

Photo of bat

Terrestrial Mammal

**‘Ope‘ape‘a  
or Hawaiian Hoary Bat**

*Lasiurus cinereus semotus*

**SPECIES STATUS:**

Federally Listed as Endangered

State Listed as Endangered

State recognized as indigenous

**SPECIES INFORMATION:** Little is know about Hawaii’s only native terrestrial mammal. At the subspecies level, the bat is endemic to Hawai‘i. The bat gives birth to twins during the summer months (Kaua‘i and the island of Hawai‘i are the only islands where breeding has been documented). It is believed that mating occurs between September and December with the birthing season following in May or June. Mother bats likely stay with their pups until they are 6 to 7 weeks old. During the day, bats are known to roost upside-down and solitarily (except mothers and pups roost together), with foraging beginning a little before sunset or a little after sunset depending on the time of year. They feed on a variety of native and non-native night-flying insects, including different species of moths, beetles, and termites. Bat activity seems to be linked with altitude as well as season, with intra-island and inter-island movement both being possibilities.

**DISTRIBUTION:** Reports of the Hawaiian hoary bat are known from all the main Hawaiian islands, except Ni‘ihau; although, specimens exist from only Kaua‘i, O‘ahu, Maui, Moloka‘i, and the island of Hawai‘i. Evidence of a breeding population is limited to the islands of Kaua‘i and Hawai‘i, where pregnant and/or lactating females have been discovered. Kaua‘i and Hawai‘i are also believed to have the largest bat populations. Hawaiian hoary bats inhabit a wide range of altitudes and habitat types. On the island of Hawai‘i, bats are found primarily from sea level to 2288 m (7500 ft), though they have been observed near the island’s summits (above 13,000 ft).

Map of bat distribution

**ABUNDANCE:** Population size is unknown at this time. Methods for counting or accurately estimating the population numbers of bats, like the Hawaiian hoary bat, which roost solitarily have not been developed. During the 1960s when the Hawaiian hoary bat was being evaluated for federal status as an endangered species, estimates of its population size were very low, ranging from several hundred to several thousand. These estimates, however, were not based on systematic surveys.

**LOCATION AND CONDITION OF KEY HABITAT:** Fewer than 30 accounts of roosting are known statewide. These reveal that Hawaiian hoary bats roost in native and non-native vegetation anywhere from 1 to 9 m above ground level. A couple of accounts describe bats roosting at ground level in lava formations. Documented roost trees in Hawai'i are 'ohi'a, hala, coconut, kukui, kiawe, avocado, and shower tree. Hawaiian hoary bats also roost in fern clumps and pukiawe bushes. They are suspected to roost in Eucalyptus and Sugi stands. Recent work on the island of Hawai'i shows that bat activity varies with season and altitude with the greatest level of activity occurring at low elevations (below 4200 ft) from April to December. One researcher theorizes that key breeding habitat is likely to occur at sites where the average July minimum temperature is above 11°C (52°F) because warm temperatures are strongly associated with reproductive success in this and other bat species. If true, then key breeding habitat on the island of Hawai'i is likely to be found at sites below 4200 ft. Because bats use both native and non-native habitat for foraging and roosting, the importance of non-native timber stands, particularly those at low elevations, should be considered. Breeding sites are also known for Manuka Natural Area Reserve and scattered areas along the Hamakua Coast.

**THREATS:** Bats are affected by habitat loss, pesticides, predation, and roost disturbance. Though research is still being conducted, it is thought that reduction and disturbance of tree cover (e.g. roost sites) as well as use of pesticides may be the cause for the decline of bat populations.

**CONSERVATION ACTIONS:** The goals of conservation actions are to not only protect current populations and key breeding habitats, but to also establish further populations to reduce the risk of extinction. In addition to common state-wide and island conservation actions, specific actions include:

- Conserve known habitat from further reduction of tree coverage and roosting areas;
- Develop and implement conservation plans that guide the management and use of forest structure to mitigate impact to known populations of the bat.

**MONITORING:**

- Continue surveys of population and distribution in known and likely habitats;

**RESEARCH PRIORITIES:**

- Establishment of population and abundance figures;
- Continue efforts to track and monitor movements and behaviors;
- Identify key breeding sites;
- Identify key over-wintering sites;
- Ascertain roost site characteristics and preferences;
- Determine the extent to which bats use torpor;
- Determine the importance of temperature in reproductive success.

**References:**

Hawaiian Hoary Bat Research Cooperative. <http://www.dofaw.net/fbrp/projects.php?id=39>  
U.S. Fish and Wildlife Service. 1998. Recovery Plan for the Hawaiian Hoary Bat. U.S. Fish and Wildlife Service, Portland, OR. 50 pp.