Rediscovery of five species of *Omiodes* Guenée (Lepidoptera: Crambidae) on Hawai‘i Island

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Beginning in 1980, through a contract from the U.S. Fish & Wildlife Service, an assessment of the conservation status of more than 800 species of native Hawaiian insects was undertaken by Wayne Gagné, Carl Christensen, and others (Gagné, 1982; Gagné & Christensen, 1985). Twenty-two species of endemic leafrollers in the genus *Hedylepta* (=

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Omiodes: Crambidae) were among the first groups of Lepidoptera analyzed, and Gagné (1982: Table 2) reported nine species that were “presumed recently extinct”. These results were based upon an analysis of the most recent museum specimen collection dates and an assessment of threats. The results were subsequently reported internationally (Gagné & Howarth, 1985), citing the reasons for extinctions as the combined pressures of habitat destruction, increased rarity of host plants, and the introduction of alien parasitoids for biological control. These data were subsequently reported to the U.S. Fish & Wildlife Service and became the basis for listing candidate endangered species (U.S. Fish & Wildlife Service, 1984).

Since then, 14 of the 23 known Hawaiian species of Omiodes leafroller moths have been variously cited as extinct or possibly extinct (Table 1) (Gagné & Howarth, 1985; Beattie, 1994; Evenhuis, 2002; IUCN, 2003). This amounts to more than half of the native species in this genus. The species currently listed as extinct by HBS are: O. anastrepta Meyrick, O. anastreptiodes Swezey, O. asaphombra Meyrick, O. continuatalis Wallengren, O. epicentra Meyrick, O. euryprora Meyrick, O. fullawayi Swezey, O. giffardi Swezey, O. iridias Meyrick, O. laysanensis Meyrick, O. meyricki Swezey, O. monogona Meyrick, O. musicola Swezey, and O. telegrapha Meyrick.

An examination of the insect collections of Hawaii Volcanoes National Park and the collection of J. Giffin revealed recently collected specimens for five of these 14 species. Some of these species are represented by only a few specimens from a few localities, and may truly be threatened with extinction. Other species, however, have been quite widely collected on Hawai‘i Island. The “rediscovery” of these widespread species suggests either that they were never truly in danger of extinction (at least on this island), or that their numbers have increased in recent decades. It is possible that the previous lack of recent collection records for these species may have been due to a lack of active interest in them since the 1950s.

Much of the concern for Omiodes moths and the speculation surrounding their conservation status stems from the group’s unusual history. Because of their occurrence on sugarcane and coconut palms, two species, O. accepta and O. blackburni, were specifically targeted for biological control using imported parasitoids between 1895 and 1958 (Funasaki et al., 1988). As early as 1954, entomologists in Hawai‘i recognized a decline in populations of native Omiodes moths, and suggested that this decline was due in part to pressure from introduced parasitoids and predators (Swezey, 1954; Zimmerman, 1958).

However, at least some species seem to be present in good numbers, and it is clear that the conservation status of Omiodes moths should be reexamined. The many peculiarities of this genus, with regards to biological control (Funasaki et al., 1988), conservation biology (Gagné & Howarth, 1985), and evolutionary history (Zimmerman, 1960), make it an ideal subject for future surveys and studies.

Since the rediscoveries reported here are primarily based on incidental collections on a single island, rather than active searches for Omiodes moths, it is highly possible that other ‘extinct’ species are extant. These rediscoveries illustrate the drawbacks of relying solely on museum specimens (although they are often the best data source available), and the need for focused surveys when proposing extinction status. An attempt should be made to relocate Omiodes species on all islands, especially since several of the currently listed species are likely to be rare or threatened, if not yet extinct. If populations of threatened moths are located, distributions may be mapped, and actions may be taken to protect these moths by protecting their host plants and habitats.

Institutions with vouchered material are abbreviated as follows: Hawaii Volcanoes National Park (HVNP); Jon Giffin, personal collection (JGPC).
**Omiodes anastrepta** Meyrick

**Rediscovery**

This species has historically been reported from the islands of O‘ahu, Moloka‘i, and Hawai‘i (Nishida, 2002). Its recorded host plant is *Carex wahuensis* Mey (Zimmerman, 1958). Here we report thirteen specimens, collected from wet and mesic forest on the windward and leeward sides of the island of Hawai‘i. This species was first cited as possibly extinct in 1994 by the U.S. Fish & Wildlife Service (Beattie, 1994). Subsequently, it was listed as extinct by HBS (Evenhuis, 2002).


**Omiodes anastreptoides** Swezey

**Rediscovery**

This species has historically been reported only from the island of Hawai‘i (Nishida, 2002). Larvae have been reared from a sedge, possibly *Carex wahuensis* Mey (Zimmerman, 1958). Here we report nine specimens of this species, all collected from wet forest
on the windward side of the island of Hawai‘i. This species was first officially cited as a Category 2 species of concern in 1994 by the U.S. Fish & Wildlife Service (Beattie, 1994). Subsequently, it was listed as extinct by HBS (Evenhuis, 2002).


**Omiodes asaphombra** Meyrick

**Rediscovery**

This species has historically been collected on the islands of Kaua‘i, O‘ahu, Moloka‘i, and Hawai‘i (Nishida, 2002). Here we report six specimens from the leeward and windward sides of the island of Hawai‘i. This species has only been reared from *Joinvillea adscendens* Gaudichaud, and has been reported to be specific to this plant (Swezey, 1954). Despite the fact that this plant is not known to occur on the leeward side of Hawai‘i Island, five of these six specimens were collected from the district of S. Kona. Therefore, we consider it likely that *O. asaphombra* is able to utilize another host plant. *Omiodes asaphombra* was first presumed extinct by Gagné & Howarth (1982) due to the scarcity of *Joinvillea adscendens*. It was subsequently listed as possibly extinct by FWS (Beattie, 1994), and as extinct by the IUCN (2003) and HBS (Evenhuis, 2002).

**Material examined:** HAWAI‘I: S. Hilo Distr, Hilo Watershed, Pu‘u O‘o boundary, at light, 2 Jul 1999, J. Giffin, 1 specimen, (JGPC); S. Kona Distr, Kona Forest Unit of Hakalau NWR, Field camp, 20 Jul 2000, W. Haines, 1 specimen, HVNP003587, (HVNP); S. Kona Distr, Kona Forest Unit of Hakalau NWR, 1372 m, 1 Aug 2000, K. Magnacca, 3 specimens, HVNP003712, HVNP003713, HVNP003714 (HVNP); S. Kona Distr, S. Kona Forest Reserve, 1500 m, at light, 10 Apr 2001, J. Giffin, 1 specimen, (JGPC).

**Omiodes continuatalis** Wallengren

**Rediscovery**

This species has been reported from all the main islands except Kaho‘olawe and Ni‘ihau (Nishida, 2002), and early entomologists reported this to be one of the most commonly seen moths in Hawai‘i in the late 1800s (Zimmerman, 1958). Recorded host plants for this species include both native and non-native grasses, including *pili* (*Heteropogon contortus* (L.)). We here report 13 specimens from mesic forest on both the windward and leeward sides of Hawai‘i Island. *Omiodes continuatalis* was first presumed extinct by Gagné & Howarth (1982) due to the loss of habitat and introduction of biocontrol agents and was subsequently listed as extinct by the International Union for Conservation of Nature (IUCN, 2003) and HBS (Evenhuis, 2002).

**Omiodes monogona** Meyrick

Rediscoveey

This species has been historically reported from all the main islands except Kaho‘olawe and Ni‘ihau (Nishida, 2002). Zimmerman (1958) reported its principal native host to be *wiliwili, Erythrina sandwicensis* Degener, but he also listed several other native and non-native legumes as alternate hosts for the caterpillars. Here we report seven specimens, from mesic to wet forest on both windward and leeward sides of southern Hawai‘i Island. *O. monogona* was first cited as possibly extinct in 1994 by the U.S. Fish & Wildlife Service (Beattie, 1994) and was subsequently listed as such by HBS (Evenhuis, 2002).


**Literature Cited**


