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Two new species of *Hylaeus (Nesoprosopis)* (Hymenoptera: Colletidae) from O‘ahu, Hawai‘i

KARL N. MAGNACCA
Department of Biology, University of Hawaii, 200 W. Kawili St., Hilo HI 96720, USA. E-mail: knm956@gmail.com

Abstract

New insect species, even in relatively conspicuous taxa, continue to be discovered on O‘ahu despite its status as the most intensively collected island in Hawai‘i. This paper describes two new island endemic bees, *Hylaeus makaha* **new species** and *Hylaeus ulaula* **new species**. Both are known from a single site, a patch of remnant diverse mesic forest in Makaha Valley.

Key words: Hawaii, bees, pollinator conservation, endangered species

Introduction

The native bee fauna of Hawai‘i consists of a single radiation of *Hylaeus (Nesoprosopis)*. The previous revision, in 2003, described 10 new species, bringing the total to 60 (Daly & Magnacca, 2003). While the total diversity is relatively low compared to a continental area of similar size and ecological variation, this is nevertheless more *Hylaeus* species than occur in all of North America, and approximately 10% of the world total (Michener, 2007). Expanding on the previous work, this paper describes two newly-discovered O‘ahu endemic *Hylaeus*, both from the same site in Makaha Valley. These findings are particularly significant with the recent listing of seven Hawaiian *Hylaeus* as candidate endangered species (U.S. Fish and Wildlife Service, 2011). Six of those seven species are currently or were historically known from O‘ahu. Given that they were found in a small patch of diverse mesic forest, a rare habitat, and had not been collected in previous searches of other sites, both of the new species may be endangered as well. In addition, both were collected visiting flowers of an endangered plant, *Chamaesyce herbstii* (Euphorbiaceae), and may be important pollinators in this ecosystem.

The island of O‘ahu occupies an unusual position in the biogeography of the Hawaiian *Hylaeus*. Although it is relatively isolated, less than half of the species are island endemics. Several multi-island species found there (*H. anthracinus*, *H. connectens*, and *H. laetus*) are not genetically distinct from populations found on Maui Nui, even though Hawai‘i island populations (across a channel of similar width) are almost all distinct (Magnacca & Brown, 2010; Magnacca & Danforth, 2006). Nearly all of the O‘ahu island endemic species are extremely rare: one, *H. anomalus*, was moderately abundant in the eastern Ko‘olau range during the early period of collecting (1892–1930) but has not been seen since then; a second, *H. mimicus*, has the same distribution and is currently moderately common, but was taken only once during the earlier period. The remainder—*H. kuakea*, *H. mana*, *H. nalo*, and the two described here, as well as the O‘ahu population of *H. specularis* if it is a cryptic species—are only known from one or two collections and fewer than five specimens (Daly & Magnacca, 2003). This degree of localization (presumably an artefact of habitat destruction), combined with the fact that five of these rare endemics have been discovered in the last decade in spite of intensive collecting on the island since the 1890’s, suggests that 1) additional new species remain to be found on O‘ahu, and 2) others probably became extinct before they were discovered. The relatives of *H. nalo*, which is so distinctive that it cannot be placed into a species group and is itself only known from a single 1914 specimen, probably fall into the latter category.

Bees in general, and *Hylaeus* in particular, are usually described primarily from the males, and females are often difficult to reliably associate. However, in light of the low number of total specimens, the current push for increased invertebrate conservation awareness in Hawai‘i (Mitchell, et al., 2005; U.S. Fish and Wildlife Service,

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