The Alaska Natural Heritage Program

Conservation Status Report

Myotis keenii

IDENTIFIERS

Scientific Name	*Myotis keenii*
English Name	Keen's myotis
English Name Synonyms	
ELCODE	AMACC01060
Scientific Name Concept Reference	Wilson, D. E., and D. M. Reeder (editors). 1993. Mammal Species of the World: a Taxonomic and Geographic Reference. Second Edition. Smithsonian Institution Press, Washington, DC. xviii + 1206 pp. Available online at: http://www.nmnh.si.edu/msw/.
Taxonomy Coments	*Myotis septentrionalis* formerly was included in this species. Koopman (in Wilson and Reeder 1993) included *septentrionalis* in *M. keenii*, but van Zyll de Jong (1979, 1985), Baker et al. (2003), and Simmons (in Wilson and Reeder 2005) recognized *M. keenii* and *M. septentrionalis* as distinct species. Most literature references to *M. keenii* actually pertain to *Myotis septentrionalis*. van Zyll de Jong and Nagorsen (1994) provisionally interpreted the very close morphologically 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. A recent molecular study using mtDNA (cytochrome b gene) (Tanya Dewey, unpublished data) supports the close relationship of *M. keenii* and *M. evotis* and their distant relationship to *M. septentrionalis*. In fact, the molecular phylogeny suggests that *M. keenii* and *M. evotis* are conspecific. However, until further studies are completed and published, we here maintain *M. keenii* and *M. evotis* as different species.

Kingdom	Phylum	Class	Order	Family
Animalia	Craniata	Mammalia	Chiroptera	Vespertilionidae

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CONSERVATION STATUS/LEGAL DESIGNATION

Global Status (G RANK)	G2G3
State Status (S RANK)	S1S2
USFWS/NMFS	
BLM	
State of Alaska (ADF&G)	
USFS	

STATE STATUS SUMMARY

Rank Reasons	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).
Rank Review Date	08/15/2008
Date Status Assigned	08/15/2008

DISTRIBUTION

Land Ownership	CITY OF WRANGELL
BCR	5 - NORTHERN_PACIFIC_RAINFOREST
Ecoregion	97 - Alexander Archipelago

POPULATION & OCCURRENCES

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Number of Occurrences	6 - 20
Comments	
Population Size	250 - 1000 individuals
Comments	Unknown, but suspected rare.

RANGE

Range Extent	20,000-200,000 square km (about 8000-80,000 square miles)
Comments	Based on recent collection in northern SE Alaska, range is calculated on entire SE panhandle. 62,000 km sq.

TREND

Short-term Trend	Unknown
Comments	Unknown. Scant information on this species. However, prior to 2005, only three specimens had been collected for this species. Now there are 11 known locations where this species has been collected, and several of these were both further north and south than the published distribution.
Long-term Trend	
Comments	Unknown.

THREATS

Scope	Moderate
Severity	Moderate
Immediacy	Low
Comments	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.

OTHER FACTORS

Intrinsic Vulnerability	Moderately vulnerable
Comments	Only one litter, usually a single pup, is produced per year.
Environmental Specificity	Moderate. Generalist or community with some key requirements scarce.
Comments	Moderately adaptable; habitat specialist with key requirements fairly common. Highly adaptable; opportunistic feeder.

INFORMATION GAPS

Research Factors potentially affecting the population are known, with some agreement on which 2 or 3 are likely limited. 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. 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, 1993b). Current level s 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 et al. 1996). Destruction of karst by recreationalists or mineral extraction may be a threat, as these areas are critical hibernacula. Little is known about 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). According to Boland et al. (unpublished), day roost sites primarily in large-diameter trees or snags and in

heavily managed areas are likely limiting.

Inventory Not currently monitored. Distribution poorly understood. 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.

STEWARDSHIP

Management 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 range wide 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).

ECOLOGY AND LIFE HISTORY

General Description COLOR: The upperparts are a rich glossy brown with indistinct dark shoulder spots; the underparts are buffy grey; the ears are black; the wing membranes are dark brown to black (Miller and Allen 1928, van Zyll de Jong 1985).

SIZE: Total length 84.8 mm (range 63-93); tail length 40.0 mm (35-44); hind foot 9.1 (8-10); forearm length 36.0 mm (35-38); ear length 18.5 mm (18-20) (van Zyll de Jong 1985).

Subspecies Comments

Identification Comments

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Ecology Comments Very little is known (van Zyll de Jong 1985). This is believed to be a solitary species. It is reported to fly rather slowly while foraging. Current documentation for 12 sites of occurrence. Species known to concentrate in roosting sites and maternity colonies.

Migration/Mobility Comments

Habitat Comments The distributional range suggests an association with coastal forest habitat (van Zyll de Jong 1985; Nagorsen and Brigham, unpubl. manuscript). Apparently this bat is associated with mature forests (Balcombe, 1988 COSEWIC report), but it is not restricted to old growth (COSEWIC 2003). Across the range it has been found roosting in southwest-facing rock crevices, among geothermally heated rocks, in tree cavities, in bark crevices, and in buildings (D. Burles, pers. comm.; Firman et al. 1993; Nagorsen and Brigham 1993; Parker and Cook 1996; Mather et al. 2000). Tree cavities and loose bark are important natural roost sites and may be limiting in some parts of the range (British Columbia Ministry of Water, Land and Air Protection 2004). In British Columbia, one maternity colony (on Hot Springs Island in the Queen Charlotte Islands) is situated within geothermally heated rocks associated with hot spring activity (British Columbia Ministry of Water , Land and Air Protection 2004). The only other known maternity colony in British Columbia was suspected to be in a tree located in a low elevation, southwest-facing cliff at Knoll Hill near Tahsis, Vancouver Island (COSEWIC 2003). Known maternity roosts and summer feeding areas in British Columbia are at elevations below 240 meters; known hibernation sites occur above 400 meters in caves over 100 meters long (British Columbia Ministry of Water, Land and Air Protection 2004). These bats have been observed foraging over hot spring pools and clearings above scrubby salal (*Gaultheria shallon*). 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).

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Food Habits	Insectivorous. Known foods include spiders, tricopterans, moths, and flies (D. Burles, pers. comm.; Parker and Cook 1996).
Phenology	Nocturnal
Reproduction Comments	
Economic Comments	Harvest prohibited.
Version Author	AKNHP
Version Date	09/23/2014