

***Hylaeus simplex* (Perkins, 1899)**  
**(Hymenoptera: Colletidae: Hylaeinae)**

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Profile Prepared by Karl Magnacca, USGS-BRD, Kilauea Field Station.

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**SUMMARY**

*Hylaeus simplex* is a formerly widespread bee endemic to the island of Hawaii in Hawaii. It is distinguished by its single, central face mark and unusually large gonoforceps. One of the most common species collected in the early 1900's, it has not been collected in decades, and may be extinct.

**CONSERVATION STATUS**

**Xerces Red List Status: Critically Imperiled**

**Other Rankings:**

|                               |                        |
|-------------------------------|------------------------|
| Canada – Species at Risk Act: | N/A                    |
| Canada – provincial status:   | N/A                    |
| Mexico:                       | N/A                    |
| USA – Endangered Species Act: | Species of Concern     |
| USA – state status:           | HI: Species of Concern |
| NatureServe:                  | GNR                    |
| IUCN Red List:                | N/A                    |

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**SPECIES PROFILE**

**DESCRIPTION**

**Males:** Face marks yellow, consisting of a single large spot covering the entire clypeus and a narrow stripe in the paraocular area; otherwise unmarked. Process of the eighth sternum thin, not dilated; apices of gonoforceps unusually long, but not visible in situ. Hairs of abdominal apex brown, appressed.

**Females:** Entirely black, lacking coloration. Indistinguishable from females of *H. difficilis* and *H. facilis*.

*Hylaeus simplex* is a member of the *difficilis* species group, possessing the characteristic facial marks and 8th sternum of that group. The gonoforceps are enlarged as in its sister species, *H. facilis*, but they are not visible externally.

## **TAXONOMIC STATUS**

*Hylaeus simplex* was described as *Nesoprosopis simplex* by Perkins (1899). *Nesoprosopis* was reduced to a subgenus of *Hylaeus* by Meade-Waldo (1923). The most recent taxonomic treatment was Daly and Magnacca (2003).

## **LIFE HISTORY**

*Hylaeus simplex* has been collected from all habitats from the coast to wet forest, but prefers dry forest and shrubland (Perkins, 1907). Nesting habits are unknown, but it probably nests in the ground like related species.

## **DISTRIBUTION**

Historic collections of *H. simplex* cover much of the island of Hawaii, including areas (such as Honuapo and mid-elevation Puna) where bees are not found today. However, it was also found in areas such as Kilauea where bees are still extremely abundant.

## **THREATS**

The cause of the sharp decline in *H. simplex* is not clear. Dry areas on Hawaii have not been impacted as much as those on other islands, and related dryland bees (especially *H. difficilis* and *H. laetus*) are among the most common *Hylaeus*. However, despite intensive collecting at Kilauea, *H. simplex* has not been found there, nor was it taken at the more diverse forests of Pohakuloa and Puu Waawaa, where other rare bees were collected. Nothing is known about life history requirements that distinguish it from the more common *H. difficilis* and *H. laetus*. It is worth noting that since the distinctive gonoforceps are not visible externally and the genitalia were not dissected on the vast majority of old specimens, it is likely that many early collections labelled as *H. simplex* are in fact *H. difficilis*. It is therefore possible that *H. simplex* was never particularly common. Nevertheless, its disappearance is still puzzling.

## **CONSERVATION STATUS**

This species was found widely and abundantly in the early period of Hawaiian insect collecting (1892-1930). It is now extremely rare and possibly extinct.

Originally, U.S. Federal listings of rare and endangered species classed *H. simplex* as a “Category 2” Candidate Species about which more information was needed before it could be considered for listing. This status was based on recognition that Hawaiian bees in general were becoming rarer and little was known about their conservation status. Data were never gathered to document whether or not this species should be proposed for listing. It is currently considered to be a “Species of Concern” or a “Special Status Species” by the U.S. Fish and Wildlife Service and the Hawaii Division of Forestry and Wildlife.

## **CONSERVATION NEEDS**

The top priority is to identify extant populations and document the continued existence of the species. The dry forest area to the north, east, and south of Hualalai may give the best chance of success, since other rare dryland species have been found there. However, more intensive searching in the Kilauea area may also turn it up there.

## RESEARCH NEEDS

Search for extant populations.

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## RESOURCES

### CONTACTS

Karl Magnacca, USGS-BRD, Kilauea Field Station, Hawaii National Park, HI 96718

### REFERENCES

Daly, H. V., and K. N. Magnacca. 2003. *Insects of Hawaii, Vol. 17: Hawaiian Hylaeus (Nesoprosopis) Bees (Hymenoptera: Apoidea)*. University of Hawaii Press, Honolulu. 234 pp.

Meade-Waldo, G. 1923. Hymenoptera, fam. Apidae, subfam. Prosopidae, fasc. 181. Pp. 1-45 in P. Wytsman (ed.), *Genera Insectorum*. L. Desmet-Verteneuil, Brussels.

Perkins, R. C. L. 1899. Hymenoptera, Aculeata. Pp. 1-115 in D. Sharp (ed.), *Fauna Hawaiiensis*, Vol. 1. Cambridge University Press, Cambridge, United Kingdom.

Perkins, R. C. L. 1907. Insects at Kilauea, Hawaii. *Proc. Hawaii. Entomol. Soc.* 1:89-99.

### WEBSITES

Bishop Museum Arthropod Species of Concern checklist

<http://hbs.bishopmuseum.org/endangered/soc-artho.html>

Lists *H. simplex* as a Species of Concern. Updated February 21, 2000.