Hawaiian Hoary Bat

COMMON NAME: Hawaiian hoary bat HAWAIIAN NAME: 'Ōpe'ape'a SCIENTIFIC NAME: Lasiurus cinereus semotus LEGAL STATUS: Endangered (Federal)

APPEARANCE: 'Ōpe'ape'a have long, dense body fur that is brown to grey and tipped with white. The white tips give the 'ōpe'ape'a a hoary or frosted appearance from which it gets it common name, Hawaiian hoary bat. There is a patch of yellow fur on the throat and white patches on the wrists and shoulders. The ears of this species are short, round, and yellow, edged in black. Wings are long and narrow with a span of 10.5-13.5 inches. They measure 5.3 inches in total length with a 2.3-inch tail and weigh 0.4-0.7 ounces. Females are typically larger than males.



NATIVE RANGE: Relatively little is known about the distribution and population status of 'ope'ape'a. Hawai'i's only native terrestrial mammal.

They are endemic to the Hawaiian Islands and occur from sea level to the highest volcanic peaks. Historically, they occurred on all of the MHI except Ni'ihau. In recent years there have been reported sightings from the islands of Hawai'i, Maui, Moloka'i, Lana'i, O'ahu, Kaua'i, and Kaho'olawe, though substantial populations of 'ōpe'ape'a may only live on Hawai'i, Maui, and Kaua'i.

HABITAT: 'Ōpe'ape'a are a nocturnal species that roosts solitarily during the day (except mothers and pups) in trees (native and non-native) or sometimes in rock crevices. Individuals begin to forage just after sunset and return to roost just before sunrise. 'Ōpe'ape'a may fly more than 12 miles one way while foraging over the course of a night. They usually return to their original roost but also have alternative roosts that may be located miles away from the original. 'Ōpe'ape'a switch roosts if original roost trees become unstable, or potentially in an effort to seek a warmer or cooler roost. They forage along the edges of forest and within shrublands and open spaces, including pastures, windrows, roadways, forest gaps, and over areas of fresh/brackish water as well as open saltwater.

DIET: 'Ōpe'ape'a are insectivorous bats that use echolocation to locate night flying insects and capture them in flight. They eat native and non-native insects, including moths, beetles, crickets, mosquitoes, and termites. Each 'ōpe'ape'a establishes several small (approximately 300 yds diameter) feeding areas within their larger home range and it is believed that individuals move between these areas in a predictable sequence each night. Research suggests that individuals may utilize these same circuits for foraging for several years at a time.

REPRODUCTION: 'Ōpe'ape'a mate in autumn, most likely between September and December, at lower elevations. It is thought that after mating the female is able to store sperm until March/April. Females give birth to twins, but sometimes up to four pups, between May and July. Pups cling to the female or to a branch until they are able to fly, about 33 days after birth. They are weaned about six weeks after birth. Although the lifespan of 'ōpe'ape'a is currently unknown, their North American cousin, *Lasirus cinereus*, is believed to live six to seven years.

ECOLOGICAL THREATS: Habitat alteration, direct and indirect impacts of the use of pesticides, and roost disturbance are likely the primary threats to 'ōpe'ape'a. A reduction in tree cover is believed to be a large contributor to species decline, due to loss of roosting sites. Roosts are especially important for the growth, development, and survival of young bats and protection from the elements. Most bats use night roosts in close proximity to foraging areas. Roost disturbance

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can cause mothers to abandon pups. 'Ōpe'ape'a have been known to be injured or killed from collisions with man-made objects such as barbed wire fences, wind turbines, and other structures.

The effects of pesticides and herbicides on 'ōpe'ape'a in Hawai'i, or on bats in general, is not well understood. However, the effects of pesticides on birds may provide some insight. Studies have found that birds can suffer mortality from direct contact with pesticides and from feeding on invertebrates that are unable to escape predation because of pesticide intoxication.

USFWS CONSERVATION STRATEGIES: 'Ōpe'ape'a were federally listed as endangered on October 13, 1970. USFWS released a Recovery Plan on May 11, 1998. Critical habitat has not been designated. Lack of information on this species limits management recommendations for protection or recovery. However, an important conservation measure is limiting disturbance during times of breeding and roosting. This includes not clearing woody plants greater than 15 feet tall in 'ōpe'ape'a habitat during breeding season (June 1 - September 15).

MCBH CONSERVATION MEASURES: Bat acoustical surveys completed in 2021 by the USGS, documented the Hawaiian hoary bat (HHB) on all MCBH properties. Bats were confirmed present at all properties: MCBH Kaneohe Bay on Mōkapu Peninsula, Marine Corps Training Area Bellows (MCTAB) in Waimanalo, Camp H M Smith in Halawa Heights, and Puuloa Range Training Facility (RTF) on the 'Ewa coastal plain. Hawaiian hoary bats were recorded in airspace at all four properties during important periods of Hawaiian hoary bat life history, including periods of pregnancy, lactation, and pup fledging. Conservation measures that benefit 'ōpe'ape'a include the following:

- Habitat protection and enhancement. 'Ōpe'ape'a that occur at MCBH benefit from maintaining healthy non-invasive vegetation and opportunistic and planned removal of non-native invasive vegetation.
- Limiting disturbance. Removal of trees greater than 15 feet tall that may be used for roosting and nesting will be monitored. MCBH will attempt to reconcile any issues associated with the Navy Landscape and Grounds maintenance contract for tree maintenance and potential impacts to roosting or nesting trees.
- **Predator control**. 'Ōpe'ape'a benefit from on-going mammalian predator control efforts.
- Wildlife Friendly Lighting. Although lighting on base does not appear to be an issue, Natural Resources staff diligently work with base and contract planners to incorporate International Dark-Sky lighting recommendations into all projects. Appendix E defines the requirements for wildlife friendly lighting.
- Monitoring for presence to help direct management activities. Natural Resources staff will conduct surveys for and record occurrences. Consultation with USFWS will occur as needed.
- Education and outreach. Development and distribution of informational material, including videos, fact sheets, and briefings for military personnel and civilians on base, including new arrivals, and outreach with volunteers.

REFERENCES

Bonaccorso, F.J. 2010. 'Ōpe'ape'a: Solving the Puzzles of Hawai'i's Only Bat. Bats 28: 10-12.

Bonaccorso, F.J., C. Todd, A. Miles, and P.M. Gorres. 2015. "Foraging range movements of the endangered Hawaiian hoary bat, Lasiurus cinereus semotus (Chiroptera: Vespertilionidae)". Journal of Mammalogy. Vol. 96, Issue 1, Pp. 64-71. DLNR. 2015. Hawai'i's State Wildlife Action Plan.

Fraser, H., V. Parker-Geisman and G. Parish. 2007. Hawaiian Hoary Bat Inventory in National Parks on Hawai'i, Maui and Moloka'i. Pacific Cooperative Studies Unit (University of Hawai'i at Mānoa), NPS Inventory and Monitoring Program.

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NatureServe Explorer. 2014. Lasiurus cinereus semotus.

Pacific Rim Conservation. 2013. Hawaiian Hoary Bat

Taylor, D. 2006. Forest Management & Bats. Bat Conservation International. Tomich, P.Q. 1986. Mammals in Hawai'i. A synopsis and notational bibliography. Second edition. Bishop Museum Press,

Honolulu. 375 pp.

U.S. Fish and Wildlife Service (USFWS). 2012. Endangered Species in the Pacific Islands. Hawaiian Hoary Bat.

VanderWerf, E.A. 2012. Hawaiian Bird Conservation Action Plan. Pacific Rim Conservation, Honolulu, HI.

For more information: MCBH Integrated Natural Resources Management Plan. 2022. Sections 6 and 7.1.