

Origins of the Hawaiian hoary bat revealed

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A Grand Valley State University biology professor and her team of scientists have determined new information about an endangered species in the U.S., which could impact its protection under the Endangered Species Act.

The study, "Two Tickets to Paradise: Multiple Dispersal Events in the Founding of Hoary Bat Populations in Hawai'i," was recently published in *PLOS ONE*.

The study, led by Amy Russell, associate professor of biology at Grand Valley, reveals that the Hawaiian hoary bat migrated to the islands from the Pacific coast of North America in two separate waves more than 9,000 years apart.

"Because the Hawaiian hoary bat is the only living native land mammal in Hawaii and it's on the U.S. Fish and Wildlife Service's [endangered species](#) list, we want to know everything possible about its genetic history, relationships to other bats and if there are unique subpopulations on different Hawaiian islands," Russell said.

These two separate migrations represent the longest overwater flight followed with the founding of a new population for any species of bat, of which there are 1,300. The study estimates that the earlier migration from mainland to North America to Hawai'i happened around 10,000 years ago, while a more recent migration occurred approximately 800 years ago.

Russell said the results of this study suggest that the current legal protection of these endangered bats may be inadequate or at least misdirected.

"By showing evidence of two distinct lineages on the islands, we are providing the U.S. Fish and Wildlife Service with scientific justification for recognizing two taxa on the islands and protecting them appropriately," Russell said. "The current recovery plan doesn't recognize that there are two distinct taxa on the [islands](#); therefore, monitoring of population size and habitat use that treats all Hawaiian bats as a single unit is likely providing measures that are overestimated and not accurate for either taxon."

To collect their data, the research team used bits of wing tissue and DNA sequencing and analytical tools to estimate the time and place of origin for the Hawaiian hoary bat.

Researchers contributing to this effort represent Grand Valley, University of Hawai'i at Hilo, Western Michigan University, EcoHealth Alliance and U.S. Geological Survey.

More information:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127912>

Provided by Grand Valley State University

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