New records of introduced Lepidoptera in the Hawaiian Islands for the year 2023

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Thirteen new state records and six new island records are reported for introduced Lepidoptera in Hawai'i. One new species-level identification, two new corrections to previous identifications, and one new status change are noted. Additional taxonomic corrections and updates to the lists in Austin & Rubinoff (2022, 2023) are provided.

The Hawaiian Islands are the "invasion capital" of the world with more introduced species than virtually anywhere else on per-area basis. Despite having nearly 1.5 million residents and over 140 years of entomological surveys, Hawai'i still has countless new native insect species awaiting discovery and dozens of new introduced insect species continuing to arrive year after year to the state, demonstrating both the incomplete state of knowledge of the native fauna and poor quarantine controls over imports. Understanding the number of new alien species establishing every year is an important baseline for evaluating quarantine effectiveness against serious invasive pests. Records of new alien species are an important part of such an effort because they reflect the effectiveness of exclusion efforts across the state. Increasing or decreasing numbers of newly introduced species serve as a warning system for understanding the efficacy of quarantine and exclusion efforts in the archipelago.

Information regarding the formerly published distributions in Hawai'i of species discussed herein is based on Nishida (2002), Starr *et al.* (2004), Howarth *et al.* (2012), and Austin & Rubinoff (2022, 2023). Identifications were made by the first author except where otherwise noted. Label data were transcribed verbatim except for corrections to Hawaiian spelling and orthography. Any other corrections to data labels are provided in brackets following the verbatim label. Atypical coordinates are presented verbatim but more conventional coordinates are provided in brackets. Identifications were based on external morphology, genitalia dissections, and cytochrome oxidase I sequence data (COI barcode; GenBank accession numbers provided). COI sequence data, including data from Austin & Rubinoff (2022), is available as a BOLD dataset [link]. Specimens were compared with illustrations and figures in the published literature as well as through comparisons with material deposited at the Bernice Pauahi Bishop Museum (BPBM), Hawai'i Department of Agriculture (HDOA), Natural History Museum, London (NHMUK), and the University of Hawai'i Insect Museum (UHIM). Voucher specimens and other examined material are deposited in these collections as noted.

Crambidae

Terastia sp. A

Status change

This species has previously been considered introduced in Hawai'i (Swezey 1923, Zimmerman 1958). It had been identified as either *Terastia meticulosalis* (Swezey 1923,

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Zimmerman 1958) or *T. subjectalis* (Nishida 2002), but Austin & Rubinoff (2022) considered it distinct from both of these species and listed it as "*Terastia* sp. A" after examining recent specimens from Maui, which represented the first records since Swezey (1923). We recently collected two more specimens from remnant native dry forest on Oʻahu, representing the first Oʻahu records in over a century, and which also differ significantly from any of the described species of *Terastia* (see Sourakov *et al.* 2015, 2022). We now propose that the species of *Terastia* in Hawaiʻi is an undescribed, endemic, likely endangered species associated with wiliwili (*Erythrina sandwicensis*). Andrei Sourakov (University of Florida) agreed with this assessment (pers. comm., 2024). This is not the first time a native species has been mistaken for something invasive, but it demonstrates the poor level of basic knowledge concerning not just the taxonomy but the conservation status of native Hawaiian insects.

Material examined. **O'ahu**: 1♂, 1♀, Kuaokalā F[orest] R[eserve], Kaluakauila Gulch, 21.5476, -158.2239, 430 m, 24–25 Dec 2023, K. A. Austin, UV bucket trap (UHIM).

Dryadaulidae

Dryadaula advena (Zimmerman)

New island record

Zimmerman (1978) treated this species as introduced. Nishida (2002) reported it from O'ahu; Austin & Rubinoff (2023) reported it from Kaua'i and Maui. We report it from Hawai'i island for the first time. It is likely a generalist detritivore and fungivore.

Material examined. Hawai'i: 1♂, Puna Distr[ict], 12 SSW Pāhoa, 335 m, logs coll. 2 Nov [19]77 / ex. logs of Suttonia [=Myrsine] lessertiana (A. DC.) Mez., emerged 17 Jan [19]78, R. Papp (BPBM).

Erebidae

Galtara extensa (Butler)

New island record

This species was deliberately released on Maui and Hawai'i island in 2013 to control Madagascan Fireweed (*Senecio madagascariensis*) and Cape Ivy (*Delairea odorata*) under the name *Secusio extensa*. Matsunaga *et al.* (2019) mentioned that larvae of this species had been found attacking vines of *Delairea odorata* at Palehua-Palikea, O'ahu, but considered establishment questionable. No voucher specimens were taken. Therefore, we report it from O'ahu for the first time from a female collected on Tantalus Drive and tentatively consider it established on O'ahu.

Material examined. **O'ahu**: 1♀, Papakōlea, Tantalus Drive, 21.3183, -157.8362, 130 m 19 Apr 2023, L.-A. Beamer, hand collecting (UHIM).

Maguda sp. A

New state record

This species closely resembles an undescribed species of *Maguda* known from northern Queensland, Australia. The host for *Maguda* is unknown, but other members of the tribe to which it belongs (Boletobiini) are known to feed as larvae on bracket fungi in the family Polyporaceae (Holloway, 2005). The genus *Maguda* occurs in southeast Asia and northern Australia.

Material examined. **O'ahu**: 1♂, Honolulu Watershed F[orest] R[eserve], Tantalus Arboretum Trail, 21.3266, -157.8260, 330 m, 11–12 Feb 2023, K. A. Austin, LED bucket trap / DNA extraction KA0737 / KAA diss. #0969 (UHIM).

Gelechiidae

Anacampsis obscurella (Denis & Schiffermüller)New state record

Five specimens of this species had been identified as *Tachyptila subsequella*, now considered a synonym of *Anacampsis obscurella*, by Syuti Issiki in BPBM from specimens collected over a century ago. It was likely introduced via the nursery trade. We can find no evidence of its establishment and suggest it to be treated as "adventive, but not established"

Material examined. **O ahu**: 1♂, 4♀, Honolulu, 6 Apr [19]11, Severin / ex. Japanese cherry / det. Issiki (BPBM).

Mesophleps adustipennis (Walsingham) New island record

This species was first recorded in Hawai'i in 2020 where it was reported from O'ahu (Austin & Rubinoff 2022). We report it from Hawai'i island for the first time. It has been reared in Hawai'i from seeds of koa haole (*Leucaena leucocephala*), but can occasionally be encountered in native mesic forest, where it presumably feeds on the seeds of koa (*Acacia koa*).

Material examined. **Hawaiʻi**: 1♂, Nani 'Ekolu, above Kealakekua, 19.5230, -155.8510, 1175 m, 23–25 Jun 2023, K. A. Austin et al., UVLED light sheet / DNA extraction DNA01738 (UHIM).

Symmetrischema striatella (Murtfeldt) New state record

This species was collected by Klaus Sattler during his extensive collecting trips in Hawai'i in the 1970s and 1980s but had gone unreported until now. It is native to North America, but has also been introduced into New Zealand (Hoare & Hudson 2018). It has been reported to feed on leaves and berries of various species of *Solanum* (Solanaceae). Given the widespread distribution of the host genus in Hawai'i, it is odd that the moth has not been found elsewhere or recently. It is possible that it has been extirpated from the state.

Material examined. Kaua'i: 1♂, Waimea Canyon State Park, Pu'u Hinahina area, 3,400 ft, 18 Aug 1973, K. &. E. Sattler / NHMUK diss. #21340 (NHMUK). 1♀, same as previous except 16 Aug 1973 / NHMUK diss. #21341 (NHMUK).

Geometridae

Chloroclystis pyrrholopha Turner

New island record

This species was first reported in Hawai'i as *Chloroclystis* sp. A by Austin & Rubinoff (2022) from specimens collected on O'ahu. Austin & Rubinoff (2023) identified it as *Chloroclystis pyrrholopha* and included an additional record from Kaua'i. We report it here from Hawai'i island for the first time. Its life history is unknown.

Material examined. **Hawai'i**: 1♀, Nani 'Ekolu, above Kealakekua, 19.5230, -155.8510, 1175 m, 23–25 Jun 2023, K. A. Austin et al., UVLED light sheet (UHIM).

Thyrinteina arnobia (Stoll)

New state record

In Hawai'i, this species appears superficially similar to *Iridopsis fragilaria* (Grossbeck), but to our knowledge it has only recently arrived in the state. A specimen was first photographed on Kaua'i in August 2023 [link] before adults were collected on O'ahu in December 2023. The genus is Neotropical in distribution, with *T. arnobia* the most widespread species. It is known from much of Central and South America and north to south Texas and the Caribbean. Several subspecies have been described for *T. arnobia* (see Rindge 1961), primarily based on the ratio of gray and white scaling on the male forewings, but individuals are variable even within a given subspecies or geographic area,

rendering subspecific distinction of questionable value. *Thyrinteina arnobia* is a pest on guava (*Psidium* spp.), but has also expanded its host range to become a major pest of *Eucalyptus* plantations in Brazil (Almeida *et al.* 2021). Monitoring will be required to track any host expansions to other Myrtaceae in Hawai'i, such as 'ōhi'a (*Metrosideros* spp.), as has unfortunately been the case for other introduced Lepidoptera (e.g., *Ophiusa disjungens*, *Targalla delatrix*). The two localities listed below both had guava present in the immediate vicinity, with scattered small 'ōhi'a nearby in low densities. Historical *Eucalyptus* groves were also nearby.

Material examined. **O** 'ahu: 1♂, Kuaokalā F[orest] R[eserve], small ridge between Kuaokalā trail and 4WD road, 21.5545, -158.2215, 565 m, 24 Dec 2023, K. A. Austin, UVLED light sheet (UHIM). 2♂♂, Kuaokalā F[orest] R[eserve], Kaluakauila Gulch, 21.5476, -158.2239, 430 m, 24–25 Dec 2023, K. A. Austin, UV bucket trap (UHIM).

Gracillariidae

Ketapangia leucochorda (Meyrick)

New state record & name update

This species was first reported in Hawai'i by Perreira & Yee (2017) as *Ketapangia* sp. We identify it here based on dissected specimens reared from *Terminalia catappa* (Combretaceae) from Barbers Point and Nu'uanu, O'ahu. It is likely much more widespread on O'ahu than currently recognized. Outside of Hawai'i, this species is known from India, the Ogasawara Islands (Japan), and the Gilbert Islands (Kiribati) (Kumata 1995).

Material examined. Oʻahu: 10♂, 1♀, Barbers Point Beach Park, 21.2968, -158.1048, 1 m, mines coll. 25 Feb 2023, adults ecl. 10–22 Mar 2023, K. A. Austin, K. Faccenda / HOST: Terminalia catappa (Combretaceae), leaf-miners / DNA extraction KA0758 / KAA diss. #0988 (♂), DNA extractions DNA01787, DNA01788 (UHIM). 5♂, 1♀, Honolulu, Pauoa Rd. n[ea]r Nuʻuanu Ave., along Nuʻuanu Stream, 21.3208, -157.8511, 30 m, mines coll. 6 Aug 2023, adults ecl. 16–21 Aug 2023, C. Doorenweerd / HOST: Terminalia catappa (Combretaceae), leaf-miners (UHIM).

Heliodinidae

Aetole prenticei Hsu

Note

This species was first reported in Hawai'i by Austin & Rubinoff (2023) from a series of specimens collected in 1994 at Barbers Point, O'ahu. No specimens had been collected since, so it was unclear whether or not this species had become established. We report it here from a large series of specimens reared from mines on the non-native *Sesuvium verrucosum* (Aizoaceae) from near the original 1994 locality. Mines were also observed on the indigenous *Sesuvium portulacastrum* but were not collected. No collections or observations of *Aetole prenticei* have been made from other locations on O'ahu, but extensive surveys have not been done and we believe it is likely that this species is more widely distributed than currently known.

Material examined. **O** 'ahu: 14♂, 3♀, Kalaeloa Beach, 21.2970, -158.1071, 1 m, mines coll. 25 Feb 2023, adults ecl. 2 Mar–24 Mar 2023, K. A. Austin, K. Faccenda / HOST: *Sesuvium verrucosum* (Aizoaceae), leaf-miner / DNA extraction KA0757 / KAA diss. #0987 (♀).

Lycaenidae

Brephidium exilis (Boisduval)

New island record

This species was previously known from Kaua'i, O'ahu, Maui, Lāna'i, and Kaho'olawe (Howarth & Preston 2002, Nishida 2002, Starr *et al.* 2004, Austin & Rubinoff 2023). We report it from Hawai'i island for the first time. Its larvae are known to utilize a wide variety of native and non-native hosts in Hawai'i, especially in Amaranthaceae. This identification was provided by Janis Matsunaga (HDOA).

Material examined. Hawai'i: 3 specimens (sex unknown), Kawaihae, 20.030265, -155.829695, 1 m, 31 Jul 2023, S. Chun, hand collected adults on Atriplex (HDOA).

Noctuidae

Noctua pronuba (Linnaeus)

New state record

Despite this species being highly invasive in North America and rapidly spreading across the entire continent since its initial introduction in Nova Scotia in 1979, this Hawai'i species is only known from a single specimen collected on Ka'ala, O'ahu in 2012. It has not been collected since, suggesting that if this species is established in Hawai'i, it is not abundant like it is in North America. However, an individual was photographed on a plane that landed in Honolulu from San Jose in 2022 [link]. The San Jose airport was apparently overrun by them, suggesting that this is a likely avenue of introduction for this species. Care should be taken to prevent this polyphagous species from becoming established in Hawai'i, as it is one of the most invasive and widespread moth species in North America.

Material examined. **O'ahu**: 1♂, Ka'ala, wet high mountain, 25 Feb 2012, Haines & Prestes (UHIM).

Oecophoridae

Borkhausenia nefrax Hodges

New state record & correction

This species had been previously identified in Hawai'i as *Oecia oecophila* (Autostichidae) (Staudinger) by Zimmerman (1978) where it had been reported from O'ahu (Nishida 2002) and Hawai'i island (Howarth *et al.* 2020). However, to our knowledge Zimmerman never dissected any specimens and did not figure any Hawaiian material, instead only including photographs of the holotype of *O. maculata* Walsingham, a synonym of *O. oecophila*, from the U.S. Virgin Islands. *Borkhausenia nefrax* and *Oecia oecophila* are superficially two very similar species, but are distinct in the male and female genitalia.

Borkhausenia nefrax was commonly seen on buildings and other structures in October 2022 in the immediate vicinity of Hale Pōhaku (Onizuka Center for International Astronomy) on Maunakea and a few were collected. One male was dissected and confirmed to be *B. nefrax* based on comparison to illustrations in Kuchlein & Van Lettow (1999). The genitalia is stored in a glycerin-filled microvial instead of slidemounting. A 1,494 base pair fragment of COI (Genbank Accession PP214158) of a sequenced specimen is a 100% match to several BIN members of BOLD:AAD8018, identified as *Borkhausenia nefrax* from California and Norway.

Borkhausenia nefrax is known from the western United States (Hodges 1974), France (Minet 1978), Spain (Vives Moreno 1981), and the Netherlands (Kuchlein & Van Lettow 1999). Though described from Arizona, it likely is an introduced species in North America and originated in Europe. Prior to Minet (1978), this species had been identified in France as Oecia oecophila, which may explain why Zimmerman identified the Hawai'i species as such. Oecia oecophila is not known to occur in Hawai'i and all previous records of it in Hawai'i (e.g., Zimmerman 1978, Howarth et al. 2020) should be considered misidentifications of B. nefrax. Larvae are detritivorous and fungivorous. As a synanthropic species, it should be expected in and around other buildings in Hawai'i, but its small size and dull forewing coloration has probably helped it escape notice until now.

Material examined. **Hawai**'i: 3♂, Mauna Kea Ice Age N[atural] A[rea] R[eserve], Hale Pōhaku, 19.7617, -155.4560, 2830 m, 18 Oct 2022, K. A. Austin, J. B. Reil, S. Schachat, hand collecting at night outside / DNA extraction KA0712 (UHIM).

Tachystola hemisema (Meyrick)

New state record

This species was photographed and later collected in Waikōloa Village, Hawaiʻi island. It may belong to a complex of at least five *Eucalyptus*-associated Australian species (Sterling *et al.* 2023), some of which have recently become established in New Zealand (Hoare & Hudson 2018), California (Pohl & Landry 2023), and England (Sterling *et al.* 2023). At present, we choose to treat the Hawaiʻi taxon as conspecific with the New Zealand and California species (*T. hemisema*) and distinct from the England species (*T. mulliganae*) based on the yellower wings more contrasting terminal forewing markings. Unfortunately, the only specimen collected in Hawaiʻi is a female, which lack significant morphological differences to separate species. Future molecular work is needed to confirm the status of the Hawaiʻi taxon.

Material examined. Hawai'i: 1♀, Waikōloa Village, 19.9494, -155.7800, 308 m, 21 Jul 2023, Kyle Kashner, UV light / DNA extraction KA0938 (UHIM).

Opostegidae

Pseudopostega zelopa (Meyrick)

New state record

Three specimens of this miniscule moth were collected in Wailupe Valley in heavily disturbed open lowland forest. It closely agrees with the description and figures of *P. zelopa* provided in Puplesis & Robinson (1999), which is a common and widespread species in South and Southeast Asia. The host plant is unknown, but is likely to be a stem miner (Erik van Nieukerken, pers. comm., 2023). *Ficus*, *Justicia*, and *Asystasia* are potential hosts that are present in the area that may be worth searching for mines. This is the first record of a non-native opostegid in Hawai'i. The endemic opostegid genus *Paralopostega* are leaf-miners on *Melicope* spp. (Rutaceae) but are rarely collected.

Material examined. **O'ahu**: $2 \circlearrowleft$, $1 \hookrightarrow$, Wailupe Valley, 21.3011, -157.7567, 100 m, 31 Mar 2023, UVLED light sheet, K. A. Austin, K. Faccenda / DNA extractions DNA01654, DNA01655, DNA01656 (UHIM).

Pvralidae

Assara seminivale (Turner)

New state record & correction

This species has been previously identified in Hawai'i as *Assara albicostalis* Walker based on O'ahu material examined by Dr. Klaus Sattler (Howarth & Sattler 1982). Austin & Rubinoff (2023) reported it from Hawai'i island, but suggested that the species in Hawai'i may be *A. seminivale* (Turner), the macadamia kernel grub, but lacked molecular data at the time. Having now sequenced a 1,494 base pair fragment (GenBank Accession PP214157) of COI for the Hawai'i taxon and finding it a 99.85% match to a specimen from Australia (GU695437.1), which is a BIN member of BOLD:AAD8506, along with other specimens of *Assara seminivale* from Australia, Papua New Guinea, and French Polynesia, we now confirm the presence of *A. seminivale* in Hawai'i and suggest that all previous identifications of *A. albicostalis* in Hawai'i are misidentifications of *A. seminivale*. This is important because *A. seminivale* is a significant pest of macadamia nuts in Australia whereas *A. albicostalis*, although very closely related, is not known to use macadamia, instead using various species of Dipterocarpaceae to complete development (Nakagawa *et al.* 2003).

Sphingidae

Hippotion rosetta (Swinhoe)

New island record

Nishida (2002) listed a junior synonym of this species, *Hippotion depictum* Dupont, as having been intercepted in quarantine and not established in the Hawaiian Islands. It was first collected in 1998 from Oʻahu and Kauaʻi (Kumashiro *et al.* 2002) before being reported from Maui by Howarth *et al.* (2012) and considered established by Austin & Rubinoff (2022). We report it from Hawaiʻi island for the first time.

Material examined. **Hawaiʻi**: 1♂, Puʻu Makaʻala N[atural] A[rea] R[eserve], Kulani Section, along road at E border of S Boundary Unit, 1500 m, 19.55456, -155.28568, UV light on sheet, 21 Oct 2011, W. Haines, A. Prestes (UHIM).

Tineidae

Xystrologa grenadella (Walsingham) New state record

This species is widespread in the Caribbean, where it occurs from Grenada north to Puerto Rico and Jamaica. It is also present in south Florida and Bermuda, but it is unclear if it is native there or not. It has also been recently reported infesting greenhouses in Germany (Davis *et al.* 2012). It has been reported as a general detritovore and fungivore, but can also be a significant pest of the bark of *Ficus* and the roots of cultivated orchids and pineapple (Davis *et al.* 2012). This identification was provided by Bruno Rasmussen.

Material examined. **O'ahu**: 2♂, 1♀, Honolulu Watershed F[orest] R[eserve], Tantalus Arboretum Trail, 21.3266, -157.8260, 330 m, 11–12 Feb 2023, K. A. Austin, UV light trap (UHIM). 5♂, 5♀, Honolulu Watershed F[orest] R[eserve], Makiki Valley Trail, 21.3259, -157.8244, 340 m, 11–12 Feb 2023, K. A. Austin, UV light trap / DNA extractions KA0735, 0736 / KAA diss. #0967(♂), #0968(♀) (UHIM).

Tortricidae

Cacocharis cymotoma (Meyrick)

New state record

This species was first detected in Hawai'i from photographs posted on iNaturalist from January 2022 on Kaua'i [link] and January 2023 on Hawai'i island [link]. Larvae were subsequently found in many locations on O'ahu feeding on the introduced species *Phyllanthus debilis* (Phyllanthaceae), where it appears to be common and widespread. A single specimen was also found by Army Natural Resources, O'ahu (ANRPO) staff on leaves of the critically endangered mēhamehame (*Flueggea neowawraea*, Phyllanthaceae) in one of their greenhouses. ANRPO staff later noticed numerous additional caterpillars in their greenhouse, again attacking *Flueggea*, suggesting this moth may be of conservation concern by impeding restoration of this rare tree. *Cacocharis cymotoma* natively occurs in Florida, Central America, the Caribbean, and much of South America, where it has been reared from *Phyllanthus acidus* Skeels and *P. niruri* L. (Brown 2008).

Material examined. Oʻahu: 4♂, 7♀, Kahanaiki, n[ea]r Kawainui Marsh, 21.3794, -157.7653, 20 m, larvae coll. 5 Feb 2023, adults ecl. 18 Feb–3 Mar 2023, K. A. Austin / HOST: Phyllanthus debilis (Phyllanthaceae), leaflet-tiers (UHIM). 1♂, Honolulu Watershed F[orest] R[eserve], Tantalus Arboretum Trail, 21.3266, -157.8260, 330 m, 11–12 Feb 2023, K. A. Austin, UV light trap (UHIM). 4♂, 1♀, Kuliʻouʻou For[est] Res[erve], Kuliʻouʻou Ridge Trail, 21.3078, -157.7231, 200 m, larvae coll. 18 Mar 2023, adult ecl. 6–12 Apr 2023, K. Faccenda et al. / HOST: Phyllanthus debilis (Phyllanthaceae), leaflet-tiers (UHIM). 1♂, Waialua, UH Experimental Station, 21.5374, -158.0889, 220 m, larva coll. 29 Mar 2023, adult ecl. 24 Apr 2023, K. Faccenda / HOST: Phyllanthus debilis (Phyllanthaceae), leaflet-tiers (UHIM). 1♀, Schofield Barracks, Army Natural Resources Program greenhouse, 21.4999, -158.0787, 295 m, larva coll. 12 Apr 2023, adult ecl. 26 Apr 2023, F. Joy / HOST: Flueggea neowawraea (Phyllanthaceae), leaf-tier (UHIM).

Zygaenidae *Illiberis* sp. A.

New state record

A single specimen of this species is present in BPBM identified as *Goe diaphana* Hampson. However, the wing shape, scale pattern, and venation more closely resembles species of *Illiberis* Walker, such as *I. pruni* Dyar and *I. kardakoffi* Alberti. Though the specimen lacks rearing data, *I. pruni* is an especially interesting possibility, considering that Severin collected *Anacampsis obscurella* on the same date in Honolulu from Japanese cherry, a known host for *I. pruni* (see *Anacampsis obscurella* account above). Regardless of its identity, it should be considered "adventive, but not established" in Hawai'i. This is the first record of Zygaenidae from Hawai'i.

Material examined. Oʻahu: 1♀, Honolulu, 6 Apr [19]11, Severin (BPBM).

ADDITIONAL CORRECTIONS TO NISHIDA (2002) OVERLOOKED BY MATSUNAGA *ET AL*. (2019) AND AUSTIN & RUBINOFF (2022, 2023)

Noctuidae

Amyna octo (Guenée) in Nishida (2002) should be Amyna axis (Guenée) per Nielsen et al. (1996). This synonymy was overlooked by Austin & Rubinoff (2022). To our knowledge, this species is known in Hawai'i from two specimens: the type of Celaena perfundens Walker, 1858, described from the "Sandwich Islands" and currently treated as a synonym of A. axis, and a more recent record from O'ahu in BPBM. Because of the minor pest status of A. axis, we find it more likely these two records stem from separate introduction events and failed subsequent establishments than a population that has persisted in Hawai'i nearly undocumented for 165+ years. Thus, we suggest that A. axis be treated as "adventive, but not established" in Hawai'i.

Leucania loreyimima Rungs in Nishida (2002) should be *Leucania stenographa* Lower (Edwards 1992). This synonymy was overlooked by Austin & Rubinoff (2022).

Pyralidae

There has been some recent confusion regarding *Ectomyelois ceratoniae* (Zeller) in Hawai'i [see Austin & Rubinoff (2022, 2023)]. Nishida (2002) included it as *Ectomyelois ceratoniae*, but Austin & Rubinoff (2022) listed it as *Apomyelois ceratoniae* (Zeller), following Nuss *et al.* (2003–2023). Austin & Rubinoff (2023) listed it again as *Ectomyelois ceratoniae*. According to Ren & Yang (2016), the current accepted combination is *Ectomyelois ceratoniae*, the name used in Nishida (2002) and Austin & Rubinoff (2023).

ACKNOWLEDGMENTS

We thank Lauren-Ashley Beamer for bringing the *Galtara extensa* record to our attention, Francis "Jay" Joy (ANRPO) for bringing the *Flueggea* record of *Cacocharis cymotoma* to our attention, Janis Matsunaga (HDOA) for bringing the *Brephidium exilis* record to our attention, Kyle Kashner for collecting the specimen of *Tachystola hemisema* for us, and Bruno Rasmussen for help in identifying *Xystrologa grenadella*. We thank Joe and Kristen Souza (Nani 'Ekolu) for allowing us to collect on their property and Cynthia King (Hawai'i DLNR) for collecting permits. We thank Jeremy Frank (BPBM), David Lees (NHMUK), and Janis Matsunaga (HDOA) for allowing us to examine material under their care. We thank Dan Nitta, Camiel Doorenweerd, and Michael San Jose for assistance with molecular work and Kevin Faccenda, Brad Reil, and Sandra Schachat for assistance with

field work. This study was supported, in part, by USDA Farm Bill project #3.0227.05: "Diagnostic Tools to Identify Exotic Tortricidae that Threaten U.S. Agriculture." Additional funding was provided by The College of Tropical Agriculture and Human Resources (CTAHR), University of Hawai'i at Mānoa; and USDA Cooperative State Research, Education and Extension (CSREES), Grant/Award Number: HAW00942-H.

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