

## Terrestrial Invertebrates

### Yellow-faced bee

*Hylaeus anthracinus*



*Hylaeus anthracinus*. Photo: Karl Magnacca.

**SPECIES STATUS:**  
Federal Candidate for Listing  
State Recognized as Endemic

**GENERAL INFORMATION:** *Hylaeus anthracinus* (F. Smith, 1853) is a medium-sized bee found on all the main islands except Kaua'i and Ni'ihau, where the closely related *H. flavifrons* occurs. It lives primarily in coastal areas, sometimes extending up into lowland dry forest on Maui, with one record from montane dry forest on Hawai'i. The island populations form three highly genetically distinct clusters which may be cryptic species: Hawai'i, Maui + Kaho'olawe, and Moloka'i + O'ahu (there are no recent records from Lāna'i). Therefore, it is important to conserve all island populations. This and other coastal species are the only native bees that regularly visit flowers of an introduced plant, the tree heliotrope (*Heliotropium foertherianum*, formerly known as *Tournefortia argentea*). With the loss of most of the native coastal vegetation, tree heliotrope is now a critical floral resource. Other important plants visited for pollen and nectar include naupaka (*Scaevola taccada*), 'ilima (*Sida fallax*), 'ōhai (*Sesbania tomentosa*), naio (*Myoporum sandwicense*), and 'akoko (*Euphorbia* spp.).

**DISTRIBUTION:** *Hylaeus anthracinus* is found from Hawai'i to O'ahu and was formerly one of the most widely distributed native bees. While it is still known to occur on all islands in that range except Lāna'i, the loss of native coastal vegetation has caused the occupied area to contract dramatically. It can still be found along several long stretches of coastline on the northwest coast of Hawai'i in South Kohala and North Kona, sometimes in extremely high densities. Elsewhere on the island, it is known only from a single, very small population near South Point (there is one high-elevation record at Pōhakuloa from 2004, but it has not been found there since and it is unknown if there is a breeding population there). On Maui and Moloka'i, it has been found at only two sites, though much of the coast is unexplored. Three sites are known for O'ahu, where the numbers have seriously declined since 2011 with the spread of an alien yellow-faced bee from India, *Hylaeus strenuus*.

**ABUNDANCE:** Unknown. *Hylaeus anthracinus* may occur in extremely high densities in the south Kohala and north Kona areas, but elsewhere is generally found in low numbers. At nearly all sites, it is restricted to narrow stretches of coastal strand less than 30 meters (98 feet) wide, and sometimes only a single row of trees or shrubs. The largest population on O'ahu, at Ka'ena Point, has virtually disappeared since 2011 for unknown reasons.

**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. Native *Hylaeus* do not visit introduced plants except for tree heliotrope, and observations suggest they cannot survive on naupaka (the most common coastal shrub) alone. Current populations of *Hylaeus anthracinus* are

widely scattered, so that they are unlikely to disperse on their own to sites where vegetation restoration is carried out. The recently introduced alien bee *Hylaeus strenuus* appears to be a major competitor in coastal and lowland dry habitats, and has displaced native *Hylaeus* from several sites on O'ahu. It has already been detected on Kaua'i and will likely spread to the other islands as well.

#### **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 *Hylaeus strenuus*), ants (primarily *Anoplolepis gracilipes*, *Linepithema humile*, and *Pheidole megacephala*), and wasps (*Vespula pensylvanica*), can directly 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 anthracinus* specifically, management needs include the following:

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

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

#### **RESEARCH PRIORITIES:**

- Survey for new populations, in both historical and novel sites.
- Determine if species status is warranted for the three genetic populations.
- Conduct studies on captive rearing for reintroduction to establish new populations.
- Evaluate life history and essential habitats to better direct conservation measures, such as determining habitat requirements for nest sites.

#### **References:**

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