



The tiny bell-shaped flowers of the pūkiawe (*Leptocophylla tameiameia*) are almost hidden but the native bees can find them. © Zachary Pezillo

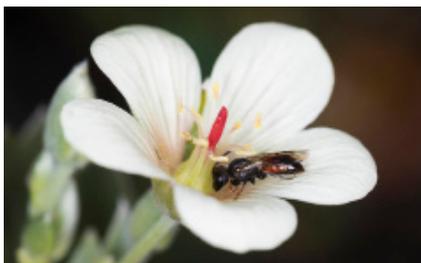
Native bees are essential pollinators

Just one type of bee arrived in Hawai'i on its own, millennia ago: the tiny, yellow-faced *Hylaeus*, or meli makalena. Over time, it evolved into 63 known species, in concert with thousands of native plants, trees and shrubs. Bees and other insects are essential for healthy ecosystems everywhere.

The health of our native forests—Hawai'i's source of fresh water—is intimately linked with these pollinators, which fertilize 'ōhi'a trees in the mountains, the rare hinahina (silverswords) in volcanic craters, the common coastal naupaka shrub, and hundreds of other native plants from -10,000 feet elevation down to the shoreline. Like native birds, such as honeycreepers, some bees are specialized to a specific plant or tree.

About the size of a grain of rice, Hawai'i's native bees can be easily missed as their shiny, slim black bodies dart quickly

about seeking pollen. Like other solitary bees the world over, they rarely sting and don't make honey that humans harvest. But without them, native plants and trees can't reproduce.



Native bee pollinates a native geranium. © Zachary Pezillo

Native bees face many threats, including indiscriminate pesticide use, loss of food sources (native plants), predation by alien ants (Hawai'i has no native ants) and other insects, and competition. Climate change plays a specific role because the females make nests in coral rocks washed ashore or in the hollow stems of plants. They lay just 1-5 eggs per nest, so increasing storms and sea level

rise can wipe out an entire generation or colony in minutes. Scientists have developed artificial nests that keep alien ants from eating the larvae and have placed them in coastal areas around Hawai'i, including our Mo'omomi Preserve on Moloka'i, to help increase their populations.

Seven of Hawai'i's native bees are on the endangered species list, the first in the United States to earn that protection. One way to help them is to preserve the habitats they need, such as our native forest preserves, as well as forests and coastlines on state and private lands.

Another way is to use more native plants in gardens and landscaping. Hawai'i residents are also encouraged to support stronger import rules and adequate funding to prevent the further introduction of new invasive species, diseases, insects and animals.



Hawai'i's native forests, like this one at our Kamakou Preserve on Moloka'i, capture abundant fresh water. © Richard A. Cooke III

NATURE HAWAII

Funding Enables Long-Term Conservation Management

While the first step for many of TNC's conservation efforts is purchasing land or easements, long-term management of these lands is also critical. This is particularly true in Hawai'i, where invasive weeds, animals and diseases continuously threaten native ecosystems.

"Through the support of generous donors like Lois and Dick Robbins, we can keep aggressive weeds out of our forest preserves," says Shalan Crysdale, Hawai'i Island Forest Program Director.

In Hawaiian, Water is Wai

Fresh water shaped the lush furrowed landscapes of the Hawaiian islands and has enabled all life here. This isolated archipelago, more than 2,500 miles from any other land mass, would be nearly barren without fresh water.

Hawaiians recognized this and use wai in many place names: Wai'anae, Waialua, Waikāne, Wai'ale'ale, Waikele and many more. The wai prefix suggests the area is known for fresh water and supports fertile agriculture and estuaries teeming with life. World-famous Waikiki, on the dry leeward side of O'ahu, was once a rich wetland, providing plentiful food and water. Waikiki means "spouting water" and alludes to the strongly surging artesian springs that were found throughout the region.

"It is no surprise that the word for riches in Hawaiian is water-redoubled: waiwai."

Sam 'Olu Gon, Senior Scientist and Cultural Advisor

governance. The ruler of the entire island could reside there and want for nothing. More than 80 percent of Hawai'i's population lives on O'ahu, and careful management is needed to ensure plentiful water supplies in the future.

From ancient times, people knew that the ultimate source of wai was the misty uplands flush with dense, mossy forests. As warm ocean air bumps up Hawai'i's high mountains, it cools and condenses into rain in forests, which capture and collect water. The protection of these upland forests, considered wao akua—the sacred realm of the gods—is an integral part of Hawaiian culture and represents sustainability. Prior to Western contact, the islands supported a population rivaling that of today yet entirely independent of the rest of the world. TNC continues this tradition by preserving forests across Hawai'i that will replenish fresh water supplies for generations to come.

Take our survey, learn more and support our work at [nature.org/hawaii](https://www.nature.org/hawaii).



Dr. and Mrs. Robbins © TNC

The Robbinses have donated more than \$500,000 over the last 18 years to our Hawai'i Island Program, through the Max and Yetta Karasik Family Foundation.

An educator, Lois grew up in Honolulu, and Dick is a cardiologist. Retired now and living in Hāmākua, each year they ask how they can contribute to helping Hawai'i's native forests thrive and continue to provide fresh water for people and vital habitat for native forest birds and other plants and animals. Thanks to the Robbinses, and all our supporters, we can continuously care for our preserves.

Mahalo nui loa!