

Van Zyll de Jong and Nagorsen (1994) provisionally interpreted the very close morphological similarity between *M. keenii* and *M. evotis* in British Columbia and the adjacent northwestern United States as overlapping intraspecific variation rather than intergradation between the taxa; they noted the need for molecular data to resolve the situation. Until molecular data have been collected and analyzed, the taxonomic status of *M. keenii* will remain unclear.

General description

A medium-sized (wingspan 21-26 cm) insectivorous bat with dark glossy brown fur and indistinct dark shoulder spots on the back. Ears and flight membrane dark, but not black. The ears are long enough to extend beyond the tip of the nose when pressed forward. The outside edge of the tail membrane has a fringe of tiny hairs, visible with a hand lens (Van Zyll de Jong 1985).

Length (cm) 9 (total)

Weight (g) 8



Reproduction

Limited evidence suggests that *M. keenii* mates in autumn and gives birth the following June or July (Nagorsen and Brigham 1993).

Ecology

Very little is known about this species; believed to be solitary and reported to fly rather slowly while foraging.

Migration

Migration for *M. keenii* does occur between summer maternity colonies/foraging areas and hibernacula (Firman et al. 1993).

Food

Insectivorous. Probably forages using a combination of gleaning and aerial hawking.

Global habitat

Distributional range suggests association with coastal forest habitat (van Zyll de Jong 1985; Nagorsen and Brigham, unpubl. manuscript). Apparently associated with mature forests (Balcombe, 1988 COSEWIC report). Crevices and cavities in trees, rock crevices, and small caves are believed to be typical roosting sites. One individual was found hibernating in a cave at 900 m elevation on Vancouver Island (Cannings et al. 1999). In one colony on Hot Springs Island in the Queen Charlotte Islands, British Columbia, bats were found roosting among coastal boulders thermally heated by runoff from local hot springs (Barclay, pers. com. 1992). This species has been observed foraging over hot spring pools and clearings above scrubby salal (*Gaultheria shallon*). There are no winter records, and it is unknown if this species hibernates in coastal areas (Nagorsen and Brigham 1993).

State habitat

Distributional range suggests association with coastal forest habitat (van Zyll de Jong 1985; Nagorsen and Brigham, unpubl. manuscript). Apparently associated with mature forests (Balcombe, 1988 COSEWIC report). Southeastern Alaska's temperate rainforests contain abundant live trees and snags in a variety of sizes. Such structural diversity provides loose bark and tree hollows suitable for cavity roosting bats, suggesting that the temperate rainforests of southeastern Alaska provide structure required by *M. keenii* and other bat species. Caves and crevices are also important habitat for this species, and over 1,769 km² of cave and crevice-containing karst occurs throughout southeastern Alaska (Parker 1996).

Global range

Restricted to coastal Washington, British Columbia, and southeastern Alaska (Parker and Cook 1996). This species has one of the smallest distributional ranges of any North American bat (Van Zyll de Jong 1979, 1985).

State range

Unknown, but suspected to be very restricted. Only three known specimens of this species have been collected from Wrangell, Prince of Wales, and Chichagof Islands in Southeast Alaska (Miller and Allen 1928, MacDonald and Cook 1999).

Global abundance

Unknown.

State abundance

Unknown, but suspected rare.

Global trend

Unknown.

State trend

Unknown.

Global protection *M. keenii* is not legally protected in the United States unless it occurs within the boundaries of a national park. The rarity of this species and lack of ecological data have prompted the British Columbia Ministry of Environment to place *M. keenii* on the provincial "red list" of species under consideration for listing as threatened or endangered (Nagorsen and Brigham 1993)

State protection

In Alaska, bats are managed as a non-game species.

Global threats

Logging activities and especially habitat fragmentation caused by logging may be the most important threats; forest fires and pesticides may also be detrimental (Balcombe, 1988 COSEWIC report).

State threats

The distribution of this species is associated with coastal rainforests in the Pacific Northwest (van Zyll de Jong 1985, van Zyll de Jong and Nagorsen 1994). Forty-two percent of the most productive forests in southeastern Alaska were harvested by 1990, including over 70% of the karstland forests on Prince of Wales and neighboring islands (U.S. Forest Service 1991, 1993). Current levels of timber harvest could have a detrimental effect on the Alaska population by altering forest structure important to bats (Thomas 1988, Parker 1996, Parker et al. 1996). Bat activity is rare in clearcuts and second-growth forests of Southeast Alaska (Parker and Cook 1996, Parker et al. 1996). Destruction of karst by recreationalists or mineral extraction may be a threat, as these areas are critical hibernacula.

Global research needs

This species is known only from a limited number of museum specimens and little is known about its biology (van Zyll de Jong 1985). Present research needs include the following: 1. Assess habitat preferences, including roosting and feeding areas, activity patterns, and food requirements. 2. Determine if there is any seasonal movement within the population. 3. Assess whether this species hibernates, and if so, where and under what conditions. 4. Research the reproductive capacity of the species and evaluate its long-term population viability. 5. Resolve questions concerning the taxonomic status of this species.

State research needs

Little is known about this species' biology and ecology. Research is needed on various life history parameters such as reproductive cycle, food habits, roost sites, habitat preferences, migration habits, and hibernation ecology. Measure species home range. Measure bat use in forest types and in karst caves to identify important habitats (e.g. roosting, breeding,

foraging). Resolve questions concerning the taxonomic status of this species.

Global inventory needs

Range-wide population surveys are needed. Coordinated surveys should be conducted in Alaska, British Columbia, and Washington.

State inventory needs

Intensive surveys are needed throughout southeast Alaska to determine the distribution, abundance, and habitat needs of this species. Coordinated surveys should be conducted in Alaska, British Columbia, and Washington using techniques specific for bats. Inventory should be conducted in areas proposed for timber harvest. 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).

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Acknowledgements



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Author(s): Gotthardt, T.A., and C.A. Coray

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

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NatureServe Conservation Status Factors

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Author: West, E. W., and G. Hammerson

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Author(s): Hammerson, G.
