

Hawaiian Plant, Thought To Be Newcomer, Actually Shaped Ecology Of The Islands From The Beginning

ScienceDaily (Apr. 15, 2008) — Scientists at the Smithsonian Institution have discovered data that suggests one of Hawaii's most dominant plants, *Metrosideros*, has been a resident of the islands far longer than previously believed.

Metrosideros, commonly called "ohi'a" in the Hawaiian Islands, has puzzled researchers for years. Although previously thought to be a newcomer to the islands, these plants are well integrated into the islands' ecosystems.

However, scientists from the Smithsonian's National Museum of Natural History and the Smithsonian's National Zoo now are able to show, through molecular research, that *Metrosideros* may have colonized the islands soon after they formed. If so, these plants would have played an important role in shaping the ecology of the islands from the beginning.

The isolated Hawaiian Islands are home to many unique and endemic species of plants and animals. To know how these species came to interact with one another and form functioning ecosystems, scientists must first know how and when each species came to be on the islands. This is particularly important in the case of *Metrosideros*--many species of birds and insects are specialized to coexist and feed on these plants. Knowing when *Metrosideros* dispersed and colonized the islands also will give scientists a better understanding of how and when the fauna that rely on them evolved.

Until now, no definitive phylogeographical study (combining evolutionary history with current distribution patterns in order to understand both) has been done on ecologically dominant species in this island group.



*The distinctly shaped flowers of the *Metrosideros* plant, known as "ohi'a" in its native Hawaii, share a symbiotic relationship with many of the islands birds, including this apapane, which pollinates the flower as it feeds on the nectar. Through research on a molecular level, scientists at the Smithsonian Institution believe these plants may have colonized the islands much earlier than once believed. Their data show that *Metrosideros* could have colonized the islands soon after they formed, creating specialized relationships with a number of birds and insects on the islands as they coevolved. (Credit: Jack Jeffrey / jackjeffreypphoto.com)*

"What we are finding," said Scott Miller, a Smithsonian scientist working on the project, "is a distinct geographical pattern that supports a hypothesis that these plants colonized the Hawaiian Islands sequentially as they formed." This could prove that *Metrosideros* played a far more important role in Hawaii's ecology than once thought.

Scientists at the Smithsonian will continue to research *Metrosideros* in Hawaii to further determine the plant's historical colonization pattern and its influence and role in the biodiversity of the islands.

Their findings are being published in the journal *Proceedings of the Royal Society B* in London on April 16.

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