



*Hylaeus hilaris*. Photo: Karl Magnacca.

## Terrestrial Invertebrates

### Yellow-faced bee

*Hylaeus hilaris*

#### SPECIES STATUS:

Federally Listed as Endangered

State Listed as Endangered

**GENERAL INFORMATION:** *Hylaeus hilaris* (F. Smith, 1879) is a medium-sized bee found on Maui Nui. It is one of the most beautiful native bees, as well as one of the rarest known to be recently extant, and lives exclusively in coastal areas. Unlike most other native bees, it is a cleptoparasite or cuckoo bee; rather than constructing a nest, the female enters the nest of another species and lays an egg inside the cell. The cleptoparasite larva then hatches and consumes the provisions, either killing the host larva directly or leaving it to starve. Adults visit flowers occasionally to feed themselves, but females do not collect pollen for a nest. While this strategy is common in general (about a quarter of all bees are cleptoparasites), *H. hilaris* and its four relatives among the Hawaiian *Hylaeus* are the only members of the family Colletidae to have evolved this trait.

**DISTRIBUTION:** *Hylaeus hilaris* was historically found on Maui, Moloka‘i, and Lāna‘i. The loss of native coastal vegetation has caused the occupied area to contract dramatically, as its host species have declined. Since the 1930s, it is known from only two collections (1990 and 1999) from Mo‘omomi Preserve on Moloka‘i, each of a single individual.

**ABUNDANCE:** Unknown, but the population is undoubtedly very low. *Hylaeus hilaris* is exceedingly rare and its long-term survival is unlikely unless there are more populations or the abundance of hosts is significantly increased. The hosts of *H. hilaris* are *H. anthracinus* and *H. longiceps*, which are themselves listed endangered species.

**LOCATION AND CONDITION OF KEY HABITAT:** Native coastal vegetation has declined dramatically, and only a tiny fraction of its original extent currently exists. Much of what remains is invaded by alien ants, which dominate lowland areas. As a result, most coastal bees are only found in marginal habitat that is too dry for ants to live in. The single current population of *H. hilaris* is widely separated from other suitable areas so they are unlikely to disperse these long distances on their own to new sites. The recently introduced alien bee *H. strenuus* appears to be a major competitor in coastal and lowland dry habitats and has displaced native *Hylaeus* from several sites on O‘ahu. However, it could potentially serve as a host for the native cleptoparasitic species.

#### THREATS:

- Habitat loss and degradation. Habitat is threatened by invasive plants, non-native ungulates, development, and fire.

- Competition and predation. Non-native Hymenoptera, including bees (particularly *Apis mellifera*, *Ceratina smaragdula*, *Lasioglossum* spp., and *Hylaeus strenuus*), ants (primarily *Anoplolepis gracilipes*, *Linepithema humile*, and *Pheidole megacephala*), and wasps (*Vespula pensylvanica*), can directly or indirectly (via the host bees) compete with or prey on this species.
- Stochastic events. Events such as droughts, tsunamis, and high tides are threats to the species.

**CONSERVATION ACTIONS:** The goals of conservation actions are not only to protect current populations and key breeding habitats but also to establish additional populations and maintain sustainable populations of host plants, thereby reducing the risk of extinction. For *Hylaeus hilaris* specifically, management needs include:

- Conduct surveys to determine distribution and abundance.
- Protect remaining habitat from development and ant invasion.
- Establish reintroduced populations where appropriate.
- Restoration of coastal habitat.

**MONITORING:** Continue surveys of known populations in order to assess their stability and trends.

**RESEARCH PRIORITIES:**

- Survey for new populations, in both historic and novel sites.
- Develop and refine methods for conducting quantitative surveys.
- Evaluate life history and essential habitats to better direct conservation measures, such as determining habitat requirements for nest sites.

**References:**

Daly, HV, and Magnacca, KN. 2003. Insects of Hawaii, Volume 17: Hawaiian *Hylaeus* (*Nesoprosopis*) Bees (Hymenoptera: Apoidea). Honolulu: University of Hawai‘i Press.

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