

# Reassessment of the Noctuoidea of the Hawaiian Islands

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## ABSTRACT

Since Zimmerman's (1958) treatment of Hawaiian Noctuidae many new island records including 1 new endemic species (a new subfamily for Hawai'i) have accumulated. This review lists all recorded species, identifying immigrant and introduced species. Type information is given for endemic species not treated in Zimmerman (1958).

## INTRODUCTION

This review is based on specimens in 3 Hawaiian collections: Bishop Museum (BPBM), Hawaii State Department of Agriculture (HDOA), and the University of Hawaii, Manoa (UH). Supplementary specimens came from the British Museum (Natural History) (BMNH), National Museum of Natural History, Washington, D.C. (NMNH), and the Canadian National Collection, Ottawa (CNC).

All species are listed for the islands from which records are available. Names of those islands represented in BPBM are in *italic*. Immigrant and introduced species are marked with an asterisk. Data from the *Proceedings of the Hawaiian Entomological Society* are cited as PHES. The genera and species are listed alphabetically by families and subfamilies following Poole (1989).

For species not treated in Zimmerman (1958), the type locality (TL) and type information are given for endemic species. Special care is taken to give information about the status and location of the types of endemic species. In most cases, this information is missing in Zimmerman (1958). The basis for the status of the types is the 3rd edition of the *International Code of Zoological Nomenclature* (1985), especially with regard to art (74 a and c). In cases where Zimmerman examined a series of syntypes and figured 1 of these as "the type," this constitutes the designation of a lectotype.

### NOTODONTIDAE

#### NOTODONTINAE

#### DIOPTINI (MINET, 1983)

#### *Cyanotricha* Prout

\**necyria* (Felder & Rogenhofer): *Hawai'i*. BPBM, HDOA, UH. Introduced in 1988 from Colombia for biological control of *Passiflora mollissima* (HBK) Bailey.

### ARCTIIDAE

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#### *Pyrharctia* Packard

\**isabella* (J. E. Smith): *O'ahu*. BPBM, HDOA. First observed December 1984 in connection

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with imported Christmas trees in 'Aiea. HDOA collected adult specimens emerged from cocoons collected on Christmas trees (specimens in BPBM, HDOA). However, it may well be possible that not all larvae and cocoons were found, and the species survived by the caterpillars feeding on all kinds of weeds. This seems possible because on 11 January 1990 a mature larva looking for a place to pupate was found by students of St. Andrew's Priory School and brought to Bishop Museum on that day by their teacher, Mr. Jack Leishman. The caterpillar pupated the next day and a female adult emerged on 29 January.

***Utetheisa* Hübner**

\**pulchelloides* Hampson: *Midway I.* BPBM. A single specimen from 1940 that may have been an accidental introduction by plane from Wake I.

LYMANTRIIDAE

Not as yet recorded from the Hawaiian Islands.

NOCTUIDAE

HERMINIINAE

***Bocana* Walker**

\**manifestalis* Walker: *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu.* BPBM, HDOA, UH. First mentioned by Swezey (PHES 2:133) as *Adrapsa manifestalis* (Walker). Established by Walker (1858:171) as type of his new genus *Bocana*.

***Simplicia* Guenée**

\**caeneusalis* Walker: *Hawai'i, Kaua'i, Lāna'i, Maui, O'ahu.* BPBM, HDOA, UH. First recorded by Butler (1877:48) from Hawai'i (Ōla'a), O'ahu, and Lāna'i under this name, then by Meyrick (1899:153) as *Simplicia robustalis* Guenée from Hawai'i, Lāna'i, and O'ahu, described by Prout (1933:85) as *Simplicia lautokensis* from Fiji, and now regarded as synonymous with the widespread Indo-Australian *caeneusalis*.

HYPENINAE

***Hypena* Schrank**

\**laceratalis* Walker: *Hawai'i, Kaua'i, Lāna'i, Maui, O'ahu.* BPBM, HDOA, UH. Introduced 1957 from Zimbabwe and 1964 from the Philippines for biological control of *Lantana*. Originally recorded as *H. jussalis* Walker, then as *H. strigata* Fabricius (PHES 18:193), it has been reidentified by P. Maddison (unpubl. note HDOA).

*laysanensis* (Swezey): *Laysan.* BPBM. Lectotype in BPBM (PHES 3:296).

*newelli* (Swezey): *Hawai'i.* BPBM. Holotype in BPBM (PHES 3:296).

*obsoleta* Butler: *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu.* BPBM, HDOA, UH. Zimmerman's fig. 345 above = female lectotype in BMNH. Synonym *insignis* Butler: Zimmerman's fig. 345 below = female holotype in BMNH.

*plagiota* (Meyrick): *Hawai'i, Kaua'i, Maui, O'ahu.* BPBM, HDOA, UH. Zimmerman's fig. 346 above = male lectotype in BMNH; fig. 346 below = female paralectotype in BMNH.

Synonym *proterothra* Meyrick: Zimmerman's fig. 347 above = female lectotype in BPBM (PHES 7:93).

*senicula* (Meyrick): *Kaua'i*. BPBM. Zimmerman's fig. 347 below = female holotype in BPBM (PHES 7:93).

### ***Pseudoschranksia* Zimmerman**

*cyantias* (Meyrick): *Hawai'i*. BPBM, HDOA. Zimmerman's fig. 362 above = female holotype in BMNH.

*epichalca* (Meyrick): *Hawai'i*. BPBM, HDOA. Zimmerman's fig. 364 above = male genitalia of lectotype in BMNH; Zimmerman (p. 424) states "holotype," which it is not.

*leptoxantha* (Meyrick): *Maui*, *Moloka'i*, *O'ahu*. BPBM, HDOA. Zimmerman's fig. 362 below = male holotype in BMNH; fig. 364 below = its genitalia.

### ***Schranksia* Hübner**

*altivolans* (Butler): *Hawai'i*, *Kaua'i*, *Maui*, *Moloka'i*, *O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 356 above is the so-called "type female" of Butler, mentioned p. 416, which is the male lectotype in BMNH.

*arrhecta* (Meyrick): *Kaua'i*. No specimens in Hawaiian collections. Zimmerman's fig. 359 above = female lectotype in BMNH, designated as such by Zimmerman. The abdomenless "male" mentioned by Zimmerman, p. 417, is also a female paralectotype (I. Kitching, pers. comm.).

*oxygramma* (Meyrick): *Kaua'i*, *O'ahu*. HDOA (1 specimen from *O'ahu*). Zimmerman's fig. 359 below = female holotype in BMNH.

*sarothrura* (Meyrick): *Hawai'i*, *Maui*, *O'ahu*. Zimmerman's fig. 360 above = male holotype BMNH. The type specimen was from *Hawai'i* (*Ōla'a*). Meyrick (1904) reports additional specimens from *O'ahu* (1 in BPBM). Zimmerman (1958:419) doubts their identity. As the specimen has no abdomen, the question remains unsolved.

*simplex* (Butler): *Hawai'i*, *Kaua'i*, *Maui*, *Moloka'i*, *O'ahu*. BPBM, HDOA. The species was described by Butler as a "variety" *simplex* of the species *altivolans*. There are 3 syntypes of *simplex* in BMNH.

## OPHIDERINAE

### ***Anomis* Hübner**

\**flava* (Fabricius): *Kaua'i*, *O'ahu*. BPBM, HDOA, UH. First record in HDOA from Honolulu in 1966; 1st record from *Kaua'i* (*Kōke'e*) in 1984. BPBM.

*hawaiiensis* (Butler): *Hawai'i*, *Kaua'i*, *O'ahu*. BPBM, HDOA, UH. Holotype in BPBM.

*noctivolans* (Butler): *Kaua'i*, *Maui*, *Moloka'i*, *O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 327 = female genitalia of the "type female from *Maui*" that therefore has to be considered the lectotype.

*vulpicolor* (Meyrick 1928): *Hawai'i*, *Moloka'i*, *O'ahu*. BPBM, HDOA, UH. Holotype in BPBM. Zimmerman (1958:376) used the generic name *Gonitis* Guenée.

***Ascalapha* Hübner**

\**odorata* (Linné): *Hawai'i, Kaho'olawe, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. Previously known as *Otosema odora* (Linné) (Hodges et al. 1983:#8649). First collected in 1928 (see PHEs 8:237).

***Eudocima* Billberg (= *Othreis* Hübner)**

\**fullonia* (Clerck): *Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First recorded in Honolulu in January 1985; *Kaua'i* in April 1985; *Maui* and *Moloka'i* in September 1986 (PHEs 27:4).

***Hypocala* Guenée**

\**deflorata* (Fabricius): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First collected by T. Blackburn near Honolulu.

*velans* Walker: *Hawai'i, Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Holotype in BMNH.

***Melipotis* Hübner**

\**indomita* (Walker): *Kaho'olawe, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First recorded Honolulu (Mānoa) in June 1969; *Kaua'i* (Līhu'e) in 1969; *Moloka'i* in 1969 (PHEs 20:494-96).

***Pandesma* Guenée**

\**anysa* Guenée: *Kaua'i, Lāna'i, Maui, O'ahu*. BPBM, HDOA, UH. First recorded *O'ahu* in late 1975; *Lāna'i* in 1977; *Kaua'i* in 1978 (PHEs 23:331).

***Polydesma* Boisduval**

\**boarmioides* (Guenée): *Hawai'i, Kaua'i, Maui, Moloka'i, Ni'ihau, O'ahu*. BPBM, HDOA, UH. Previously known as *Polydesma umbricola* Boisduval; reidentified in HDOA by P. Madison (see Holloway 1979:515); 1st collected in 1945 (PHEs 12:475).

## CATOCALINAE

***Achaea* Hübner**

\**janata* (Linné): *Hawai'i, Kaua'i, Lāna'i, Maui, Midway, Moloka'i, Nihoa, O'ahu*. BPBM, HDOA, UH. First collected in 1944 (PHEs 12:233).

***Ophiusa* Ochseneheimer**

\**disjungens* (Walker): *Hawai'i, Kaua'i, Lāna'i, O'ahu*. BPBM, HDOA, UH. First recorded Honolulu in 1974; *Lāna'i* in 1979 (PHEs 22:170)

***Pericyma* Herrich-Schäffer**

\**cruegeri* (Butler): *Kaua'i, O'ahu*. BPBM, HDOA, UH. Apparently 2 different introductions. Adults reared from larvae ex *Poinciana* were collected at *Kaua'i* (Kōloa) in early 1971 (HDOA; PHEs 21:142). Adults were reared from larvae collected on the UH campus (*O'ahu*) ex *Poinciana* in 1981 (UH). The species has not been collected since then. It is a native of Borneo and northern Australia.

## PLUSIINAE

**Autographa** Hübner

\**biloba* (Stephens): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i* (PHES 18:6), *O'ahu*. BPBM, HDOA, UH. First reported by Meyrick (1899:159).

\**californica* (Speyer): *O'ahu*. UH. One specimen reared from a larva found in "romaine lettuce" purchased in a Honolulu market, 25 May 1965. Never found again.

**Chrysodeixis** Hübner

\**eriosoma* (Doubleday): *French Frigate Shoals, Hawai'i, Kaua'i, Kure, Lāna'i, Laysan, Maui, Midway, Moloka'i, O'ahu*. BPBM, HDOA, UH. First recorded by Butler (1877:47). This species has been known in Hawaiian literature as *C. chalcites* (Esper), which is now recognized to be limited to Europe, Asia, and northern Africa (Holloway 1977:81).

**Lophoplusia** Zimmerman

*giffardi* (Swezey): *Hawai'i, Maui*. BPBM, HDOA, UH. Lectotype in BPBM (PHES 3:296).

*psectrocer* (Hampson): *Hawai'i, Maui, O'ahu*. BPBM, HDOA. Holotype in BMNH. TL is "Kaupō Trail" not "Campo Trail" (PHES 4:336).

*pteroLyta* (Meyrick): *Hawai'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Holotype in BMNH.

*violacea* (Swezey): *Kaua'i, O'ahu*. BPBM, HDOA, UH. Holotype in BPBM (PHES 4:337).

**Mouralia** Walker

\**tinctoides* (Guenée): *Kaua'i*. BPBM. The single specimen was collected at light at Kōke'e State Park on 20 June 1982. The species is a native of Brazil. Identified by I. Kitching (BMNH).

**Trichoplusia** McDunnough

\**ni* (Hübner): *Hawai'i, Kaua'i, Laysan, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First record from Moloka'i (PHES 11:3).

## STICTOPTERINAE

**Stictoptera** Guenée

*cucullioides* Guenée: *Hawai'i, Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First record from Honolulu in 1948 (PHES 13:326). Specific name *subobliqua* synonymized by Holloway (1985:228).

## EUTELIINAE

**Penicillaria** Guenée

\**jocosatrix* Guenée: *Kaua'i, Maui, O'ahu*. BPBM, HDOA, UH. First record from O'ahu in 1968; Maui in 1982; Kaua'i in 1983 (see PHES 20:269).

***Targalla* Walker**

\**delatrix* (Guenée): *Hawai'i, Kaua'i, Maui, O'ahu*. BPBM, HDOA, HU. First record from O'ahu in 1964; Maui in 1986 (PHES 19:130; 20:285). Identified by E. L. Todd (USNM).

## ACONTIINAE

***Amyna* Guenée**

\**natalis* (Walker): *Kaua'i, O'ahu*. BPBM, HDOA, UH. First record from O'ahu (Hickam AFB) in 1945 (PHES 12:475).

\**octo* (Guenée): *O'ahu*. BPBM. First record in 1974. Identified by P. Maddison.

***Eublemma* Hübner**

\**accedens* (Felder A. Rogenhofer), **rev. stat.**: *Hawai'i, Kaua'i, Moloka'i, O'ahu*. BPBM, HDOA, UH. First record from O'ahu as *anachoresis* (Wallengren) in 1960 (PHES 18:10); *Hawai'i* in 1963 (PHES 18:341); *Moloka'i* in 1963 (PHES 19:3); *Kaua'i* in 1986. Investigation of this species by K. Sattler and the late A. Hayes has indicated that *anachoresis* is restricted to southern Africa. The widespread Old World tropical species usually referred to under this name is distinct. The oldest available name for it is *accedens* (type locality: Java).

## NOLINAE

***Nola* Leach**

\**brunella* (Hampson): *Hawai'i*. BPBM, HDOA. Introduced 1964 from Malaysia for biological control of *Melastoma* (PHES 19:205).

## AMPHIPYRINAE

***Acrapex* Hampson**

*exanimis* (Meyrick): *Hawai'i, O'ahu*. BPBM, HDOA, UH. Holotype in BMNH.

*mischus* Fletcher: *O'ahu*. BPBM, HDOA, UH. First record in 1956. TL 'Āina Haina; holotype in BPBM (PHES 17:67-69). In addition to those specimens mentioned by Fletcher, there are 2 specimens collected by J. W. Beardsley in January 1961 (HDOA) and April 1961 (UH) at Wailupe Valley (O'ahu).

***Athetis* Hübner**

\**thoracica* (Moore): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First record from Honolulu 1906 and earlier (PHES 2:3). Until recently, this species has been confused with *Leucocosmia. nonagrica* (Walker), which is not known to occur in the Hawaiian Islands (Holloway 1989:141).

***Callopietria* Hübner**

\**meridionalis* Collenette: *Hawai'i* (1977), *Kaua'i* (1982), *Lāna'i* (1978), *Maui* (1980), *O'ahu* (1971). BPBM, HDOA, UH (see also PHES 23:42, 317). Identified by F. Howarth; confirmed by P. Maddison.

**Condica** Walker (= *Platysenta* Grote)

\**dolorosa* (Walker): *Kaua'i*, O'ahu. BPBM, HDOA, UH. First record from O'ahu (Hickam AFB) in 1975; *Kaua'i* (Līhu'e) in 1978 (PHES 23:173, 332).

\**illecta* (Walker): *Hawai'i*, *Kaua'i*, Maui, Moloka'i, O'ahu. BPBM, HDOA, UH. First record from O'ahu, *Kaua'i*, and Moloka'i in 1961; Maui in 1968 (HDOA) (PHES 18:5, 12).

**Elaphria** Hübner

\**nucicolora* (Guenée): *Hawai'i*, *Kaho'olawe*, *Kaua'i*, *Lāna'i*, Maui, O'ahu. BPBM, HDOA, UH. First recorded from O'ahu (Hickam AFB) in 1943 (PHES 13:99)

**Spodoptera** Guenée

\**exempta* (Walker): *French Frigate Shoals*, *Hawai'i*, Johnston I, *Kaua'i*, *Kure*, *Lāna'i*, *Maui*, *Midway*, Moloka'i, Ni'ihau, O'ahu, *Pearl and Hermes Reef*. BPBM, HDOA, UH. First recorded from *Hawai'i* by Butler (1877:4) from specimens collected by T. Blackburn.

\**exigua* (Hübner): *Hawai'i*, *Kaua'i*, *Laysan*, Maui, O'ahu. BPBM, HDOA, UH. First report from Butler (1880:7).

\**litura* (Fabricius): *Kure*, *Midway*, *Pearl and Hermes Reef*. BPBM, UH. First record BPBM from *Midway* in 1939.

\**mauritica* (Boisduval): *Hawai'i*, *Kaua'i*, *Maui*, *Midway*, O'ahu. BPBM, HDOA, UH. First report in 1953 from O'ahu (Barbers Point Naval Air Station) (Zimmerman 1958:345). Pre-1938 Hawaiian records were misidentifications of *S. exempta* (Zimmerman 1958:336).

## CUCULLIINAE

**Aumakua** Hayes and Sattler (1980)

*omaomao* Hayes and Sattler: *Kaua'i* (1957), *Maui* (1976), *Moloka'i* (1978). BPBM, UH. TL Kōke'e State Park (1975, S. Au coll.), *Kaua'i*; holotype in BMNH.

**Neogalea** Hampson

\**sunia* (Guenée): *Hawai'i*, *Kaua'i*, *Lāna'i*, *Maui*, Moloka'i, O'ahu. BPBM, HDOA, UH. Introduced 1955 from California for biological control of *Lantana* (PHES 18:2). Generic name changed from *Catabena* Walker to *Neogalea* Hampson following Todd (1972:260). Specific name changed from *esula* (Druce) to *sunia* Guenée following Poole (1989).

## HADENINAE

**Discestra** Hampson

\**trifolii* Hufnagel: O'ahu. UH. One specimen light trapped on 15 October 1976 at Hickam AFB by J. W. Beardsley and identified by E. L. Todd (PHES 23:181). Because of the great similarity to *T. postica* Smith, the author and J. W. Beardsley thoroughly inspected it in 1988; the identification is correct. Not collected since then.

***Haliophyle* Warren**

*anthracias* (Meyrick): *Hawai'i* (BMNH), *Kaua'i*, *Maui*. BPBM. Zimmerman's fig. 251 above = male lectotype in BMNH; fig. 257 above = its genitalia.

*compsias* (Meyrick): *Hawai'i*, *Maui*. BPBM, HDOA. Zimmerman's fig. 251 below = male lectotype BMNH; fig. 257 below = its genitalia.

*connexa* Zimmerman: *Hawai'i*. One specimen only in BPBM. Zimmerman's fig. 253 above = female holotype in BMNH; fig 261 below = its genitalia. Zimmerman is the author of the species because Warren described it as an aberration. The specimen in BPBM was collected by E. H. Bryan Jr. on 15 August at Humu'ula.

*euclidias* (Meyrick): *Hawai'i*, *Kaua'i*, *Maui*. BPBM, HDOA. Zimmerman's fig. 253 below = male lectotype in BMNH. Under this name are many doubtfully conspecific specimens in collections. A revision is needed.

*ferruginea* (Swezey): *Maui*. BPBM, HDOA, UH. Zimmerman's fig. 256 = holotype in BPBM. Swezey in the original description (PHES 8:197) calls the specimen a male, but Zimmerman dissected it and found it to be a female. At Zimmerman's time of publication, only this type was available. Today we have a good series of this species.

*flavistigma* Zimmerman: *Hawai'i*, *Kaua'i*, *Lāna'i*, *Maui*, *Moloka'i*, *O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 262 below is the female genitalia of the holotype he designated and not a lectotype because Warren described it as an aberration. Therefore, Zimmerman is the author of the species. Zimmerman's fig. 254 below is the lectotype of an aberration *depupillata* Strand that Zimmerman synonymizes with *flavistigma* (1958:319). Fig. 258 below = its genitalia. Location of this lectotype is unknown. Under the name of *flavistigma* are many doubtfully conspecific specimens in collections. A revision is needed.

*ignita* Zimmerman: *Hawai'i*. BPBM, HDOA. As Zimmerman, not Warren, is the author also of this species, his fig. 259 above = male genitalia of the holotype in BMNH. The single specimen in BPBM was collected from the north side of Saddle Road on 19 September 1982 by Howarth, Nishida, and Samuelson. The specimen in HDOA was collected from Ōla'a by Perkins.

*niphadopa* (Meyrick): *Hawai'i*, *Lāna'i*, *Maui*, *Moloka'i*. BPBM, HDOA, UH. Zimmerman's fig. 255 below = female lectotype in BMNH; fig. 263 = its genitalia.

Unidentified species: Known from *Kaua'i*, *Maui*, *Moloka'i*, and *O'ahu*.

***Leucania* Ochseneheimer**

\**loreyimima* (Rungs): *Hawai'i* (1978), *Kaua'i* (1983), *Midway* (1983), *O'ahu* (1972). BPBM, HDOA, UH (PHES 22:23; 23:327). Reidentified from *Leucania loreyi* (Duponchel) by P. Maddison.

\**scottii* (Butler): *Hawai'i*, *Kaua'i* (1961), *Lāna'i* (1963), *Moloka'i* (1961), *O'ahu* (1956). BPBM, HDOA, UH (See also PHES 16:197; 18:6, 8, 12, 346). Reidentified from *Meliana* sp. near *scottii* (Butler) by P. Maddison.

\**striata* Leech: *Kaua'i*, *Maui*, *O'ahu*. BPBM, HDOA, UH. First record from Maui in 1976 (F. Howarth); *O'ahu* in 1977 (J. W. Beardsley); *Kaua'i* in 1981. The Hawaiian specimens were identified by Hayes and Sattler (BMNH) (See also PHES 23:177, 182, 316; 25:15).



***Pseudaletia* Franclemont**

*amblycasis* (Meyrick): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 241 above = male lectotype in BMNH.

*dasuta* (Hampson): *Hawai'i (BPBM), Maui*. BPBM, UH.

*macrosaris* (Meyrick): *Hawai'i, Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 244 above = male lectotype in BMNH. Synonym *pyrrhias* (Meyrick): *Kaua'i*. Zimmerman's fig. 243 above = male lectotype in BMNH. Synonym *typhloides* (Meyrick): *Hawai'i*. Zimmerman's fig. 244 below = male holotype in BMNH.

\**unipuncta* (Haworth): *Hawai'i, Kaua'i, Lāna'i, Lisianski, Maui, Moloka'i, O'ahu, Midway*. BPBM, HDOA, UH. First recorded by Butler (1880:7) from specimens collected by T. Blackburn.

Unidentified species A: *O'ahu*. UH. One specimen from Kalihi Valley on 21 June 1961; 4 adults and 2 preserved larvae from Pālolo in February/August 1906.

Unidentified species B: *Maui*. BPBM, HDOA, UH. First record in 1974; apparently quite common; systematic collecting resulted in 1st specimens; may be endemic.

Unidentified species C: *O'ahu*. HDOA. One specimen from Mt. Ka'ala on 18 April 1975.

***Trichoclea* Grote**

\**edwardsi* Smith: *O'ahu*. No specimen in Hawaiian collections (PHES 15:378).

\**postica* Smith: *O'ahu*. BPBM, HDOA, UH. First record from *O'ahu* (Iroquois Pt.) in 1947 (PHES 13:217).

## NOCTUINAE

***Agrotis* Ochseneheimer**

*arenivolans* Butler: *Hawai'i, Maui*. BPBM, UH. Zimmerman's fig. 174 above = male lectotype in BMNH; fig. 178 = female paralectotype genitalia.

*aulacias* Meyrick: *Hawai'i, Kaua'i, Maui*. BPBM, HDOA, UH. Zimmerman's fig. 174 below = male lectotype in BMNH.

*baliopa* Meyrick: *Hawai'i, Maui*. BPBM, HDOA, UH. Zimmerman's fig. 175 above = male lectotype in BMNH.

*bryani* (Swezey): *Nihoa*. BPBM, HDOA, UH. Female holotype in BPBM (Bull. BPBM 31:74).

*ceramophaea* Meyrick: *Hawai'i, Kaua'i, Maui, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 180 above = male holotype BMNH. Synonym *stenospila* Meyrick: Zimmerman's fig. 180 below = holotype in BPBM (PHES 7:91-104). Zimmerman's note (1958:231) about the example in BMNH is correct. It is, as Zimmerman says, a paratype.

*charmocrita* (Meyrick): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 181 above = male holotype in BPBM (PHES 7:91-104); fig. 183 = its genitalia.

*cremata* (Butler): *Maui, O'ahu*, BPBM. Zimmerman's fig. 186 = male lectotype in BMNH.

*crinigera* (Butler): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 187 above = male lectotype in BMNH.

*diplosticta* (Hampson), **rev. stat.**: *Hawai'i (CNC), Kaua'i, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 196 below = male holotype in BMNH; fig. 198 below = its genitalia. Synonym *wikstroemiae* (Swezey), **rev. stat.**: Zimmerman's fig. 197 above = female paratype in BPBM; male holotype not figured by Zimmerman but also in BPBM (PHES 5:174). See discussion of *A. hephaestaea* for taxonomic status.

*dislocata* (Walker): *Hawai'i, Kaua'i, Lāna'i, Laysan, Maui, Moloka'i, Ni'ihau (BMNH), O'ahu*. BPBM, HDOA, UH. TL presumably Honolulu; holotype in BMNH. TL of synonym *looki* (Swezey) is Saddle Road (*Hawai'i*); holotype in BMNH.

*epicremna* Meyrick: *Kaua'i, Maui, Moloka'i*. BPBM, HDOA, UH. Zimmerman's fig. 191 above = male lectotype in BPBM.

*evanescens* (Rothschild): *Laysan*. BPBM, HDOA, UH. Zimmerman's fig. 192 above = male lectotype in BMNH. Synonym *eremioides* (Meyrick): *Laysan*. Syntypes in Städtisches Museum für Naturkunde Bremen (West Germany) and BMNH (in litt. BMNH).

*fasciata* (Rothschild): Midway. No specimens in Hawaiian collections. Zimmerman's fig. 192 below = male lectotype in BMNH; fig. 194 below = its genitalia.

*giffardi* (Swezey): *Hawai'i, Maui, O'ahu*. BPBM, HDOA. Zimmerman's fig. 195 = holotype in BPBM (PHES 8:198).

*hephaestaea* Meyrick: *Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Zimmerman (1958:247) follows Swezey (1944:135) in synonymizing *diplosticta* and its synonym *wikstroemiae* under *hephaestaea*. Swezey's reasoning was that Meyrick described *hephaestaea* from 14 specimens collected by Perkins on the NW Ko'olau range (O'ahu) in July 1901 and Hampson described *diplosticta* from a single male collected by Perkins at Waialua (O'ahu) without date. Therefore, Swezey suspects that this specimen came from the same lot that Meyrick worked with, for the region where Perkins collected on the NW Ko'olau range was above the Waialua plantation. However, Hardwick and Beardsley collected in 1961 on Pūpūkea trail along the Ko'olau range specimens that are doubtless *diplosticta*. Swezey missed the critical differences between the 2 species (D. Lafontaine, in litt.): "*hephaestaea* has the vestiture ventrally and legs reddish brown; *diplosticta* is entirely gray ventrally." Swezey was also wrong with the BPBM specimens from Kaua'i. None has the reddish brown abdomen. The black spots that are so pronounced by Swezey are variable throughout, but the abdominal coloring is constant and different in the 2 species. Zimmerman's fig. 196 above = male lectotype BMNH; fig. 198 above = its genitalia.

\**ipsilon* (Hufnagel): French Frigate Shoals, *Hawai'i, Kaua'i, Kure, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First recorded by Butler (1879:269) as "*Agrotis suffusa* W. V."

*kerri* (Swezey): *French Frigate Shoals*. BPBM, HDOA. Zimmerman's fig 201 above = female paralectotype in BPBM; the male lectotype is also in BPBM (PHES 5:174).

*laysanensis* (Rothschild): *Laysan*. No specimens in Hawaiian collections. Zimmerman's fig. 201 below = male lectotype in BMNH; fig 202 below = its genitalia.

*melanoneura* Meyrick: *Hawai'i, Kaua'i*. BPBM. Zimmerman's fig. 204 above = male holotype in BMNH; fig 207 above = its genitalia. Synonym *austalea* Meyrick: Zimmerman's fig 205 above = male lectotype in BMNH.

*mesotoxa* Meyrick: *Hawai'i, Kaua'i, Maui*. BPBM, HDOA. Zimmerman's fig. 204 below = female lectotype in BMNH; fig 203 below = its genitalia.

*microreas* Meyrick: *Hawai'i*. BPBM. Zimmerman's fig. 206 above = female lectotype in BMNH.

*panoplias* Meyrick: *Hawai'i*. No specimens in Hawaiian collections. Zimmerman's fig. 206 below = male holotype in BMNH; fig. 208 above = its genitalia.

*perigramma* Meyrick: *Hawai'i, Maui*. BPBM. Zimmerman's fig. 210 above = male lectotype in BMNH.

*photophila* (Butler): *O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 209 above = male lectotype in BMNH. Synonym *lucicolens* (Butler): Zimmerman's fig. 209 below = male lectotype in BMNH.

*procellaris* Meyrick: *Laysan*. BPBM has a single specimen with a note attached by J. W. Beardsley: "This is probably the only existing specimen of this presumably extinct species except for two syntypes in Bremen." Two syntypes in "Städtisches Museum für Naturkunde Bremen (West Germany)" (in litt. BMNH).

*psammophaea* Meyrick: *Hawai'i, Kaua'i, Maui, O'ahu*. BPBM, HDOA, UH. Zimmerman's fig. 210 below = male lectotype in BMNH; fig 211 = its genitalia.

*tephrias* Meyrick: *Kaua'i, Maui*. BPBM, UH. Zimmerman's fig. 214 above = male lectotype BMNH. Synonym *spoderopa* Meyrick: Zimmerman's fig. 214 below = male lectotype in BMNH.

*xiphias* Meyrick: *Hawai'i, Kaua'i, Maui*. BPBM, UH. Zimmerman's fig. 215 above = male lectotype in BMNH; fig. 217 = its genitalia.

Unidentified species A: Near *xiphias*: *Hawai'i, Kaua'i, Lāna'i, Lisianski, Maui*. BPBM.

Unidentified species B: *Kaua'i* (Kōke'e State Park). January 1919 (Kusche coll.). UH.

Unidentified species C: At least 1 probably endemic unidentified species from *Maui* taken in snow region of Mt. Haleakalā associated with flowers of *Argyroxiphium* species (Silversword). BPBM; UH has 2 specimens from Haleakalā (June 1935); 2 from Mauna Loa Observatory, *Hawai'i* (July 1965) and 1 from Mauna Kea above Halepōhaku, *Hawai'i* (June 1966); latter may represent another probably endemic species.

### ***Lycophotia* Hübner**

\**porphyrea* (Denis & Schiffmüller): *Hawai'i, Kaho'olawe, Kaua'i, Laysan, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. First recorded by Meyrick (1899:143) from specimens collected by Perkins.

### ***Peridroma* Hübner**

*albiorbis* Zimmerman: *Hawai'i, Maui, Moloka'i*. BPBM, HDOA. Zimmerman's fig. 222 above = female holotype in BMNH. Zimmerman is the author of the species because Warren described it as an aberration. Therefore, fig. 222 above is the holotype designated and published by Zimmerman; fig. 230 = its genitalia.

*chersotoides* (Butler): *Hawai'i, Maui, Moloka'i*. BPBM, HDOA. Zimmerman's fig. 223 above = male lectotype in BMNH; fig. 226 below = its genitalia.

*cinctipennis* (Butler): *Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA. Holotype in BMNH. Zimmerman's fig. 231 above is the genitalia of the holotype. Subspecies *c. albistigma* Zimmerman: Zimmerman's fig. 224 below = a specimen compared with the holotype in BMNH; Zimmerman is the author of the subspecies because Warren described it as an aberration. Therefore, fig. 224 below was compared to the holotype (here indirectly designated), while fig 231 below = female genitalia of this holotype. The status of the subspecies *albistigma*, however, is doubtful as it coexists with the nominate species on O'ahu (Mayr 1966:21). Poole (1989:785), placed *albistigma* as a synonym of *cinctipennis*.

*coniotis* (Hampson): *Hawai'i, Kaua'i, Maui*. BPBM, HDOA. Zimmerman's fig. 221 = male lectotype in BMNH. Subspecies *rufata* Zimmerman: Zimmerman's fig. 222 below = female holotype BMNH because Zimmerman is the author of the subspecies; fig. 233 = its genitalia. Warren had described *rufata* as an aberration. As the subspecies *rufata* coexists on Kaua'i with the nominate species, its status also is doubtful (Mayr 1966:21).

*neurogramma* (Meyrick): *Hawai'i*. HDOA. Holotype in BMNH. Zimmerman's fig. 228 below = the genitalia of the holotype.

*selenias* (Meyrick): *Hawai'i, Kaua'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA. Zimmerman's fig. 223 below = male lectotype in BMNH; fig. 229 below = its genitalia.

Unidentified species: Several unidentified and/or undescribed species from *Hawai'i, Kaua'i, Maui, O'ahu*. BPBM. Identifications by M. Honey and I. Kitching forthcoming.

### ***Helicoverpa* Hardwick**

*confusa* Hardwick: *O'ahu*. BPBM, UH. Hardwick (1965:117) also mentions specimens from *Hawai'i, Lāna'i, Maui, and Moloka'i*. TL *Lāna'i*. Holotype in BMNH. Zimmerman's fig. 165 as *hawaiiensis* is a female of *confusa* as are the genitalia of fig. 167 above (Hardwick 1965:117-18). The allotype is a Blackburn specimen and as it has none of the different locality signs that Blackburn used as locality labels, it is probably from O'ahu.

*hawaiiensis* (Quaintance & Brues): *Hawai'i, Kaua'i, Lāna'i, Maui, Moloka'i, O'ahu*. BPBM, HDOA, UH. Consult Hardwick (1965:86) for type material.

*minuta* Hardwick: *Lisianski*. No specimens in Hawaiian collections. TL *Lisianski I*. Holotype in BMNH (Hardwick 1965:119).

*pallida* Hardwick: *Necker, Nihoa*. BPBM. TL *Necker I*. Holotype in BPBM (Hardwick 1965:90). Subspecies *nihoaensis* Hardwick: *Nihoa*. BPBM. TL *Nihoa I*. Holotype BPBM (Hardwick 1966:868)

\**zea* (Boddie): *Hawai'i, Kaua'i, Kure, Laysan, Midway, Oahu, Pearl and Hermes Reef*. BPBM, HDOA, UH. First recorded by Butler under the name of *Heliothis conferta* Walker.

### ***Heliothis* Ochsenheimer**

\**virescens* (Fabricius): *Hawai'i, Moloka'i, O'ahu*. BPBM, HDOA, UH. First report by J. W. Beardsley at 'Ewa in June 1956 (PHES 16:190).

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