



Drosophila ochrobasis. Photo: Karl Magnacca.

Terrestrial Invertebrates

Picture wing *Drosophila*

Drosophila ochrobasis

SPECIES STATUS:

Federally Listed as Endangered

State Listed as Endangered

Designation of Critical Habitat for 12 Species of
Picture-Wing Flies: Final Rule – USFWS 2008

GENERAL INFORMATION: *Drosophila ochrobasis* Hardy & Kaneshiro, 1968 is a member of the *adiastola* species group. The species is endemic to Hawai‘i, occurring in montane wet forest. It is part of the *adiastola* subgroup, which is characterized by having the wings largely dark with scattered clear spots. Among these, *D. ochrobasis* is distinguished by the males having the base of the wing mostly clear with only a few faint marks; females are almost indistinguishable from the sympatric *D. setosimentum*. The primary breeding host of *D. ochrobasis*, if it has one, is unclear. Nearly all members of the *adiastola* subgroup breed in *Clermontia* (with the exception of one small clade which has switched to *Touchardia*), including the sympatric sibling species *D. setosimentum*. The presence of two such closely related species may mean that *D. ochrobasis* has switched to a new host. It has been reared three times, each from a different host and part: *Clermontia* roots, *Marattia* (mulesfoot fern) rachis, and *Myrsine* leaves.

DISTRIBUTION: *Drosophila ochrobasis* is historically known from many collections at six sites between 1966 and 1975, from a Saddle Road kīpuka, Ka‘ū Forest Reserve, Hualālai, and Kohala. However, sometime after this period, it underwent a serious decline, with only a single collection from the Saddle Road in 1986 before it was rediscovered in Kohala in 2006. Since then it has been found consistently at a few sites in the Kohala area, but nowhere else.

ABUNDANCE: Unknown. *Drosophila ochrobasis* appears to be extirpated throughout nearly all of its historic range, including many sites where it was formerly regularly collected, indicating a population decline of over 95%.

LOCATION AND CONDITION OF KEY HABITAT: All picture wing *Drosophila* live in rotting bark or sap fluxes of native trees as larvae, and are generally host-specific. The uncertainty about the breeding hosts of *D. ochrobasis* makes it difficult to ascertain the habitat quality. It is clear that *Clermontia* is nearly gone from some of the sites where *D. ochrobasis* previously occurred, while it is still abundant at Kohala. However, *D. ochrobasis* does not live in some areas with abundant *Clermontia* that should be within its range, such as South Kona, where *D. setosimentum* is common.

THREATS:

- Habitat loss and degradation due to invasive plants and rats, disturbance by non-native ungulates.
- Non-native predators, including wasps (*Vespula pensylvanica*).

- Insufficient information hampers conservation efforts.

CONSERVATION ACTIONS: Conservation of *Drosophila* requires 1) knowledge of the current sites occupied by the species; 2) conservation of a steady supply of breeding hosts at multiple sites; and 3) mitigation of ongoing threats, such as habitat destruction by feral ungulates and the presence of destructive alien arthropod predators. A general understanding of life history and habitat requirements is a prerequisite for management actions, though not for determining endangered status. 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 *Drosophila ochrobasis* specifically, management needs include:

- Conduct surveys to determine distribution and abundance.
- Continue and expand fencing to protect habitat from ungulate disturbance.
- Conduct studies on life history and essential habitats to better direct conservation measures, including determining habitat requirements such as microclimate.

MONITORING:

- Continue surveys to identify populations in order to assess their stability and trends.

RESEARCH PRIORITIES:

- Survey for new populations, in both historic and novel sites.
- Determine major threats and limiting factors.

References:

- Kaneshiro, KY, Kaneshiro, K. 1995. Draft listing proposal for 18 species of Hawaiian picture-wing *Drosophila*. Document submitted to the Pacific Islands Office, U.S. Fish and Wildlife Service, Honolulu, Hawaii.
- Montgomery, SL 1975. Comparative breeding site ecology and the adaptive radiation of picture-winged *Drosophila* (Diptera: Drosophilidae) in Hawaii. *Proceedings of the Hawaiian Entomological Society* 22(1): 65–103.
- U.S. Fish and Wildlife Service. 2006. Endangered and threatened wildlife and plants; determination of status for 12 species of picture-wing flies from the Hawaiian Islands. *Federal Register* 71: 26835–26852.
- U.S. Fish and Wildlife Service. 2008. Endangered and threatened wildlife and plants; designation of critical habitat for 12 species of picture-wing flies from the Hawaiian Islands. *Federal Register* 73: 73734–73895.