PSI2009/650
Evolution of *Metrosideros polymorpha* across an island-age gradient in Hawai‘i

Douglas Powless
University of Hawai‘i at Hilo, 248 East Laniakaula St., 96720 Hilo, Hawai‘i, United States of America
powlless@hawaii.edu

Island ecosystems, such as the Hawaiian islands, are famous for their diversity of endemic species. Understanding the basic processes that produce these adaptive radiations is important for conservation of biodiversity. The highly variable Hawaiian tree species, ‘ohi’a (*Metrosideros polymorpha*), is a dominant and foundational species across most natural communities of the main Hawaiian islands. In this study, we focus on the divergence of the three most common ‘ohi’a varieties (*polymorpha, incana, and glaberimma*) across an island-age gradient. We examined the divergence of morphological and phenological traits and the relative fitness (reproductive output) of varieties and apparent hybrids at six sites representing different ages in the Ko‘olau Mountains of O‘ahu (~3.5 million years old), the Kohala Mountains of northwestern Hawai‘i Island (~1 million years old), and young lava flows of eastern Hawai‘i Island (~200 years old). Under the hypothesis that disturbance (primarily volcanism) promotes introgression among varieties, and that lack of disturbance promotes divergence and potentially speciation of varieties, we expect to find more reproductive isolation (e.g., different peaks in flowering time) and more morphological variation between varieties at older sites. This study highlights the importance of habitat stability on the divergence of sympatric varieties of endemic plants.

Number of words in abstract: 197
Keywords: evolution - Metrosideros - phenology - Hawai‘i
Technical area: Ecosystems, Biodiversity and Sustainable Development
Special session: Not specified
Presentation: Poster presentation preferred
Special equipment: No special equipment