



Terrestrial Invertebrates

Yellow-faced bee
Hylaeus assimulans

SPECIES STATUS:
Federally Listed as Endangered
State Listed as Endangered

GENERAL INFORMATION: *Hylaeus assimulans* (Perkins, 1899) lives primarily in coastal areas, often extending up into lowland dry forests. Each island population is genetically distinct, but they do not form divergent clusters of potential cryptic species. It is much larger than related species, and its size may be an adaptation to eating the large pollen of ‘ilima (*Sida fallax*), with which it is closely associated and visits more often than other species. Other important plants visited for pollen and nectar include naupaka (*Scaevola taccada*), pā‘ū o Hi‘iaka (*Jacquemontia ovalifolia*), and nehe (*Lipochaeta* spp.).

DISTRIBUTION: *Hylaeus assimulans* was historically found from Maui to O‘ahu. The loss of native coastal vegetation has caused its range to contract dramatically. It has not been collected from O‘ahu since at least the 1930s, and surprisingly there are no recent records for Moloka‘i where there is extensive coastal habitat. It is currently known from only one to three sites on each island. On Maui, it is found at scattered localities on West Maui and in the Makena area. On Lāna‘i, it has been found on both the east and northwest slopes in mostly alien vegetation, and there is a single record from Kaho‘olawe.

ABUNDANCE: Unknown. *Hylaeus assimulans* is generally found in very low numbers where it occurs. It is subject to extreme population fluctuations due to the dry conditions of its habitat and episodic blooming of its preferred flowers, particularly on Lāna‘i. The Maui population is the most widely distributed, and the difficulty of accessing sites on West Maui may be preventing a better assessment of its range.

LOCATION AND CONDITION OF KEY HABITAT: Native coastal vegetation and dry forest have 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. Current populations of *Hylaeus assimulans* are widely scattered so they are unlikely to disperse these long distances on their own to sites where vegetation restoration is carried out. ‘Ilima is one of relatively few native plants that can regrow vigorously after fire, but repeated fires will convert a shrubby ‘ilima understory into grass.

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 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 assimulans* 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 and dry forest 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* (*Nesoprotopis*) Bees (Hymenoptera: Apoidea). Honolulu: University of Hawai‘i Press.

Magnacca, KN. 2007. Conservation status of the endemic bees of Hawai‘i, *Hylaeus* (*Nesoprotopis*) (Hymenoptera: Colletidae). *Pacific Science* 61(2): 173-190.

U.S. Fish and Wildlife Service. 2011. Endangered and threatened wildlife and plants; 12-month finding on five petitions to list seven species of Hawaiian yellow-faced bees as endangered. *Federal Register* 76: 55170–55203.