

## New State Records and Additions to the Alien Terrestrial Arthropod Fauna in the Hawaiian Islands

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**Abstract.** An annotated list of 393 adventive terrestrial arthropod species plus three new varieties of known established species, which have been recorded in Hawaii since the Fourth Edition of Bishop Museum's Hawaiian Terrestrial Arthropod Checklist (Nishida 2002), is presented. This compilation includes records of over 362 nonnative arthropod species published between the years of 2001 and 2017 as well as over 30 new Hawaii State records that have not been previously recorded. Annotations include date first detected, island distribution, citation, relevant biological notes, and for new state and island records, the collection data. A separate table with about 150 entries lists the synonyms, misidentifications, deletions, and changes of status for species included in the 2002 checklist that were discovered during our research. However, the latter list is not comprehensive as a complete revision of the 2002 checklist was beyond the scope of our project. Also included is a bibliography of the approximately 270 source documents that were consulted. We intend for this publication to be a useful supplement to the 2002 edition of the Hawaiian Terrestrial Arthropod Checklist.

**Key words:** New state records, Hawaii, insects, arthropods, checklist

Since its first edition was published in 1992, the Hawaiian Terrestrial Arthropod Checklist (Nishida 1992) has been an indispensable reference not only for Hawaii's entomologists but for biologists from all areas of study. The Checklist is an "authority file of non-marine arthropod names for the Hawaiian Islands" and has been the basis for determining the status of both native and adventive arthropod species. While at the Bishop Museum, Nishida updated The Checklist three times: in 1994, 1997, and, finally, in 2002. Since Nishida's departure from the museum, an update has not been issued in over sixteen years. The realization that invasive species pose many of the greatest threats to Hawaii's environment, agriculture, native ecosystems, and people justifies the high priority given to maintaining an updated checklist of established alien species in the Hawaiian Archipelago.

Biologists working in numerous fields rely on this checklist and refer to it when making administrative decisions and rules, identifications, or diagnostics, as well as for data entered into reports and publications on invasive species and new arrivals into the Islands. Biosecurity officials refer to this checklist when interceptions are made on both imports and exports. When State Plant Quarantine inspectors intercept arthropod pests coming into Hawaii's ports, the Checklist is consistently consulted to determine if the species is already established in the state or not known to occur. If the species in question is identified as not known to occur in Hawaii, dispositions of those shipments may include destroying, treating, or refusing entry of the shipment. The United States Department of Agriculture (USDA) also regularly requests establishment data of arthropod pests in Hawaii to regulate importation of plants

and plant products from Hawaii to the U.S. mainland. The Checklist also assists in the conservation of native Hawaiian arthropod species by providing a quick reference on the status and island distribution of both native and potentially harmful alien species. It also has proven to be a resource for showing where the distribution and information gaps are, which have facilitated surveys and new research initiatives. The inclusive data allows researchers to keep better track of recognized indigenous and endemic species, therefore contributing to the studies of endangered species, conservation, and biodiversity. While the list included herein does not include an update of the native taxa, the listing of alien species can provide insight into the balance of native and adventive groups over time. Corroborating the usefulness of the Checklist was the sudden increase of new records published after the advent of the earlier editions, as researchers discovered that many of the species they were studying had not yet been formally recorded.

In the latest edition (2002), Nishida estimated around 3049 adventive arthropod species were established in the state, which was 286 species more than recorded in the 1997 edition. Since then [the 2002 edition had a listing cutoff date of around 1999 (Kumashiro et al. 2002)], hundreds of additional immigrant arthropod species have been discovered in Hawaii. These new arrivals have been recorded in various peer-reviewed scientific journals, technical reports, and other literature including some in obscure journals. These scattered references are often difficult for researchers and other stakeholders to access. Because these records are scattered, efficiently finding establishment data is often a time-consuming and onerous task. In addition, many new records have not been published

for a variety of reasons, such as the following:

- Only a few individuals or a single population may have been collected once and not collected again. In such cases, it may not be possible to identify the species or determine establishment until additional specimens or biological data become available.
- The continuing decline in the number and availability of classical taxonomists and specialists able to assist in the identification of newly discovered species in the state, especially when the species is new to science or in groups in need of revision. Thus, many collections may remain unidentified until an appropriate taxonomist is available.
- The latter problem is greatly exacerbated since there are more species of arthropods in the world than any other taxonomic group, and arriving alien species can come from anywhere through commerce and actions of people. This often leads to misidentification of specimens, synonymies, or constant confusion of correct taxonomic classification.
- Finally, with the significant decline in number of local entomologists, new records may not be discovered and published in a timely matter.

Updating the Hawaiian Terrestrial Arthropod Checklist is an enormous task which can take years, even with someone fully dedicated to the project. In an effort to gather the scattered records of newly established arthropods and to consolidate them into one easily accessible source, a USDA Farm Bill project was undertaken. To distribute our work more widely, the results of this project will be published in two parts: The addition to the 2002 Bishop Museum Arthropod Checklist (included herein) and a pathway analysis of how these immigrants arrived in the Islands.

The goal of this paper is to compile a list (Table 1) of the immigrant non-marine arthropod species that have been discovered since Nishida 2002. We include both published records as well as new records not previously published. The latter include species believed to be established that are known to us and have been authoritatively identified with voucher specimens deposited in an entomological collection. Excluded are new records for indigenous and endemic species. Since the beginning of this project, keeping up with a continuous stream of new records has delayed its publication; therefore, to disseminate the list in a timely manner, most unpublished new state records added to this list were capped at 2015, with a few relevant exceptions. New arrivals identified after this cutoff will be published in a subsequent paper. Known records published by others have been added to the list, up to the date of submission.

The arrangement of taxa follows that used in the previous checklist (Nishida 2002). That is, the taxa are arranged alphabetically within the next higher category, which is also arranged alphabetically. Thus, species are listed alphabetically within their genus, which is alphabetized within its family, and so on.

To make the list more useful, we include citations to the pertinent literature, year of earliest detection in Hawaii, collection data for previously unpublished records, island distribution, and notes on each species. New island records noted in this list refer to new records after the initial new state record listed was published, but do not include new island records of species already listed in Nishida 2002. While every effort was taken to ensure accuracy, some errors inevitably occur in a work of this magnitude. The most up-to-date name and classification scheme is used for the listed species. When applicable, synonyms and previous names are included. However, names change not only from corrections of misidentifications, but also from improvements in our understanding of the taxonomy of a group.

While compiling this list, several synonyms, misidentifications, deletions, and changes in status were discovered, in the noted source documents, for many of the species recorded in Nishida 2002. These emendations, which total about 150 changes, are included in Table 2; however, it was beyond the scope of this project to conduct an exhaustive or complete search of changes since Nishida 2002.

Over 270 source documents were consulted for included establishment records and taxonomic changes. These added published records for approximately 361 species of alien arthropods to the known fauna of Hawaii. In addition, this report adds another 33 new state establishment records that have not been reported previously, which brings the total to approximately 396 species added to the fauna since Nishida 2002 (Table 1). This brings the total number of alien, non-marine arthropod species reported to occur in Hawaii to over 3,829. However, many of these may have been extirpated and are no longer present, or populations have not established. The collection data and relevant biological notes documenting each new state and island record for these taxa as well as notes on the status changes are provided in the Collection Data and New Record Summaries section.

The information in this article is as accurate as the authors could verify; however, there may be errors or pertinent data which we missed. If any errors are detected, please contact us.

### Abbreviations

**BPBM** Bernice Pauahi Bishop Museum  
**HDOA** Hawaii Department of Agriculture  
**UH** University of Hawaii  
**USDA-APHIS-PPQ** United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection & Quarantine  
**USDA-ARS-PBARC** United States Department of Agriculture, Agricultural Research Service, Daniel K. Inouye U.S. Pacific Basin Agricultural Research Center  
**USDA-ARS-SEL** United States Department of Agriculture, Agricultural Research Service, Systematic Entomology Laboratory

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### Collection Data and New Record Summaries

Collection data for new state and island records and notes on selected status changes to the Hawaiian Terrestrial Arthropod Checklist (Nishida 2002).

### Arachnida: Acari

#### Eriophyidae

#### *Aceria guerreronis* Keifer

#### NEW STATE RECORD

Although this species was recorded on Maui as far back as 1991, this identification was based on associated host plant damage to coconut fruit. Since then, this eriophyid has reached Oahu in 2002, Molokai in 2014, and Kauai in 2016. A morphological identification was finally provided by E. McDonald in 2016.

**Collection records:** MAUI, Lahaina, 1.VII.1991, ex. *Cocos nucifera* fruit, coll. D. Tsuda, det. B. Kumashiro. OAHU, Nanakuli, 15.IX.2000, ex. *C. nucifera* fruit, coll. L. Nakahara & R. Heu. MOLOKAI, Kalamaula, 10.XII.2014, ex. *C. nu-*



*cifera* fruit, coll. L. Buchanan, det. B. Kumashiro, 21.XII.2014. **KAUAI**, Kilauea, 11.I.2016, ex. *C. nucifera* fruit, coll. R. Ward, det. E. McDonald.

### *Phyllocoptes bougainvilleae* Keifer

#### New island record

**Collection records:** **HAWAII**, Kona, Kealakehe, 29.IV.2016, ex. *Bougainvillea* sp. foliage, coll. B. Bushe, det. G.A. Evans, 27.XII.2016. Vouchers at HDOA.

## Arachnida: Araneae

### Lycosidae

#### *Hogna crispipes* (L. Koch)

#### New island record

This species was first listed from Kahului in 2002 as *Lycosa* sp. A and provisionally considered native (Howarth and Preston 2002); however, the form of the male pedipalp is closer to extra-limital species of *Hogna* rather than the native Hawaiian wolf spiders. *Hogna* is the largest genus of wolf spiders with a nearly world-wide distribution. The Maui specimen proved to be the same species as an adventive species found on Kauai and Oahu, which was recently identified by V. Framenau as *H. crispipes* (L. Koch, 1877). This species is widespread in Australia and many Pacific islands (Framenau et al. 2006).

**Collection records:** **KAUAI**, Lihue, 21°58'52"N, 159°22'16", 23.IX.1997, coll. D. Jameson, 1 female; Kahili Mountain Park, near Koloa, 800 ft. elev., 21°56'12"N, 159°28'45"W, 8.II.1998, spotlighting on lawn, coll. J.W. Berry, 2 males, 4 females, 10 juv.; Same data except: 10.III.1998, lab reared, 1 male. **OAHU**, Kunia, Village Park, 8.X.1988, coll. A. Manning, 1 female; Kahaluu, 1.XI.1993, in yard, no coll., 1 male; Kaneohe, near Valley of Temples, 3.XII.1993, outside house, coll. I. Santos Bear, 1 female with spiderlings. Det. V. Framenau.

## Insecta: Coleoptera

### Anthribidae

#### *Eucorynus crassicornis* (Fabricius)

#### NEW STATE RECORD

An adult weevil emerged from a Chinese imported garlic bulb purchased from an Oahu supermarket in 2010. According to G.A. Samuelson, a single specimen was turned in to him by W.D. Perreira previous to this collection, in 2005. Additional adults have been found at large in homes that had similar Chinese imported garlic bulbs sitting out on counter-tops. Specimens have also been found at large associated with *Pritchardia* palms and rotting *Cassia*. G.A. Samuelson sent one specimen to Barry Valentine to confirm the identification.

The following records are in BPBM: **Collection records:** **OAHU**, Kalaeloa, 40 ft elev., 26.V.2005, rotting *Cassia*, coll. W.D. Perreira, det G.A. Samuelson; Honolulu, Kalihi Valley, 21°20.7'N, 157°51.6'W, 5.VI.2011, 120 m, at light, coll. F.G. Howarth, det. G.A. Samuelson.

The following records are in HDOA: **Collection records:** **OAHU**, Aiea, 29.VIII.2010, ex. garlic bulb imported from

China, coll. C. Young, Sent to SEL- no ID yet; Waimea Valley Arboretum, 6.VI.2011, at large on *Pritchardia* sp., coll. W. Nagamine, det. F.G. Howarth.

### Chrysomelidae

#### *Trachymela sloanei* (Blackburn)

#### NEW STATE RECORD

*Trachymela sloanei* was first discovered in 2011 on *Eucalyptus camaldulensis* trees exhibiting peculiar notches along leaf edges, characteristic of caterpillar feeding. A closer inspection of the red gum trees revealed numerous larvae and two adult chrysomelids under the tree bark. Species identification was confirmed by Alexander Konstantinov at USDA-ARS-SEL in December, 2011.

This native to Australia ferociously invaded New Zealand in 1976 (Brockhoff and Bain 2000), defoliating eucalyptus trees throughout the country. In 1998, it was detected in California, the first record of this species in the U.S. This species is known to be intercepted at Honolulu ports of entry on shipments of cut myrtle. This discovery of *T. sloanei* in Waimanalo represented the first records of the Australian tortoise beetle in Hawaii. In May 2013, *T. sloanei* was collected from red gum trees at Kapalua, Maui, a new island record.

*Trachymela sloanei* adults and larvae are nocturnal, feeding at night on the leaves, and hiding under the tree bark during the day. They sometimes hide high up in the trees and it is common to see the feeding damage but not find the culprits. The adult is 6-7 mm long, entirely brown with darker mottled spots and can be mistaken for a ladybug. Eggs are laid under the bark or on the leaves. *T. sloanei* is reported to feed on a variety of *Eucalyptus* species, but in Hawaii it has only been confirmed feeding on *E. camaldulensis* thus far.

**Collection records:** **OAHU**, Waimanalo, University of Hawaii Research Station, 24.II.2011 (Correction to Conant 2013- printed as first collection in 2009), ex. *Eucalyptus camaldulensis* foliage, coll. W. Nagamine, det. A. S. Konstantinov, 20.XII.2011. **MAUI**, Kapalua, 10.V.2013, ex. *E. camaldulensis* foliage, coll. C. Baker, det. B. Kumashiro, 16.V.2013. Vouchers at HDOA.

### Clambidae

#### Undetermined genus sp. A

Without specific identifications, it is not possible to determine whether the specimens from Kauai and Maui represent one or two species, or whether they are native and therefore not adventive.

### Curculionidae

#### *Atrichonotus taeniatulus* (Berg)

#### NEW STATE RECORD

Several adult weevils were initially dissected from the crop of a deceased black francolin bird in 2009, however, field collected specimens were not found until 2010 when adults were observed infesting *Medicago lupulina*.

**Collection records:** **HAWAII**, South Kohala/North Kona, 26.I.2009, ex. crop of dead black francolin, coll. J. Bright, det. J. Prena, 25.II.2009; Waimea, 7.IV.2010, ex. *Melilotus alba*, coll. W. Okamura, det. B. Kumashiro, 12.IV.2010; North Kohala- Kaauhuhu, 7.VI.2010, ex. *Medicago lupulina*, coll. W. Okamura, det. B. Kumashiro, 8.VII.2010. Vouchers at HDOA.

### ***Naupactus leucoloma* Boheman**

The white-fringed weevil, *Naupactus leucoloma*, was first detected swarming outside of a homeowner's porch, near pasture land on the Big Island. This species was reported by Conant (2013), however collection data for this new state record is reported here.

*N. leucoloma* and *Atrichonotus taeniatulus*, were both collected in and around North Hawaii island ranchlands and cattle pastures of Waimea and Kohala. These species are well known pests of alfalfa (*Medicago sativa*, Fabaceae) and other legumes used as cattle graze in pastures. In addition, *N. leucoloma* is a polyphagous pest of over three-hundred known species of agricultural crops, pastures, ornamentals, and other plant species where they are established [Southern United States, Central and South America, Australia, New Zealand, and South Africa (Walker 2006)]. Some hosts recorded in literature include *Brassica* spp., *Glycine max*, *Citrullus lanatus*, *Solanum lycopersicum*, *Ipomoea batatas*, and *Zea mays*. Adult weevils feed on the foliage of hosts, while larvae cause the greatest damage by feeding on roots in the soil (Capinera 2008). Both *A. taeniatulus* and *N. leucoloma* have fused elytra and are therefore limited in dispersal capabilities by crawling and human aided hitchhiking.

**Collection records:** **HAWAII**, Waimea, 3.VIII.2013, ex. at large, congregating outside home near pasture, coll. P. Conant, det. L. Chamorro, 30.X.2013; Waimea, 10.IX.2013, ex. *Amaranthus spinosus*, coll. S. Chun, M. Fukada, R. Curtiss, det. B. Kumashiro, IX.2013. Vouchers at HDOA.

### ***Scolytogenes* sp. A**

#### **NEW STATE RECORD**

Specimens identified by Donald J. Bright as *Scolytogenes* sp. A were collected from coffee berry borer traps (BROCAP traps with a mixture of 3:1 methanol:ethanol) at two separate coffee farms on Hawaii island.

**Collection records:** **HAWAII**, Kainaliu Experiment Station, 2.XI.2010, coffee berry borer trap, coll. J. Scharff; Pahala, 8.XII.2010, coffee berry borer trap, coll. C. Hirayama, det. D.J. Bright, 2011. Vouchers at HDOA.

### **Nitidulidae**

#### ***Aethina tumida* (Murray)**

#### **New island record**

**Collection records:** **KAUAI**, Kapaa, 22.V.2012, ex. managed *Apis mellifera* hive at residence, coll. J. Conrow, det. M. Ramadan, 24.V.2012. Voucher at HDOA.

### **Scarabaeidae**

#### ***Protaetia orientalis* (Gory & Percheron)**

#### **New island records**

While *Protaetia orientalis* was first discovered on Oahu in 2002, populations have exploded in recent years, making this relatively large beetle (between 2 cm and 2.5 cm) a surprising sight to residents and a consistently reported pest. Adults can be sometimes be seen aggregating in large numbers on over-ripe fruit and fruit-producing flowers, especially the inflorescence of palm trees, mangoes, and lychee. Although reports from Oahu residents have suggested that these larger groups of feeding beetles can damage flowers and in some cases reduce fruit yield, there have not been any scientific studies to date.

**Collection records:** **HAWAII**, Keaukaha, 30.I.2013, ex. larvae under ironwood log, coll. Q. Maeda, det. B. Kumashiro, 1.II.2013. Hawi, 11.II.2014, on *Cocos nucifera* foliage, coll. K. Fujimoto, det. M. Ramadan, 16.V.2014. **KAUAI**, Lihue, 20.V.2015, on avocado tree, coll. S. Rapozo, det. B. Kumashiro; Puhi, 24.VI.2015, ex. larvae in mulch at residence, coll. Angelo, det. B. Kumashiro. **MAUI**, Kahului, 15.IX.2010, ex. feeding on *Zea mays* corn ear, coll. M. Fukada, det. B. Kumashiro, 4.X.2010. Vouchers at HDOA.

### **Tenebrionidae**

#### **Bolitophagini?; Undetermined genus sp. A**

#### **First field collection, unknown establishment**

A single collection of several adult Tenebrionids was made from wet lumber in Hilo. While the lumber was imported, it would have been shipped dry and become moist while sitting on the property, making it difficult to determine if these beetles may have hitched a ride with the shipment or not. The specimens were sent to G.A. Samuelson for identification, however, they were unidentifiable past the tribe level. Samuelson believes a specialist on Tenebrionidae will need to examine these beetles for species identification.

**Collection records:** **HAWAII**, Hilo, 16.XII.2013, coll. J. Morell, ex. wet wood, det. G.A. Samuelson, 18.II.2014. Vouchers at HDOA.

### ***Menephilus arciscelis* Marseul**

#### **NEW STATE RECORD**

Several adults were collected at a Mililani residence over the course of two years. Not much can be found in literature (in English), but this species is known to be native to Japan.

**Collection records:** **OAHU**, Mililani, 24.IX.2009, coll. W. Nagamine, at large in home; Mililani, 10.VII.2010, coll. W. Nagamine, at large, under lumber; Mililani, 9.IX.2011, coll. W. Nagamine, at large, on wall outside. All listed collections det. G.A. Samuelson, 18.II.2014. Vouchers at HDOA & BPBM.

### ***Stethotrypes raffrayi* (Thomson)**

#### **NEW STATE RECORD**

Hundreds of tiny dark brown beetles with gold patches were found crawling around wooden nursery benches covered in

algae. Adult beetles, larvae, and pupae crowded under and within potted plants, in corners of nursery benches, and under wet rocks and bricks. With the expertise of Dr. Wolfgang Schawaller, an identification was finally determined.

According to Schawaller, *Stethotrypes raffrayi* is known from Java, Sumatra, and the Philippines. While species in the tribe Leiochrini are not known to be pests, the high numbers of these beetles not previously known to occur in the U.S. were becoming problematic in some nursery plants exported to the mainland U.S. These tenebrionids are just over 2 mm and resemble coccinellid beetles with their round, dome-like elytra.

**Collection records:** HAWAII, Panaewa, 31.VIII.2012, coll. C. Hirayama, ex. on wooden nursery benches covered with algae, det. W. Schawaller, 5.II.2018; Hilo, 13.VI.2015, ex. under plant pots and bricks in residential yard, coll. B. Azama. Vouchers at HDOA & BPBM.

## Insecta: Diptera

### Agromyzidae

*Liriomyza* sp. A (apparently undescribed)

#### NEW STATE RECORD

Specimens of this leafminer were reared from blotch mines on the leaves of crown flower (*Calotropis gigantea*) and tropical milkweed (*Asclepias curassavica*) planted at the University of Hawaii at Manoa. Adults and associated host plant damage appeared to be new to Hawaii and specimens were sent to USDA-ARS-SEL, then referred to Owen Lonsdale at the Canadian National Collection of Insects, Arachnids and Nematodes.

According to O. Lonsdale, this leafminer appears to be an undescribed species of *Liriomyza* most closely related to *L. asclepiadis* and *L. subasclepiadis*. Larvae produce blotch mines on leaves of *Calotropis gigantea*. Populations of this undescribed *Liriomyza* sp. appears to be controlled on Oahu by several locally established parasitoids, including *Closterocerus utahensis* Crawford and *Chrysocharis* sp. (Eulophidae- larval endoparasitoids) and *Diglyphus begini* (Ashmead) (Eulophidae), a larval ectoparasitoid.

**Collection records:** OAHU, Manoa, University of Hawaii campus, ex. mining *Calotropis gigantea* foliage, 15.VIII.2013, coll. D. Tsuda; Kaneohe, ex. mining *C. gigantea* foliage, 13.II.2013, coll. M. Ramadan & W. Nagamine; Kunia, ex. mining *C. gigantea* foliage, 26.III.2013, coll. J.N. Matsunaga. Vouchers at HDOA.

### Ceratopogonidae

*Atrichopogon levis* (Coquillett)

#### New island record

**Collection records:** OAHU, Honolulu, Moanalua Stream, 21°21'N, 157°52.7'W, sweeping stream margin, coll. F.G. Howarth, 9.I.2009, 2 males, 3 females; same data except 25.I.2009, 3 males, det. F.G. Howarth, 2009. Vouchers at BPBM & HDOA.

### *Culicoides jamaicensis* Edwards

#### New island record

**Collection records:** OAHU, Kalaeloa, Barbers Point, 7.X.2000, pan trap beneath light, W.D. Perreira, 1 female; Honolulu, Kalihi, 21°20.6'N, 157°51.6'W, -.IV.2007, 120m elev., ex. at light, coll. F.G. Howarth, 1 female; same data except 4-5.VIII.2007, 1 male, 3 females; 16.XI.2007, 1 female; 29-30.I.2009, det. F.G. Howarth, 2009. Vouchers at BPBM & HDOA.

### *Forcipomyia* cf. *quasiingrami* Macfie

#### New island record

**Collection records:** HAWAII, Kurtistown, 19°34.8'N, 155°04'W 290 m elev., 21.X.2007, ex. at blacklight, coll. F.G. Howarth and F.D. Stone, 1 male. OAHU, Honolulu, Kalihi, 21°20.6'N, 157°51.6'W, 4.XII.2007, 120 m elev., ex. at light, coll. F.G. Howarth, 1 male; same data except 28.XII.2007, 1 male, 1 female; 25.I.2009, 1 male; 28.I.2009, 1 male; 31.I.2009, 1 male, 1 female, det. F.G. Howarth, 2009. Vouchers at BPBM.

### Chironomidae

*Apedilum elachistus* Townes

#### NEW STATE RECORD

Wolff (2002) reported collecting pupae of an unidentified species of *Apedilum* during a survey of the invertebrates living in streams on Oahu. The adults identified here most likely represent the same species. *A. elachistus* is widespread in North America. Larvae are blood worms and live in eutrophic sediments in streams and shallow water bodies. When abundant, the swarming adults can become a nuisance.

**Collection records:** OAHU, Honolulu, Moanalua, 21°20.9'N; 157°53.7'W, 11.XI.2008, ex. sweeping stream margin, coll. F.G. Howarth; Same collection data except collected 29.IV.2013. Det. F.G. Howarth, conf. P. Cranston, 2013. Vouchers at BPBM and HDOA.

### Culicidae

*Aedes japonicus* (Theobald)

#### New island record

*Aedes japonicus* has been established on Hawaii island since 2004 (Larish and Savage 2005) and while a single individual was detected in a monitoring trap at Honolulu International Airport, Oahu in 2012 (Yang and Hasty 2013), this mosquito has not been collected from the field on other main islands until 2013 (Magnacca 2015). In addition to Magnacca's (2015) list of new island establishments on Oahu and Kauai, this single specimen collected at The Nature Conservancy's Waikamoi Preserve on Haleakala, Maui is evidence of this species' spread across the Hawaiian Islands.

**Collection record:** MAUI, Haleakala, Waikamoi Preserve, 8.X.2016, coll. M. Fukada, det. J.N. Matsunaga, XI.2016. Voucher at HDOA.



## Insecta: Hemiptera

### Aleyrodidae

#### *Aleurotrachelus atratus* Hempel

##### New island record

**Collection records:** HAWAII, UH Hilo Campus, 23.XII.2013, ex. *Cocos nucifera* foliage, coll. S. Cabral, det. B. Kumashiro, 31.I.2014. Vouchers at HDOA.

#### *Metaleurodicus cardini* (Back)

##### New island record

**Collection records:** OAHU, Ala Moana, 24.IV.2009, ex. unknown plant foliage, coll. W. Nagamine, det. W. Nagamine, 24.IV.2009; Kakaako, 28.IV.2009, ex. *Psidium guajava* foliage, coll. W. Nagamine, det. W. Nagamine, 28.IV.2009. Vouchers at HDOA.

### Anthocoridae

#### *Montandoniola confusa* Streito & Matocq

The predaceous anthocorid bug, under the name *Montandoniola moraguesi* (Puton), was introduced into Hawaii from the Philippines in 1964 for the biological control of the Cuban laurel thrips (*Gynaikothrips ficorum*). According to Pluot-Sigwalt et al. (2009), *M. moraguesi* had been misidentified for over 45 years. Species in the genus *Montandoniola* are easily confused, as it is difficult to separate them by external morphology alone. Genitalia dissections are necessary to identify key diagnostic features. Pluot-Sigwalt et al. (2009) examined the genitalia of type specimens from various parts of the world and concluded that three cryptic species have been confused under the species name *Montandoniola moraguesi*. As a result, Pluot-Sigwalt et al. (2009) determined that *M. moraguesi* appears restricted to the Mediterranean region and Africa. *M. thripodes* and *M. pictipennis* are known from Hong-Kong and Japan, respectively.

*Montandoniola confusa* Streito & Matocq, described as a new species in Pluot-Sigwalt et al.'s review (2009), was discovered in Guadeloupe, and is found in Florida, Bermuda, Australia (Pluot-Sigwalt et al. 2009), Mexico (Cambero-Campos et al. 2010), Brazil (Tavares et al. 2013), and presumably Philippines where the Hawaiian introduction originated. Historical specimens from Hawaii were examined in this study and determined to be *M. confusa* and not *M. moraguesi*.

Prior to the 2009 study there was confusion over another name: *Macrotrachelia thripiformis* Champion, 1901, which has been used for two different species in Hawaiian literature. Lattin (2005) reviewed the literature and examined specimens from Bishop Museum. He concluded that the name *Macrotrachelia thripiformis*, listed by Nishida (2002) very likely refers to *Montandoniola moraguesi* (now *M. confusa*).

In addition, the 1965 introduction of what was then reported as "*Macrotrachelia thripiformis* (Davis & Chong 1966)" to Hawaii from Mexico was misidentified. Lattin (2005) identified a series of voucher specimens from the 1965 Mexico population release as *Macrotrachelia nigrinitens* (Stal 1860).

No field established collections of *M. nigrinitens* (= *M. thripiformis*) are known, and this species appears not to have established in Hawaii. However, as noted by Lattin (2005), anthocorids are tiny and easily missed in surveys.

### Asterolecaniidae

#### *Planchonia stentae* (Brain)

##### NEW STATE RECORD

In 2009, stems of *Hoya imperialis* var. *rauchii* from Keaau, Hawaii, were found to be infested with pit scales. Specimens were then identified by D.R. Miller as *Planchonia stentae* (Brain), the South African pit scale. Following this 2009 verification, previously unidentified specimens (Waimea, 2007) were found in HDOA's reference collection, reexamined, and consequently identified as *P. stentae*. This species has now been collected on Hawaii, Maui, and Oahu.

This South African pit scale, also known as the Euphorbia pit scale, has been recorded in California and Florida, where it has become a major pest of at least 49 introduced and native plant species (Stumph and Lambdin 2000). This species can severely weaken small and young plants, causing major stem deformation, especially at apical tips.

**Collection records:** HAWAII, Keaau, 22.IV.2009, ex. *Hoya imperialis* var. *rauchii*, coll. C. Noel, det. D.R. Miller, 3.IX.2009; Waimea, 19.XI.2007, ex. *Sophora chrysophylla* stems, coll. J. Higashino, det. J.N. Matsunaga, 28.IX.2009. MAUI, Pukalani, 12.III.2013, ex. *Asclepias physocarpa* stems, coll. M. Fukada, det. J.N. Matsunaga, 25.III.2013. OAHU, Honolulu, Pawaa, 12.VII.2014, ex. *Heliotropium anomalum* var. *argenteum* stems, coll. J.N. Matsunaga, det. J.N. Matsunaga, 25.VIII.2014. Vouchers at HDOA.

### Cicadellidae

#### *Draeculacephala portola* Ball

##### NEW STATE RECORD

*Draeculacephala portola* Ball was reported from Hawaii in 1959 by Young and Davidson (1959), however, according to Napompeth and Nishida (1974) this was in error. In 1992, Christopher H. Dietrich (Formerly USDA-ARS-SEL, now University of Illinois Urbana-Champaign) who published a revision of the genus *Draeculacephala*, examined Hawaiian specimens. All Hawaii specimens were of *D. californica*, *D. inscripta*, and *D. minerva*, reinforcing the previous misidentification record. The 2012 collection represents a new state record for *D. portola*.

**Collection records:** HAWAII, Ninole, 19.XII.2012, ex. *Nasturtium officinale* foliage, coll. S. Bergfield, det. S.H. McKamey 20.II.2013. Vouchers at HDOA.

### Coccidae

#### *Ceroplastes eugeniae* Hall

##### NEW STATE RECORD

D.R. Miller tentatively identified Hawaii specimens as *Ceroplastes* poss. *rusci*, but noted that these had more stig-

matic setae than typical *C. rusci* and seemed slightly larger. Slide-mounted specimens were forwarded to Ana Lúcia B. G. Peronti, Universidade Federal de São Carlos, as she worked on the revision of the genus in Brazil. Peronti subsequently provided a firm identification as *Ceroplastes eugeniae* Hall. Previous notes of *Ceroplastes rusci* collections should be changed to *C. eugeniae*.

**Collection records:** OAHU, Aiea, 8.VII.2009, ex. *Aonidia merrillii* foliage, coll. R. Heu, M. Lee, C. Young, det. A. L. Peronti, 21.I.2013. **HAWAII**, Kurtistown, 22.VII.2009, ex. *Annona muricata*, coll. B. Bushe, det. A. L. Peronti, 21.I.2013. **KAUAI**, Kilauea, 9.IX.2010, ex. *Cyperus papyrus*, coll. M. Schultz, det. J.N. Matsunaga, II.2013. Vouchers at HDOA.

### *Ceroplastes stellifer* (Westwood)

[= *Vinsonia stellifera* Westwood]

#### New island record

**Collection records:** HAWAII, Captain Cook, 6.V.2010, ex. *Schefflera arboricola* coll. M. Ramadan, det. M. Ramdan and J.N. Matsunaga, 19.V.2010. Vouchers at HDOA.

### *Pulvinariella mesembryanthemi* (Vallot)

#### NEW STATE RECORD

Heavily infested samples of what was called “akulikuli” by the collector, were brought to the attention of UH-CTAHR, and further handed on to HDOA for identification. A tentative identification and further confirmation by G.A. Evans concluded that this was the ice plant scale, *Pulvinariella mesembryanthemi* (Vallot). After some confusion of the initial plant from which it was collected, it was discovered that the host was actually *Lampranthus roseus*, mini ice plant, and not one of the native akulikuli species (*Sesuvium portulacastrum*). Within several months, Maui and Oahu infestations were also detected, suggesting that *P. mesembryanthemi* has been present in Hawaii for some time. Interestingly, an infestation detected in Kona was found in the Kona International Airport’s landscaping, while the Oahu infestation was also found near the Honolulu International Airport, in the Mapunapuna roadside landscaped areas. It is highly likely that the iceplant scale was spread via nursery stock used for these landscaped areas.

Recorded host plants of the ice plant scale include *Carpobrotus* spp., *Disphyma* spp., *Mesembryanthemum* spp. (Aizoaceae); *Atriplex vesicaria* and *Lampranthus* spp. (Chenopodiaceae) (García Morales et al. 2016). In addition, according to Qin and Gullan (1992), *S. portulacastrum* is a possible host plant in Australia.

**Collection records:** HAWAII, Kamuela, I.2012, ex. *Lampranthus roseus*, coll. S. Keith, det. G.A. Evans, 26.IV.2012. **MAUI**, Wailuku, 28.VIII.2012, ex. *Lampranthus* sp. coll. M. Fukada, M. Lee & C. Young, det. B. Kumashiro, 12.IX.2012. **OAHU**, Mapunapuna, 19.VII.2012, ex. *Carpobrotus* sp. coll. M. Lee & C. Young, det. B. Kumashiro, 24.VII.2012. Vouchers at HDOA.

## Coreidae

### *Acanthocoris* sp. A

#### NEW STATE RECORD

According to T.J. Henry, this group is in need of serious revision; adults are not identifiable to species. There are many similar species and no identification keys to separate them. *Acanthocoris* sp. A represents the second of two alien leaf-footed bugs which feed on *Ipomoea* spp. to establish in Hawaii. *Physomerus grossipes*, which has become common on sweet potato, was first detected in 1997.

**Collection records:** KAUAI, Lihue, 24.VII.2009, ex. at large, coll. E.J. Garcia. Anahola, 14.VI.2011, ex. *Ipomoea batatas*, coll. M. Ko & C. Lao; Kalaheo, 24.V.2012, ex. *I. batatas*, coll. N. Hori, det. T.J. Henry, 30.X.2015. Vouchers at HDOA.

### *Physomerus grossipes* (Fabricius)

#### New island records

**Collection records:** KAUAI, Lihue, 28.II.2011, ex. *Ipomoea obsuta* foliage, coll. M. Ko & C. Lao, det. B. Kumashiro, 1.III.2011. **HAWAII**, Kohala, 1.IX.2016, ex. *Ipomoea batatas*, coll. D. Fuertes, det. J. Matsunaga, 13.X.2016. Vouchers at HDOA.

## Cydnidae

### *Fromundus biimpressus* (Horváth)

#### NEW STATE RECORD

Thousands of burrowing bugs at a Keaukaha school and surrounding areas on Hawaii island were reported by the public to HDOA in 2015. The burrowing bugs were attracted to the bright lights of the athletic field and gym at night and could be found in masses around the school on sidewalks, along buildings, in the baseball dugouts, and on landscaping in following days. In addition, swarming in masses at various beach parks (Onakahakaha and Richardson’s Beach Park) in the Keaukaha area were also reported around the same week.

It first appeared that this was a new unrecorded species of Cydnidae, however, a review of the HDOA collection found unidentified specimens collected from Oahu in the 1980’s which were identical to the Keaukaha individuals. Shortly after the Keaukaha swarms, a single specimen was submitted from Kauai. Further, a review of a cydnid first reported as “Genus? sp. A” in Howarth and Preston 2002 was also the same species. Specimens were forwarded to USDA-ARS-SEL for identification in 2015 but remained pending. With the assistance of Joe Eger, an identification was provided and confirmed by James N. Zahniser USDA-ARS-SEL after re-submitting additional specimens.

*Fromundus biimpressus* is known from South East Asia (China, Indonesia, Laos, Malaysia, Thailand, Vietnam). In 2004 it was discovered on Guam under similar circumstances, at lights during the night (Lis and Zack 2010).

**Collection records:** OAHU, Honolulu International Airport, 16.XII.1982, ex. light trap, coll. D. Preston, det. J.M. Matsunaga, IX.2017. **HAWAII**, Keaukaha, 12.X.2015, 19.X.2015, ex. swarming at school athletic field at night, coll. S. Chun,



det. J.N. Zahniser, 14.IX.2017. **KAUAI**, Kapaa, 22.X.2015, ex. at large, in home fumigated for termites, submitted by Aloha Termite, det. J.N. Matsunaga, IX.2017. Vouchers at HDOA.

### Diaspididae

#### *Andaspis numerata* Brimblecombe

##### NEW STATE RECORD

Stems of a reported dying *Hibiscus rosa-sinensis* plant initially thought to be weakened by disease, was further examined for the possibility of insect boring damage. Microscopic examination revealed the entire surfaces of the woody stems were covered in layers and layers of armored scales, reaching several millimeters thick. The layers were so thick that it appeared as if the armored scale coverings were the bark of the tree. An additional collection of this scale was found nearby several months later, however, it has not yet been reported outside of the Kapahulu, Honolulu, Oahu area. It can easily go undetected, camouflaged with the bark of woody plant stems.

*Andaspis numerata* Brimblecombe, identified by D.R. Miller on May 23, 2011, represents both a new Hawaii record and a new U.S. record. According to Miller (2011 pers. comm., 23 May), *A. numerata* has been intercepted from Samoa in Honolulu in 1931 on (?) *Agrostophyllum rheineckianum* (Orchidaceae). It has also been intercepted in San Francisco in 1952 on *Hibiscus* sp.; and from Fiji at DC in 1956 on *Erythrina fusca* (Fabaceae) cuttings. *A. numerata* is distributed throughout Australasia (American Samoa, Australia, Fiji, Papua New Guinea, Tonga, Western Samoa) and India (García Morales et al. 2016) where it is a serious pest to tea plants (Das 1976).

**Collection records:** **OAHU**, Kapahulu, 23.III.2011, ex. *Hibiscus rosa-sinensis*, coll. M. Ko, det. D.R. Miller, 23.V.2011; Kapahulu, 18.VIII.2011, ex. *Hibiscus* sp. coll. M. Ko & C. Lao, det. J.N. Matsunaga, 30.VIII.2011; Kunia, 30.IV.2015, ex. *Sesbania tomentosa* stems, coll. J.N. Matsunaga, det. J.N. Matsunaga, 23.II.2016. Vouchers at HDOA.

#### *Aonidiella orientalis* (Newstead)

##### First detection, unknown establishment

A single collection of this species was found infesting the fruits of a potted loulou palm plant (*Pritchardia* sp.) in a Waimanalo nursery in May 2009. Specimens were forwarded to D.R. Miller and identified as *Aonideilla orientalis* (Newstead), the Oriental scale. Upon subsequent surveys, no other infestations could be found. It is unknown if *A. orientalis* is established.

**Collection records:** **OAHU**, Waimanalo, 27.v.2009, ex. *Pritchardia* sp. fruits, coll. B. Azama, det. D.R. Miller, 2. IX.2009. Vouchers at HDOA.

#### *Fiorinia phantasma* Cockerell & Robinson

##### New island records

**Collection records:** **HAWAII**, Kona, Keahole Agricultural Park, Hawaii, 7.II.2012, ex. *Chrysalidocarpus lutescens* foliage, coll. L. Larish. det. Kumashiro, 17.II.2012. **KAUAI**, Hanamaulu, 29.XI.2016, ex. *C. lutescens*, coll. L. Ishii, det.

J.N. Matsunaga, 9.XII.2016. Vouchers at HDOA.

#### *Pseudaonidia trilobitiformis* (Green)

##### New island record

**Collection records:** **LANAI**, Manele Bay, 18.VII.2012, ex. *Poncirus trifoliata*, coll. M. Fukada & C. Young, det. B. Kumashiro, 12.VII.2012. Vouchers at HDOA.

#### *Pseudaulacaspis pentagona* (Targioni-Tozzetti)

##### New island records

**Collection records:** **KAUAI**, Kapaa, 13.VI.2008, ex. *Carica papaya* fruit, coll. R. Redfern, det. B. Kumashiro, 4.VIII.2008. **MAUI**, Haiku, 10.IX.2008, ex. *Carica papaya* fruit, coll. B. Yonahara, det. B. Kumashiro, 12.IX.2008. Vouchers at HDOA.

### Kerriidae

#### *Paratachardina pseudolobata* Kondo & Gullan

##### New island record

**Collection records:** **MAUI**, Wailuku, 18.V.2016, roadside landscaping, ex. stems of *Osteomeles anthyllidifolia* and *Dodonea viscosa*, coll. M. Fukada, det. J. N. Matsunaga, 26.VII.2016. Vouchers at HDOA.

### Membracidae

#### *Stictopelta marmorata* Goding

##### NEW STATE RECORD

Individual adult specimens were collected in Waianae Valley, Oahu, on three separate occasions, all attracted to light. Host plants in Hawaii remain unknown. This species occurs in the southwest United States and the Neotropics.

**Collection records:** **Oahu**, Waianae Valley, 31.III.2003, at light; coll. G. Imoto, det. S.I. McKamey, 9.IX.2009; Waianae Valley, 6.VI.2007, at light, coll. G. Imoto, det. B. Kumashiro, 9.IX.2009. Voucher at HDOA.

### Miridae

#### *Kundakimuka queenslandica* Cassis

##### NEW STATE RECORD

The 2 mm-long predaceous *Kundakimuka queenslandica* Cassis was discovered while looking for specimens of the leaf-tying moth, *Choreutis* sp. (Lepidoptera: Choreutidae), on *Ficus benjamina* and *F. retusa*. Specimens were found inside of leaves folded by *Choreutis* sp., and in several cases, a dead, early-instar *Choreutis* sp. was present. Specimens of *K. queenslandica* were first collected in May 2002 in Waimanalo, Oahu, however, remained unidentified until an additional collection in 2009. The September 2009 discovery was serendipitous, found while looking for the recent immigrant, *Apotomorphinus cribratus* (Coleoptera: Curculionidae).

In December 2010, T.J. Henry identified the predator as close to the species *Kundakimuka queenslandica* Cassis. In January 2011 G. Cassis confirmed this identification. *K. queenslandica* was described from specimens collected from Australia, where it preys on larvae of the moth *Neodrepta*

*luteotactella* (Walker) (Lepidoptera: Xyloryctidae) that infest the paperbark tree, *Melaleuca integrifolia*.

**Collection records:** **OAHU**, Waimanalo, 15.V.2002, ex. *Choreutis* sp. larvae feeding on *Ficus retusa* foliage, coll. W. Nagamine, det. W. Nagamine, 3.I.2010; Kaimuki, 16.IX.2009, on *Eugenia jambolana* fruit, coll. W. Nagamine, det. G. Cassis, 12.I.2011. Vouchers at HDOA.

### ***Polymerus testaceipes* Stal, 1860**

#### **NEW STATE RECORD**

*Polymerus testaceipes* was found infesting *Gerbera jamesonii* (gerbera daisy) cultivars in Volcano, Hawaii, causing significant damage to the flowers. Upon closer inspection, lygaeids, aphids, and thrips were also found feeding on the flowers at high densities, causing uneven opening, however, the mirid appeared to be a new species in Hawaii. Specimens were sent to USDA-ARS-SEL in January 2013 and identified by T.J. Henry in December 2014.

According to T.J. Henry, *Polymerus testaceipes* is a highly variable species distributed throughout the Neotropics and established in Florida. Recorded hosts include various Asteraceae species, *Borreria verticillata* (Rubiaceae), *Chenopodium quinoa* (Chenopodiaceae) (Logarzo et al. 2005), *Phaseolus* sp. (Fabaceae) (CABI 2015).

**Collection records:** **HAWAII**, Volcano, 27.IX.2012, ex. gerbera daisy, coll. S. Chun, det. T.J. Henry, 14.XII.2014. Voucher at HDOA.

### **Pentatomidae**

#### ***Bagrada hilaris* (Burmeister)**

#### **New island records**

**Collection records:** **KAUAI**, Kokee cabins, 5.IV.2017, ex. various crucifers (kale, broccoli raab, chard, etc.) in home garden, coll. W. Jacinto, L. Ishii, C. Kaneshige, det. J.N. Matsunaga, 10.IV.2017. **MOLOKAI**, Hoolehua, 14.IV.2017, ex. various mustard greens, coll. G. Teves, det. J.N. Matsunaga, 18.IV.2017. Vouchers at HDOA.

### ***Piezodorus oceanicus* (Montrouzier)**

*Piezodorus oceanicus* was first recorded as a new state record from Maui by Howarth and Preston (2007) as *P. sp. nr. grossi* Staddon, 1997. In a subsequent survey and report, this species was identified and listed by Howarth et al. 2012 as *P. hybernii* (Gmelin, 1790).

A separate collection from Oahu in 2009 was independently sent by HDOA to Hemiptera specialist T.J. Henry, who initially identified the Oahu species as *Piezodorus hybernii*, but after closer examination and dissection confirmed that the Oahu population was in fact *P. grossi* Staddon and not *P. hybernii*. The Maui and Oahu populations were compared and verified as the same species. *P. grossi* Staddon, 1997 was synonymized under *P. oceanicus* (Montrouzier, 1865) by Cassis and Gross (2002) and therefore *P. oceanicus* is the correct and revised name for the species established on Oahu and Maui.

Members of *Piezodorus* feed on legumes and some species are significant agricultural pests. Historically, there was much confusion on the identity of *P. oceanicus* as it is difficult to separate many of these closely related species (Bundy et al. 2018).

**Collection records:** **MAUI**, Kahului Airport area, three collections in 2006 using fogging of *Macroptillium atropurpureum*, gas aspirator and sticky trap (Howarth et al. 2012), vouchers at BPBM. **OAHU**, Moanalua, 19.I.2009, ex. *Alysicarpus vaginalis*, coll. D. Tsuda, det. T.J. Henry, 7.X.2009, vouchers at HDOA.

### **Pseudococcidae**

#### ***Antonina pretiosa* Ferris**

#### **New island record**

**Collection records:** **MAUI**, Kula, 3.VII.2010, ex. *Bambusa* sp. stems, coll. E. Rezens, det. J.N. Matsunaga, 26.VII.2010. Vouchers at HDOA.

### ***Pseudococcus* sp. A (nr. *aurantiacus* Williams and *cryptus* Hempel)**

#### **NEW STATE RECORD**

Specimens of an unidentified *Pseudococcus* sp. A were collected from Manila palm on Oahu and betel nut palm on Hawaii within the span of four months in 2010. Populations appeared small, with only a few mature females and several immatures found on each plant. Females sat upon ovisacs similar to those of *P. cryptus*. It did not appear to be causing any major damage to host plants, however, in each case, individuals were commonly surrounded by other palm pests, including *Fiorinia phantasma* and *Aleurotrachelus trachoides*.

Specimens were identified by D.R. Miller as *Pseudococcus* sp., apparently undescribed. According to Miller, "These specimens are very similar to *P. aurantiacus* Williams and might even be that species, but several details don't fit. There are many more oral collars and multilocular pores on *P. aurantiacus* and the oral rims seem to be more consistently placed." In these specimens, "the 'oral rims' sometimes are without obvious rims. It is also similar to *P. cryptus*, but has more oral collars on the thorax and head. This most likely is an introduced species, probably from Asian Pacific and needs further study." Palm trees are commonly shipped between islands for landscaping purposes, and was the likely pathway between the two islands. This represents both a new Hawaii and U.S. record.

**Collection records:** **OAHU**, Kunia, 27.II.2010, ex. *Veitchia merrillii* foliage, coll. J.N. Matsunaga, det. D.R. Miller, 30.IX.2010; Kunia, 4.II.2011, ex. *Cocos nucifera* foliage, coll. J.N. Matsunaga, det. J.N. Matsunaga, 25.II.2011. **HAWAII**, Panaewa, 10.VI.2010, ex. *Areca catechu* foliage, coll. S. Cabral, det. D.R. Miller, 30.IX.2010. Vouchers at HDOA.

### ***Vryburgia brevicruris* (McKenzie)**

#### **NEW STATE RECORD**

Mealybug masses were observed and collected off *Senecio*

*madagascariensis* plant roots from around Hale Pohaku, off Mauna Kea access road (~9,300 ft elevation). The infestation was very low, and only a few mature females were found. Specimens were verified by D.R. Miller as *Vryburgia brevicurvis* (McKenzie), a species typically found on aerial parts of its hosts. This species has previously been intercepted in Hawaii from *Caralluma nebrownii* (Asclepiadaceae) imported from California (holotype female), but has never been collected in the field until now.

**Collection records:** HAWAII, Mauna Kea, Hale Pohaku, ~2,835 m elev., 31.V.2011, ex. *Senecio madagascariensis* roots, coll. J.N. Matsunaga, det. D.R. Miller, 8.II.2012; Mauna Kea, Hale Pohaku, ~2,835 m elev., 25.I.2013; ex. *S. madagascariensis* roots, coll. J.N. Matsunaga, P. Conant, C. Young, det. J.N. Matsunaga II.2013. Vouchers at HDOA.

## Psyllidae

### *Cacopsylla tobirae* (Miyatake)

#### NEW STATE RECORD

A suspected new psyllid infesting Japanese pittosporum (*Pittosporum tobira*) on the University of Hawaii campus in Manoa, Oahu was reported to HDOA in July 2013. Subsequent surveys found several sites with heavy infestations around the Pawaa, Honolulu areas on *P. tobira* plants. Specimens were tentatively identified as *Cacopsylla tobirae* (Miyatake) (Conant 2013) and forwarded to USDA-ARS-SEL quickly after. Identifiers at USDA-ARS-SEL could not provide a species identification and thus these samples remained unidentified.

A publication by Bertone in 2016 revealed that North Carolina State University was able to confirm the identity of *C. tobirae* collected in North Carolina in 2014 with the help of USDA-ARS-SEL. With this publication, additional samples collected in 2013 were resubmitted to USDA-ARS-SEL in June, 2017 and quickly confirmed as *C. tobirae* by Cheryle O'Donnell shortly after.

*Cacopsylla tobirae*, a native of Asia, is an invasive pest species of the common ornamental Japanese pittosporum plants and has been recorded from California (Percy et al. 2012), North Carolina (Bertone 2016), and now Hawaii. In 2013, severe leaf curl and stunting of terminal branches, as well as extreme sooty mold growth was seen on infested plants at several sites around urban Honolulu. Follow-up surveys in 2017 revealed that *P. tobira* plants at three of four sites with infestations in 2013 were removed, though it is uncertain why. It can be speculated that the infestation was so severe that plants were either dying or too hard to maintain. However, the original site at University of Hawaii Manoa maintained the plants. A much lower population density was found with the discovery of a pupal endoparasitoid. In May 2017, a species of *Pysllaephagus* (Hymenoptera: Encyrtidae) was found parasitizing the pupae at rates over 60%. This species is pending identification, but also appears to be a new state record for Hawaii.

**Collection records:** OAHU, Manoa, University of Hawaii

campus, 8.VII.2013, ex. *Pittosporum tobira* foliage, coll. S. Nelson, det. W. Nagamine, 8.VII.2013; Pawaa, 9.VII.2013; ex. *P. tobira* foliage, coll. M. Tauyan, det. W. Nagamine, 9.VII.2013, conf. C. O'Donnell, 8.VI.2017; Manoa, University of Hawaii campus, 31.V.2017, ex. *P. tobira* foliage, coll. J.N. Matsunaga & K. Wong, det. J.N. Matsunaga, 31.V.2017. Vouchers at HDOA.

## Rhyparochromidae

### *Horridipamera inconspicua* (Dallas)

#### NEW STATE RECORD

*Horridipamera inconspicua* is widespread in the tropics from the Ethiopian Region to South Asia and Japan. It is sometimes abundant in its preferred habitat, which is early successional disturbed grassland mixed with Euphorbiaceae weeds. Its hosts are unknown, but it presumably prefers grass seeds (Slater and Zheng, 1984).

**Collection records:** HAWAII, Laupahoehoe, 27.X.2008, ex. mixed lawn grass (bermuda, manienie, seashore paspalum, Tifton), coll. Art Hollinger; Laupahoehoe, 7.VII.2009, ex. *Euphorbia hirta*, coll. R. Hamasaki, det. T.J. Henry, 18.V.2011; Laupahoehoe, 7.X. 2009, on patio floor-attracted to light, coll. R. Hamasaki. Vouchers at HDOA.

## Insecta: Hymenoptera

### Agaonidae

#### *Josephiella* n. sp. A (apparently undescribed)

#### NEW STATE RECORD

An agaonid wasp new to science was discovered causing galls on the stems of *Ficus microcarpa*. Terminal stems of affected trees appeared unhealthy with a sparse foliar canopy. Initial observers of this damage were under the assumption that the same species which causes leaf galling on *F. microcarpa* (*Josephiella microcarpae*) was also causing the galling on stems of the same plant. However, closer examination of the stem-galling wasps showed that while both the leaf-galler and the stem-galler are morphologically similar in many ways, this in fact may be a different species. Both leaf and stem-gallers can be found on the same plant. Jean-Yves Rasplus, co-author of the leaf-galling *J. microcarpae*, agreed that this could be an undescribed species and is currently working on its species description.

Subsequent to the initial discovery of this stem-galler on Oahu in 2012, infested *F. microcarpa* were quickly noted on Hawaii and Maui. In May, 2016, galled *F. microcarpa* stems with exit holes were collected from Molokai and in July, 2017, from Kauai. However, material from these islands were too old and no adults could be recovered. Therefore, we do not list the collection data below, and in the list of new species we noted a question mark next to these islands until the adults are confirmed. *Josephiella* n. sp. A, along with *Josephiella microcarpae*, lobate lac scale (*Paratarchardina pseudolobata*), and other ficus-feeding species has contributed to the weakening of large banyan trees on Oahu.



**Collection records:** OAHU, Manoa, 13.VII.2012, ex. *Ficus microcarpa* stems, coll. D. Hulbert, det. J.-Y. Rasplus, 6.X.2012. **HAWAII**, Hilo, 30.VII.2012, ex. *F. microcarpa* stems, coll. C. Hirayama, L. Larish & S. Chun, det. B. Kumashiro, VIII.2012. **MAUI**, Wailuku, 6.VIII.2012, ex. *F. microcarpa* stems, coll. M. Fukada, VIII.2012. Vouchers at HDOA.

### Aphelinidae

#### *Encarsia cubensis* Gahan

##### NEW STATE RECORD

Specimens of *Encarsia cubensis* were first reared from *Aleurotrachelus trachoides* (Hemiptera: Aleyrodidae) infesting pepper plant (*Capsicum* sp.) foliage in Hilo in 2008. *E. cubensis* is a parasitoid of various whitefly species, including *A. trachoides* and *Aleurothrixis floccosus* (Noyes 2014), two economically important pests in Hawaii.

**Collection records:** **HAWAII**, Hilo, Waiakea Uka, 21.V.2008, ex. *Aleurotrachelus trachoides* on *Capsicum* sp. foliage, coll. S. Matayoshi, det. G.A. Evans, 21.X.2008; Hilo, Waiakea Uka, 28.IX.2009, ex. *A. trachoides* on *Capsicum* sp., coll. S. Matayoshi. **OAHU**, Makiki, 17.IV.2009, ex. prob. *A. trachoides*, coll. D. Oishi, C. Young & M. Lee, det. W. Nagamine, IV.2009. Vouchers at HDOA.

#### *Encarsia diaspidicola* Silvestri

##### NEW STATE RECORD

Pest calls regarding high infestations of *Pseudaulacaspis pentagona* attacking papaya trees in Manoa were reported in June, 2012. Samples of the scales were taken and held for emergence of any parasitoids that may be present. Unexpectedly, a species of *Encarsia* emerged, and was tentatively identified as *E. diaspidicola* Silvestri, and subsequently confirmed by G.A. Evans. Evans also revisited specimens which were reared from sago palm fronds infested with *Aulacapis yasumatsui* and other scale insects in 2008. He identified these as *E. diaspidicola* in 2012.

This was surprising not only because it would constitute a new record for Hawaii, but because *Encarsia diaspidicola* was a candidate biological control agent of *P. pentagona* (Diaspididae) in Hawaii by USDA-ARS-PBARC entomologists, and had not yet been released (Neumann et al. 2010). Shortly after the Oahu discovery, lab-reared *E. diaspidicola* were released on Hawaii island in papaya fields to control the *P. pentagona* infestations devastating this crop in Hawaii (Follett et al. 2015).

**Collection records:** OAHU, Hawaii Loa Ridge, 3.XI.2008, ex. reared from *Cycas revoluta* infested with *Aulacaspis yasumatsui* and possibly other scale insects, coll. J. (Garcia) Matsunaga, det. G.A. Evans, 2012; Manoa, 5.XI.2012, ex. *Pseudaulacaspis pentagona*, on *Carica papaya*, coll. W. Nagamine, det. G. A. Evans, 16.II.2013. Vouchers at HDOA.

### Encyrtidae

#### *Psyllaephagus bliteus* Riek

##### New island record

**Collection records:** OAHU, Waimanalo, 24.II.2011, ex. *Glycaspis brimblecombei* on *E. camaldulensis*, coll. W. Nagamine, det. W. Nagamine, 5.V.2011. Vouchers at HDOA.

#### *Psyllaephagus* sp. A (not *P. blastopsyllae*)

##### NEW STATE RECORD

See *Cacopsylla tobirae* (Miyatake)

**Collection records:** OAHU, Manoa, University of Hawaii campus, 31.V.2017, ex. *Cacopsylla tobirae* pupae, coll. J.N. Matsunaga & K. Wong, det. J.N. Matsunaga/M. Ramadan, VII.2017; Manoa, University of Hawaii campus, 21.VI.2017, ex. *C. tobirae* pupae, coll. J. Ocenar & K. Wong, det. M. Ramadan, VII.2017 (Identification to species pending). Vouchers at HDOA.

### Eulophidae

#### *Cirrospilus* sp. A (not *C. vittatus*)

##### NEW STATE RECORD

When blister galls began forming on lemon-scented gum tree foliage in Aiea, Oahu, leaves were collected and held for the emergence of potential gall-forming insects. What was discovered turned out to be an assemblage of about six separate species. Additional samples from Honolulu produced similar results. All samples of Oahu *Corymbia citriodora* blister galls, produced *Cirrospilus* sp. A, *Epichrysocharis burwelli* (presumed gall former), and four additional species of unidentified Hymenoptera (Chalcidoidea). *Cirrospilus* sp. A is possibly a parasitoid species; however, it is unknown which of the five other species found in the leaf material may be its host. *C. vittatus* is the only other established species of *Cirrospilus* recorded in Hawaii (Kauai, Maui, and Oahu) but is known to attack *Cremastobombycia lantanella* (Lepidoptera: Gracillariidae). The *Cirrospilus* reared from *C. citriodora* blister galls can be described as yellow, slender-bodied, highly patterned, with a somewhat iridescent thorax. Also see *Epichrysocharis burwelli*.

**Collection records:** OAHU, Aiea, 1.IV.2001, ex. *Corymbia citriodora* foliage with blister galls, coll. R. Heu. Aiea, 12.VII.2005, ex. *C. citriodora* foliage with blister galls, coll. R. Heu; Honolulu, Tantalus, 19.VII.2005, ex. *C. citriodora* foliage with blister galls, coll. R. Heu, M. Chun, & W. Nagamine. All det. J. La Salle, VI.13.2005.

#### ?*Closterocerus* sp. A (not *C. utahensis*)

##### NEW STATE RECORD

*Eucalyptus* sp. foliage with blister galls collected from West Maui was held for the emergence of gall formers. At least two species of Tetrastichinae wasps emerged- a possible *Closterocerus* sp. A and an *Ophelimus* sp. A. According to La Salle (2005 pers. comm., 14 June), this possible *Closterocerus* sp. A is most likely a parasitoid of the *Ophelimus* sp. A, which is probably the gall former on this *Eucalyptus* sp. material. On Oahu, *Closterocerus utahensis* has been recorded attacking species of *Liriomyza* (Diptera: Agromyzidae). Also see *Ophe-*

***limus* sp. A.**

**Collection records:** MAUI, Honokawai, 10.V.2005, ex. *Eucalyptus* sp. foliage with blister galls, coll. M. Fukada and A. Shishido; Camp Maluhia, 16.VIII.2005, ex. *Eucalyptus* sp. foliage with blister galls, coll. M. Fukada. All det. J. La Salle, VI.13.2005.

***Epichrysocharis burwelli* Schauff****New island record**

*Epichrysocharis burwelli* is a blister gall former on lemon-scented gum (*Corymbia citriodora*) leaves. It was originally described from California in 2000 (Schauff & Garrison 2000), but is most likely native to Australia. While *E. burwelli* is a presumed gall former in the *C. citriodora* material from Oahu, it may not be the only gall former of the six species which emerged from the same material. Also see ***Cirrospilus* sp. A.**

**Collection records:** OAHU, Aiea, IV.2001, ex. *Corymbia citriodora* galled foliage, coll. R. Heu; Aiea, 12.VII.2005, ex. *C. citriodora* foliage with blister galls, coll. R. Heu; Honolulu, Tantalus, 19.VII.2005, ex. *C. citriodora* galled foliage with blister galls, coll. R. Heu, M. Chun, & W. Nagamine. MAUI, 10.V.2005, ex. *C. citridora* foliage with blister galls, coll. M. Fukada & A. Shishido. All det. J. La Salle, VI.13.2005.

***Ophelimus* sp. A (maybe not *O. eucalypti*, not *O. maskelli*)  
NEW STATE RECORD**

*Ophelimus* sp. A adults emerged from blister galls of *Eucalyptus* sp. foliage collected on Maui. La Salle speculates that this is most likely the gall former from this species of *Eucalyptus*. This is not *O. maskelli* (a known gall former on *Eucalyptus* causing problems in other areas of the world) and it may not be *O. eucalypti*. According to La Salle (2005, pers. comm. 24 August), the taxonomy of these small gall forming eulophids on *Eucalyptus* spp. is unresolved, with most of the species (and probably some of the genera) being undescribed. Also see **?*Closterocerus* sp. A.**

**Collection records:** MAUI, Camp Maluhia, 16.VIII.2005, ex. *Eucalyptus* sp. foliage with blister galls, coll. M. Fukada, det. J. La Salle, 24.VIII.2005.

**Formicidae*****Monomorium dichroum* Forel****Revised identification, new island record**

Previously identified as *Monomorium bicolor* complex by Brian E. Heterick in 2008, Heterick confirmed that the species in Hawaii is *Monomorium dichroum* in January 2016. Ant-web lists specimens from Haleakala National Park, Maui (*M. bicolor* complex), while Starr and Starr (2011) reported specimens (*M. bicolor* complex) from Molokai and Kahoolawe.

**Collection records:** OAHU, Moanalua, Pearl Harbor Naval Base NEX, 30.VI.2005, ex. red imported fire ant baited vial, coll. T. Suh. HAWAII, Kawaihae Pier, 14.VII.2005, ex. red imported fire ant baited vial, coll. P. Conant. KAUAI, Kekaha, Kikialoa Harbor, 26.VI.2007, ex. red imported fire ant baited

vial, coll. C. Kaneshige & E.J. Garcia, etc. B.E. Heterick, I.2016. MOLOKAI, Hoolehua Airport, 30.X.2015, ex. red imported fire ant baited vial, coll. B. Dietrich et al. Vouchers at HDOA.

***Pheidole navigans* (= *moerens*) Forel****New island record**

This species was previously reported as *Pheidole moerens* Wheeler in Gruner et al. (2003) from Hawaii and by Starr and Starr (2013) from Maui. Sarnat et al. 2015 removed *Pheidole navigans* Forel, 1901 from synonymy with *P. moerens* after examining type specimens, as well as representatives from Hawaii. A single minor worker was collected from Lihue, Kauai at a rental car parking lot near the Lihue Airport (13.X.2015, ex. peanut butter baited vial, coll. B. Dietrich, voucher at HDOA), however, we cannot confirm *P. navigans* without additional specimens including major workers. We report the following Oahu collections as a new island record.

**Collection records:** OAHU, Mililani, 3.X.2008, at large at a nursery with plants from Hawaii island, coll. R. Change, det. C. Young, 6.X.2008; Waimanalo, 21.VIII.2013, peanut butter baited vial at nursery, coll. D. Arakaki, det. C. Young, 22.VIII.2013. Vouchers at HDOA.

***Trichomyrmex destructor* (Jerdon) “dark form”****Record of note/Establishment uncertain**

Ants collected from Ford Island by a private pest control company were somewhat morphologically similar to local *Trichomyrmex* (= *Monomorium*) *destructor* populations, however, with minor differences and darker coloration. Individuals from this collection site were also similar to *M. mayri* (not established in Hawaii), however, DNA analysis (using COI) by R. Clouse and M. Janda placed this population within a *T. destructor* clade which falls between a *T. destructor* clade from Madagascar and a *T. destructor* clade from Melanesia, India, and Palau.

While this population falls within *T. destructor*, it is important to note that this potentially represents a recent and separate invasion of *T. destructor* to Hawaii. Further DNA analysis of local *T. destructor* populations should be done to verify this conclusion, however, the location and circumstances of the infestation in addition to morphological differences point to a new introduction of a very invasive pest ant species in Hawaii. Vouchers at HDOA.

**Collection records:** OAHU, Ford Island, 12.X.2012, vienna sausage baited vial, coll. C. Agena, det. R. Clouse and M. Janda, 22.II.2013. Vouchers at HDOA.

**Megachilidae*****Megachile lanata* (Fabricius)****New island records**

**Collection records:** MOLOKAI, Hoolehua, 14.XI.2008, ex. at large, at residence; coll. E. Lani, det. K. Magnacca. KAUAI, Kalaheo, 12.IX.2011, ex. at large, at residence, coll.

D. Silva. Kalaheo, 31.X.2011, ex. at large, at residence, coll. D. Silva, det. K. Magnacca via photos. Vouchers at HDOA.

## Vespidae

### *Polistes dominula* (Christ)

#### Establishment uncertain

Adults of the European paper wasp were first collected in the field in June, 2006 by the City and County of Honolulu Parks and Recreation personnel on Oahu (HDOA 2007). Workers were stung as they were trimming trees at Keehi Lagoon Beach Park, where a nest was subsequently found and collected from one of the trees. Keehi Lagoon Beach Park is in close proximity to the Honolulu International Airport and the Honolulu Harbor, which are both less than a mile away. Surveys following this discovery did not reveal additional adult wasps or nests.

A second collection of *P. dominula* from Volcano, Hawaii was reported by David Foote, U.S. Geological Survey, Pacific Island Ecosystems Research Center. A student on a school bus was stung by aggressive European paper wasps which flew in through the bus' open windows. A nest was found attached to the outside of one of the windows.

Finally, a third collection of the European paper wasp was made when a nest was discovered attached to the undercarriage of an imported firetruck in Kahului after aggressive wasps were reported to be flying around the truck.

*Polistes dominula* adults have been intercepted at Hawaii ports of entry on numerous occasions, commonly hitchhiking in shipping containers, in Christmas tree shipments, and in nests attached to vehicles coming from the western mainland U.S. The three collections of this species have been found at large, though at circumstances that may not particularly confirm establishment. After nests were contained from all three collections, there have been no known reports of the European paper wasp known to the authors. The European paper wasp is known from cooler, seasonal climates. It is possible that this species exists in small numbers within similar habitats to *Vespula pennsylvanica*, and therefore, the two yellow and black patterned wasps could easily be misidentified if only flying in the distance. If the European paper wasp becomes well established, there may be concerns for native bees and lepidoptera, as well as its aggressive nature and propensity to sting people.

**Collection records:** OAHU, Keehi Lagoon Park, 16.VI.2006, at large around nest in tree, coll. K. Bernie, det. D. Oishi and B. Kumashiro, VI.2006. MAUI, Kahului, 26.VIII.2008, at large around nest on a firetruck shipped from San Diego, California, coll. A. Shishido, det. B. Kumashiro, VIII.2008. Vouchers at HDOA. HAWAII, Volcano, 2008, flying around a nest attached to the window of a school bus, coll. D. Foote.

### *Polistes jokahamae* Radoszkowski

#### Previous misidentification & Synonym

According to Carpenter (2008) *Polistes macaensis* (Fabricius),

now considered a synonym of *P. olivaceus* (De Geer), was recorded from Hawaii in the 1800s. However, a review by Carpenter showed that *P. macaensis* was a misidentification for *P. jokahamae* Radoszkowski. In addition, *P. jadvigae* Dall Torre as listed by Nishida 2002 is a synonym of *P. jokahamae*. J.M. Carpenter reviewed HDOA's collection of Vespinae specimens and the misidentification of *Polistes jokahamae* under *P. olivaceus*. Adults of *P. jokahamae* correctly identified by Carpenter were collected on Oahu as far back as 1905, and on Hawaii island in 1988. This paper wasp is native from India to Japan and has been introduced to many Pacific islands by commerce. Vouchers at HDOA.

### *Vespula alascensis* (Packard)

#### Revised name

Close morphological and molecular evaluation of specimens identified as *Vespula vulgaris* from Europe, New Zealand, Australia, and the U.S. by Carpenter and Glare (2010) concluded that the N. American *V. alascensis* was previously misidentified as *V. vulgaris*, its close Eurasian counterpart. Hawaii adults previously identified as *Vespula vulgaris* were collected from Maui as far back as 1973 and verified by Carpenter as *V. alascensis* in 2011. This Hawaii population arrived from Northwestern North America probably as hibernating queens in Christmas tree shipments. Vouchers at HDOA.

## Insecta: Lepidoptera

### Choreutidae

#### *Choreutis* sp. A

#### New island records

**Collection records:** HAWAII, Kohala, 31.V.2013, ex. *Ficus binnendijkii* foliage, coll. R. Hamasaki, det. B. Kumashiro. KAUAI, Hanapepe, 26.IV.2017 ex. *Ficus* prob. *celebensis* foliage, coll. E.J. Garcia, det. J.N. Matsunaga. Vouchers at HDOA.

### Erebidae: Arctiinae

#### *Secusio extensa* (Butler)

#### Biological control release, NEW STATE RECORD

*Secusio extensa* was imported by HDOA to control the invasive weed *Senecio madagascariensis* (fireweed) in the Hawaiian Islands. After thirteen years of research and permit applications, *S. extensa* was released on Maui and Hawaii Islands in 2013. This agent is now established on both islands.

*Secusio extensa* larvae were collected at the Palehua-Palikea area, Oahu, on *Delairea odorata* vines being eradicated from the area. This collection was the first on Oahu, as this agent was not purposefully released on that island. Establishment is questionable, as Oahu does not have large concentrations of *S. extensa*'s host plants (*S. madagascariensis* and *Delairea odorata*). HDOA and Pulama Lanai have conducted releases on Lanai to control fireweed in the area, though establishment has not been confirmed. There have also been reports *S. extensa* sightings on Kahoolawe; however, no specimens have been obtained.



## Geometridae

### Undetermined genus sp. A

#### NEW STATE RECORD

A small (1 cm wingspan) pale green species of an inch worm.

**Collection records:** OAHU, Honolulu, Kalihi Valley, 5.VI.2007, 120 m, 21°20.7'N, 157°51.6'W, at light, coll. F.G. Howarth, 1 male; same data except 5.VI.2011, 2 females. Vouchers at HDOA.

## Lycaenidae

### *Zizina otis* (Fabricius)

#### New island records

**Collection records:** HAWAII, Paukaa, 25.V.2016, at large, at grassy field, coll. S. Chun., det. J.N. Matsunaga. KAUAI, Lihue, 7.X.2009, at large coll. L. Ishii, det. B. Kumashiro; Port Allen, 23.X.2015, at large, flying around weeds, at port/pier, coll. J.N. Matsunaga, det. J.N. Matsunaga. Vouchers at HDOA.

## Pieridae

### *Phoebis agarithe* (Boisduval, 1836)

#### New island record

**Collection records:** KAUAI, Wahiawa Bay, 8.III.2006, at large, coll. C. Kaneshige, det. B. Kumashiro.

## Insecta: Orthoptera

### *Nanixipha nahoa* Otte, Shaw & Carvalho

#### New island record

This species has also been documented on Maui through digital macro photography, however, no specimens have been vouchered that are known to the authors.

**Collection records:** OAHU, Pawaa, 9.X.2014, at large, coll. J.N. Matsunaga, det. B. Kumashiro. Voucher at HDOA.

## Insecta: Psocoptera

### Philotarsidae

#### *Haplophallus* sp A & B.

Gruner (2004) and Howarth et al. (2012) report *Haplophallus* species from Molokai and Maui respectively. It is necessary to compare voucher specimens from the two islands to determine whether these represent the same or separate species.

## Insecta: Thysanoptera

### Thripidae

#### *Frankliniella occidentalis* (Pergande)

#### New strain record “invasive greenhouse/glasshouse strain”

Two farms on Hawaii island reported extremely heavy damage and high losses by thrips feeding to various plants and flowers, including jade vine, crown flower, chrysanthemum, and gerbera daisies in the summer of 2010. According to the growers, these thrips were exhibiting atypical pesticide resistance. Upon initial examination, these thrips appeared to have minute morphological differences from than typical *F. occidentalis* in Hawaii, and subsequently specimens were forwarded to USDA-ARS-SEL for identification assistance.

Steve Nakahara identified the specimens as mostly *F. occidentalis*, with some individuals exhibiting slight differences and informed us of a study by Rugman-Jones et al. (2010) indicating that Western flower thrips, *F. occidentalis*, is a complex of two cryptic species (western flower thripsL and western flower thripsG) needing further study and species name revisions. Through nuclear-mitochondrial barcoding, the authors discovered two distinct genetic entities, morphologically similar, and sometimes found on the same plants. Additional specimens from these collections were forwarded to authors Paul Rugman-Jones and Mark Hoddle for DNA analysis and subsequently all returned with as *Frankliniella occidentalis*, the invasive greenhouse/glasshouse strain (western flower thripsG). *Frankliniella occidentalis* has been recorded in Hawaii since 1966, however, this is the first record of the invasive greenhouse/glasshouse strain.

**Collection records:** HAWAII, Panaewa Ag Lots, 5.V.2010, ex. *Calotropis gigantea* flowers, coll. S. Cabral; Panaewa, 3.VI.2010, ex. *Chrysanthemum* flowers, coll. S. Cabral; Panaewa Ag Lots, 4.VI.2010, ex. *Gerbera* flowers, coll. S. Cabral. All identified as *Frankliniella occidentalis* and *F. prob. occidentalis* by S. Nakahara, 28.IX.2010 (morphological identification).

### *Holothrips* sp. A

#### NEW STATE RECORD

**Collection records:** OAHU, Kaneohe, Hoomaluhia Botanical Garden, 1.VII.2009, ex. *Sabal texana* seeds, coll. M. Lee and R. Heu, det. S. Nakahara, 20.VIII.2009. Voucher at U.S. National Entomological Collection.

## Insecta: Thysanura

### Lepismatidae

#### *Lepisma saccharina* Linnaeus

#### Establishment uncertain

The blue silverfish or common silverfish has been previously reported in Hawaii, but the earlier records were apparently based on misidentifications of *Ctenolepisma longicaudatum* (Escherich, 1905) (Zimmerman 1948a; Nishida 2002). *L. saccharina* is easily distinguished from *C. longicaudata* in life by its smaller size (body length 5–9 mm), shorter caudal filaments (a little longer than one half abdominal length), uniform dark slate-blue dorsal color, and quicker movements. In *C. longicaudata*, the body length is 10–13 mm; the caudal filaments are longer than the abdomen; the dorsal scales are silvery gray and often mottled; and its movements are slower and more directed towards cover. Additional diagnostic characters for *L. saccharina* are smooth macrosetae, caudal tergite slightly longer than wide with a truncate or slightly rounded hind margin, terminal segment of labial palpus large and wider than long, and presence of a group of about three macrosetae near the posterior margin along the midline of each abdominal sternite, which is far removed from the lateral group of ventral macrosetae (Wygodzensky 1972). A single colony of

this species was found in a container of old cat food, which had been in Hawaii for several years. No further specimens have been found, and the species may not have established.

**Collection records:** OAHU, Honolulu, Kalihi Valley, 21°20.7' N, 157°51.6' W, 7.II.2010, 120 m, ex. container of old dry cat food, in house, coll. F.G. Howarth, 25 specimens, det. F. G. Howarth, 2010.

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**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002.

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>ARACHNIDA: ACARI</b>				
<b>Cunaxidae</b>				
<i>Pulaeus</i> nr. <i>glebulentus</i>	Den Heyer, 1979	1998	Mi	Nishida and Beardsley 2002
<i>Pulaeus</i> sp. #1		1998	Mi	Nishida and Beardsley 2002
<i>Pulaeus</i> sp. #2		1998	Mi	Nishida and Beardsley 2002
<b>Eriophyiidae</b>				
<i>Aceria guerrieronis</i>	Keifer, 1965	2000	Ka, Ma, Mo, Oa	NSR <sup>+</sup>
<i>Phyllocoptes bougainvilleae</i>	Keifer, 1959	1999	Ha, Ma	Kumashiro et al. 2002; NIR <sup>+</sup>
<b>Galumnatidae</b>				
<i>Pergalumna bryani</i>	(Jacot, 1934)	1999	Ma	Howarth and Preston 2002
<b>Knemidokoptidae</b>				
<i>Knemidokoptes jamaicensis</i>	Turk, 1950	2009?	Ha	Gaudioso et al. 2009
<b>Pionidae</b>				
<i>Piona lapointei</i>	Smith & Cook, 2004	1997	Ha, Oa	Lapointe 2002; Smith and Cook 2004
<b>Stigmaeidae</b>				
<i>Ledermuelleriopsis plumosus</i>	Willmann, 1951	1991	Ka	Swift and Goff 2001

1 = Island distribution: Ha=Hawaii, Ka=Kauai, Kh=Kahoolawe, Ku=Kure, Ln=Lanai, Ma=Maui, Mi=Midway, Mo=Molokai, Ne=Necker, Oa=Oahu  
+ = Indicates accompanying text in Collection Data and New Record Summaries section  
r = Biological control release. NIR = New Island Record. NSR = New State Record

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Varroidae</b>				
<i>Varroa destructor</i>	Anderson & Trueman, 2000	2007	Ha, Oa	HDOA 2008; Ramadan et al. 2008
<b>Veigaiidae</b>				
<i>Gamasolaelaps whartoni</i>	(Farrier, 1957)	1991	Ka	Swift and Goff 2001
<b>ARACHNIDA: ARANEAE</b>				
<b>Linyphiidae</b>				
<i>Erigone bifurca</i>	Locket, 1982	2003	Ha	Krushelnicky et al. 2013
<i>Erigone fradeorum</i>	(Berland, 1932)	2002–2003	Ma	Krushelnicky et al. 2007
Undetermined Genus sp. A		2002–2003	Ma	Krushelnicky et al. 2007
<b>Lycosidae</b>				
<i>Hogna crispipes</i>	(L. Koch, 1877)	1988	Ka, Ma, Oa	Howarth et al. 2012; NIR <sup>+</sup>
<b>Salticidae</b>				
<i>Habronatus pyrrithrix</i>	(Chamberlin, 1924)	2010	Oa	Krushelnicky et al. 2013
<i>Hakka himeshimensis</i>	Doenitz & Strand, 1906	1923	Ha, Ne	Berry and Proszynski 2001
<i>Myrmarachne nigella</i>	Simon, 1901	2009	Oa	Krushelnicky et al. 2013
<i>Pellenes</i> sp. A		1995	Ha	Proszynski 2002- Single specimen, Est.?
<i>Pseudicius</i> sp. A		2012	Oa	Krushelnicky et al. 2013
<i>Ptocasius</i> sp. A		1966	Oa	Proszynski 2002- Single specimen, Est.?



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Theridiidae</b> <i>Steatoda capensis</i> Hann, 1990	2002	Ha, Oa	Krushelnicky et al. 2013
<b>ENTOGNATHA: COLLEMBOLA</b>			
<b>Hypogastruridae</b> <i>Brachystomella insulae</i> Najt & Thibaud, 1988	2004	Ha	Krushelnicky et al. 2013
<i>Brachystomella</i> sp. A	2004	Ha	Krushelnicky et al. 2013
<b>Isotomidae</b>			
<i>Cryptopygus benhami</i> Christiansen & Bellinger, 1980	2002–2003	Ma	Krushelnicky et al. 2007
<i>Folsomides angularis</i> (Axelson, 1905)	2002	Ha	Krushelnicky et al. 2013
<b>INSECTA: COLEOPTERA</b>			
<b>Aderidae</b> <i>Xylophilus</i> cf sp. A	2000	Ma	Howarth et al. 2012
<b>Anthicidae</b>			
<i>Cyclodinus mundulus</i> (Sharp, 1885)	?	Oa	Chandler 2005
<b>Anthribidae</b>			
<i>Eucorynus crassicornis</i> (Fabricius, 1801)	2005	Oa	NSR <sup>+</sup>
<b>Bostrichidae</b>			
<i>Heterobostrychus hamatipennis</i> (Lesne, 1895)	2003	Oa	HDOA 2004

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Callirhipidae</b> <i>Callirhipis robusta</i> Waterhouse, 1877	1989	Oa	Samuelson 2006a
<b>Carabidae</b> <i>Agonum muelleri</i> (Herbst, 1784)	2006	Ha	Liebherr et al. 2009
<i>Trechus obtusus</i> Erichson	1998	Ha, Ma	Liebherr and Takumi 2002; Evenhuis and Imada 2013
<b>Cerambycidae</b> <i>Acalolepta aesthetica</i> (Olliff, 1890)	2009	Ha	Conant 2013
<b>Cerylonidae</b> <i>Ceryloninae</i> : Undetermined genus sp. A	~2000	Oa	Preston et al. 2007
<b>Chrysomelidae</b> <i>Altica carinata</i> (Germar, 1824)	2002–2003	Ma	Krushelnysky et al. 2007- single specimen only
<i>Diabrotica balteata</i> LeConte, 1865	2008	Ma	HDOA 2010a
<i>Specularius impressithorax</i> (Pic, 1932)	2001	Ha, Ka, Kh, Ma, Oa	HDOA 2004; Samuelson 2006b
<i>Trachymela sloanei</i> (Blackburn, 1896)	2011	Ma, Oa	Matsunaga 2013b <sup>+</sup>
<b>Clambidae</b> Undetermined genus sp. A	1991	Ka, Ma	Kumashiro et al. 2002; Howarth and Preston 2002 <sup>+</sup>
<b>Coccinellidae</b> <i>Cycloneda sanguinea</i> (Linnaeus, 1763)	1992	Oa	Kumashiro et al. 2002

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Diomus</i> sp. A	2002–2003	Ma	Krushelnicky et al. 2007
<b>Cryptophagidae</b>			
? <i>Cryptophagus</i> sp.	2002–2003	Ma	Krushelnicky et al. 2007
<b>Curculionidae</b>			
<i>Apotomorphinus cribratus</i> Boheman, 1844	2009	Oa	HDOA 2010a
<i>Atrichonotus taeniatus</i> (Berg, 1881)	2009	Ha	NSR <sup>+</sup>
<i>Blosyrus asellus</i> (Olivier, 1807)	2009	Ha, Ka, Oa	Heu et al. 2009; HDOA 2010a; McQuate et al. 2016
<i>Cathormiocerus curvipes</i> (Wollaston, 1854)	2013	Ma	Ewing and Krushelnicky 2014
<i>Gonipterus scutellatus</i> Gyllenhal, 1833	2004	Ma	Haines 2006
<i>Hypothenemus hampei</i> (Ferrari, 1867)	2010	Ha	Garcia 2010; Burbano et al. 2011
<i>Euplatypus parallelus</i> (Fabricius, 1801)	1999	Ma	Howarth and Preston 2002
<i>Naupactus leucoloma</i> (Boheman, 1840)	2013	Ha	Conant 2013 <sup>+</sup>
<i>Scolytogenes</i> sp. A	2010	Ha	NSR <sup>+</sup>
<i>Tychius picirostris</i> (Fabricius, 1787)	2002–2003	Ma	Krushelnicky et al. 2007
<i>Xyleborinus andrewesi</i> (Blandford, 1896)	2007	Ha, Oa	Cognato and Rubinoﬀ 2008
<i>Xylosandrus germanus</i> (Blandford, 1894)	2007	Oa	Cognato and Rubinoﬀ 2008
<i>Xylosandrus morigerus</i> (Blandford, 1894)	2007	Ha	Cognato and Rubinoﬀ 2008



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Dermestidae</b> <i>Evorinea</i> sp. A	1993	Ha	Kumashiro et al. 2002
<b>Elateridae</b> <i>Conoderus posticus</i> (Eschscholtz, 1822)	2015	Oa	Johnson et al. 2017
<i>Melanotus punctosus</i> (Walker, 1858)	1999	Ma	Howarth and Preston 2002; Johnson and Samuelson 2006
<i>Platynychus adjutor</i> (Candèze, 1873)	1990	Oa	Kumashiro et al. 2002
<i>Rismethus scobinula</i> (Candèze, 1857)	1972	Ma	Johnson and Samuelson 2006
<b>Hydrophilidae</b> <i>Cercyon fimbriatus</i> Mannerheim, 1852	1999	Ma	Howarth and Preston 2002
<i>Cercyon</i> sp. nr. <i>lividulus</i> Orchymont, 1926	1937	Ha, Oa	Hansen 1993; Gruner 2004
<b>Laemophloeidae</b> <i>Laemophloeus</i> sp. A	2000	Ma	Howarth et al. 2002
<b>Nitidulidae</b> <i>Aethina tumida</i> (Murray, 1867)	2010	Ha, Ka, Ma, Mo, Oa	Robson 2012; NIR <sup>+</sup>
<i>Phenolia attenuata</i> (Reitter, 1879)	1998	Ka, Oa	Ewing 2004
<i>Stelidota geminata</i> (Say, 1825)	1997	Ha, Ka, La, Ma, Mo, Oa	Ewing 2004
<b>Passandridae</b> <i>Passandra elongatula</i> Grouvelle, 1874	1977	Oa	Samuelson and Ramsdale 2006

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Phalacridae</b> <i>Phalacrus</i> sp. A	2003	Nu	Ramsdale and Samuelson 2006
<b>Scarabaeidae</b> <i>Cyclocephala pasadenae</i> (Casey, 1915)	2007	Ha	HDOA 2009; Jameson et al. 2009
<i>Oryctes rhinoceros</i> (Linnaeus, 1758)	2013	Oa	Kumashiro et al. 2014; Matsunaga 2013c
<i>Protaetia orientalis</i> (Gory & Percheron, 1833)	2002	Ha, Ka, Ma, Oa	HDOA 2004; NIR <sup>+</sup>
<i>Tennorrhynchus retusus</i> (Fabricius, 1781)	2007	Ha	HDOA 2009; Jameson et al. 2009
<b>Silvanidae</b> <i>Silvanoprus scuticollis</i> (Walker, 1859)	1999	Ma	Howarth and Preston 2002
<b>Staphylinidae</b> <i>Astenus</i> sp. A	2003	Ma	Howarth and Preston 2006
<i>Hesperus</i> sp. A	2000	Ma	Howarth and Preston 2006
<i>Pselaphinae</i> sp. A	2000	Ma, Oa	Preston et al. 2007; Howarth et al. 2012
<i>Rugilus</i> sp. A	2006	Ma	Howarth et al. 2012
<i>Tachyporus</i> sp. A	2002–2003	Ma	Krushelnicky et al. 2007
<b>Tenebrionidae</b> Bolitophagini?: Undetermined genus sp. A	2013	Ha	Undetermined; NSR <sup>+</sup>

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Lepidocnemeplatia sericea</i> (Horn, 1870)	2000	Ma	Howarth and Preston 2002– Single specimen, established?
<i>Lyphia</i> sp. A	2002	Ma	Howarth et al. 2012
<i>Menephilus arciscelis</i> Marseul, 1876	2008	Oa	NSR <sup>+</sup>
<i>Stethotrypes raffrayi</i> (Thomson, 1878)	2012	Ha	NSR <sup>+</sup>
<i>Strongylium cultellatum</i> Mäklin, 1867	2005	Oa	Samuelson and Howarth 2013
<i>Ulus hirsutus</i> Champion, 1885	1982	Ka, Oa	Steiner 2003
<b>INSECTA: DIPTERA</b>			
<b>Agromyzidae</b>			
<i>Liriomyza</i> sp. A	2013	Oa	Apparently undescribed; leaf miner ex. <i>Calotropis gigantea</i> ; NSR <sup>+</sup>
<b>Asilidae</b>			
<i>Leptopteromyia mexicanae</i> Martin, 1971	2007	Ma	Howarth et al. 2012
<b>Asteiidae</b>			
<i>Loewimyia ?bifurcata</i> Sabrosky, 1943	1998	Mi	Nishida and Beardsley 2002
<b>Canacidae</b>			
<i>Dasyrhicnoessa clandestina</i> Munari, 2002	1958	Oa	Munari and Evenhuis 2011
<i>Dasyrhicnoessa fulva</i> (Hendel, 1913)	1981	Ma, Oa	Munari and Evenhuis 2011– possibly indigenous
<i>Tethina albula</i> (Loew, 1869)	?	?Ha, Ka, Kh, Ma, Oa?	Mathis and Foster 2007; Foster and Mathis 2008 Munari and Evenhuis 2011– No listed specimens, but believed established



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Tethina pallipes</i> (Loew, 1865)		1932	La, Oa	Munari and Evenhuis 2011
<b>Cecidomyiidae</b>				
<i>Mycodiplosis fungicola</i> Felt, 1911		1991	Oa	Kumashiro et al. 2002
<b>Ceratopogonidae</b>				
<i>Atrichopogon levis</i> (Coquillett, 1901)		2006	Ma, Oa	Howarth et al. 2012; NIR <sup>+</sup>
<i>Culicoides jamaicensis</i> Edwards, 1922		2000	Ma, Oa	Howarth and Preston 2007; NIR <sup>+</sup>
<i>Forcipomyia biannulata</i> Ingram & Macfie, 1924		2006	Ha, Ma, Oa	Howarth and Preston 2007; Grogan et al. 2017
<i>Forcipomyia pulcherrima</i> Santos Abreu, 1918		2000	Ma, Oa	Howarth and Preston 2007 as <i>F. chrysolopha</i> (Kieffer, 1911); Grogan et al. 2013
<i>Forcipomyia</i> cf. <i>quasiingrami</i> Macfie, 1939		2006	Ha, Ma, Oa	Howarth and Preston 2007; NIR <sup>+</sup>
<b>Chironomidae</b>				
<i>Ablabesmyia</i> sp. A		1999	Ka, Ma, Oa,	Wolff et al. 2002; Howarth et al. 2012
<i>Apedilum elachistus</i> Townes, 1945		1999	Oa	Wolff et al. 2002- as <i>Apedilum</i> sp.; NSR <sup>+</sup>
<i>Chironomus</i> sp. A		2006	Ma	Howarth and Preston 2007
<i>Eukiefferiella</i> sp. A		1999	Oa	Wolff et al. 2002
<i>Kiefferulus longilobus</i> (Kieffer, 1916)		2006	Ma, Oa	Howarth and Oishi 2013
<i>Parakiefferiella</i> sp. A		1999	Oa	Wolff et al. 2002
<i>Paratanytarsus</i> sp. A		1999	Oa	Wolff et al. 2002

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<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Stempellinella</i> sp. A	1999	Oa	Wolff et al. 2002
<b>Chloropidae</b>			
<i>Oscinella frit</i> (Linnaeus, 1758)	1998	Oa	Kumashiro et al. 2002
<b>Culicidae</b>			
<i>Aedes japonicus</i> (Theobald, 1901)	2004	Ha, Ka, Ma, Oa	Larish and Savage 2005; Magnacca 2015; NIR <sup>+</sup>
<i>Anopheles punctipennis</i> (Say)	2003	Oa	Furumizo et al. 2005- Single specimen, not established
<b>Dolichopodidae</b>			
<i>Achradocera shannoni</i> (Van Duzee, 1930)	2008	Oa	Evenhuis and Bickel 2012
<i>Chrysotus crosbyi</i> van Duzee	1998	Oa	Evenhuis 2015
<i>Sympycnus turbidus</i> Becker, 1932	2011	Ka	Evenhuis and Bickel 2012
<b>Drosophilidae</b>			
<i>Amiota</i> sp. A	2007	Oa	Leblanc et al. 2009
<i>Drosophila carbonaria</i> Patterson & Wheeler, 1942	1995	Ha, Ma, Mo	O’Grady 2002
<i>Drosophila nasutooides</i> Okada, 1964	2008	Oa	Leblanc et al. 2009
<i>Hirtodrosophila</i> sp. nr. <i>unicolorata</i> (Wheeler, 1959)	2005	Ha, Ma	Leblanc et al. 2009
<i>Mycodrosophila</i> sp. A	1969	Ma, Oa	O’Grady 2002
<i>Scaptodrosophila</i> sp. A	2005	Ha	Leblanc et al. 2009
<i>Stegana coleoprata</i> (Scopoli, 1763)	1976	Ha, Mo, Oa	O’Grady 2002; Leblanc et al. 2009

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Zaprinus ghesquierei</i> Collart, 1937		1978	Ha, Ma, Mo, Oa	O’Grady 2002; Leblanc et al. 2009
<b>Ephydriidae</b>				
<i>Philygria debilis</i> Loew, 1861		2002	Ha	Krushelnicky et al. 2013
<b>Heleomyzidae</b>				
<i>Tephrochlamys japonica</i> Okadome, 1967		Pre 2002	Ma	Okadome 2002
<b>Limoniidae</b>				
<i>Dicranomyia</i> sp. A		1999	Ma	Howarth and Preston 2002
<i>Libnotes</i> sp. A nr. <i>trukensis</i> (Alexander, 1972)		1996	Ha, Mo	Gruner 2004- apparently undescribed
“ <i>Limonia</i> ” s.l. sp. A		1992	Ha	Kumashiro et al. 2002
<b>Lonchaeidae</b>				
<i>Silba</i> sp. A		2002	Ha	Krushelnicky et al. 2013
<b>Muscidae</b>				
<i>Coenosia humilis</i> Meigen, 1826		2002	Ha	Krushelnicky et al. 2013; voucher specimens were not compared between Coenosiniinae Genus sp. and <i>Coenosia humilis</i> , therefore we list both records.
Coenosiniinae: Undetermined genus? sp. A		1999	Ma	Howarth and Preston 2002; see <i>Coenosia humilis</i>
<b>Mycetophilidae</b>				
<i>Sciophila</i> sp. A		2000	Ma	Howarth and Preston 2006

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Sciaridae</b>			
<i>Hyperplasion</i> sp. A	2006	Ma	Howarth and Preston 2007
<b>Syrphidae</b>			
<i>Ocyptamus dimidiatus</i> (Fabricius, 1781)	2008	Oa	HDOA 2010; Evenhuis 2015
<b>Tipulidae</b>			
Undetermined genus sp. A	2006	Ma	Howarth and Preston 2007- not <i>Nephrotoma suturalis</i>
<b>Xylomyidae</b>			
<i>Solva</i> sp. A	2014	Oa	Evenhuis 2016
<b>INSECTA: HEMIPTERA</b>			
<b>Aleyrodidae</b>			
<i>Aleuroclava jasmimi</i> (Takahashi, 1932)	1993	Oa	Kumashiro et al. 2002
<i>Aleurodicus dugesii</i> Cockerell 1896	2002	Ha, Ka, Ma, Oa	Heu et al. 2002
<i>Aleuroglandulus subtilis</i> Bondar, 1923	2006	Ha, Oa	HDOA 2008; Nagamine and Garcia 2011
<i>Aleurotrachelus atratus</i> Hempel, 1922	2006	Ha, Ma, Oa	HDOA 2007; NIR <sup>+</sup>
<i>Aleurotrachelus</i> sp.1	1991	Ma	Kumashiro et al. 2002- apparently undescribed
<i>Aleurotrachelus</i> sp.2	1992	Ha, Ka	Kumashiro et al. 2002- apparently undescribed
<i>Aleurotrachelus</i> sp.3	1996	Oa	Kumashiro et al. 2002- apparently undescribed
<i>Aleurotrachelus trachoides</i> (Back, 1912)	1998	Oa	Kumashiro et al. 2002



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Dialeurodes schefferae</i>	Hodges & Dooley, 2007	1988/1991	Oa	Kumashiro et al. 2002- as <i>D. sp. A</i> ; Hodges and Dooley 2007
<i>Metaleurodicus cardini</i>	(Back, 1912)	2003	Ha, Oa	HDOA 2005; NIR <sup>+</sup>
<i>Paraleyrodes bondari</i>	Peracchi, 1971	2003	Oa	Kumashiro and Martin 2004 pers. comm.; Evans 2008; HDOA 2008
<i>Paraleyrodes minei</i>	Iaccarino, 1990	2003	Oa	HDOA 2004; Dooley 2006
<i>Trialeurodes abutiloneus</i>	(Haldeman, 1850)	1990	Ha, Oa	Kumashiro et al. 2002
<b>Anthocoridae</b>				
<i>Buchanananiella continua</i>	(White, 1879)	~2000	Ha	Brenner and Lattin 2001 - Single collection, but likely established
<i>Dufouriellus ater</i>	(Dufour, 1833)	1971	Ha	Lattin 2005
<i>Montandoniola confusa</i>	Streito & Matocq 2009	1965 <sup>r</sup>		Lattin 2007; Pluot-Sigwalt et al. 2009 <sup>+</sup>
<i>Xylocoris flavipes</i>	(Reuter, 1875)	1920	Oa	Lattin 2005; 2007
<b>Aphalaridae</b>				
<i>Blastopsylla occidentalis</i>	Taylor, 1985	1993	Ka	Beardsley and Uchida 2002 as Psyllidae
<i>Ctenarytaina eucalypti</i>	(Maskell, 1890)	1993	Ma	Kumashiro et al. 2002 as Psyllidae
<i>Glycaspis brimblecombei</i>	Moore, 1964	2001	Ha, Ma, Oa	HDOA 2001; Nagamine and Heu 2001
<b>Aphididae</b>				
<i>Aphis coreopsidis</i>	(Thomas, 1878)	2004	Ka, Ma, Mo, Oa	Messing et al., 2006; Footitt et al. 2012

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Aphis eugeniae</i> van der Goot, 1917	1994	Ka, Oa	Foottit et al. 2012
<i>Aphis sedi</i> Kaltenbach, 1848	1997	Ka, Oa	Kumashiro et al. 2002; Foottit et al. 2012
<i>Aphis spiraeicola</i> Patch, 1914	1939	Ha, Ka, Ma, Mo, Ha	Foottit et al. 2012- previously treated as junior syn. of <i>A. citricola</i>
<i>Capitophorus formosartemisiae</i> (Takahashi, 1921)	2003	Oa	Foottit et al. 2012- Single collection, established?
<i>Capitophorus hippophaes</i> (Walker, 1852)	1993	Oa	Kumashiro et al. 2002
<i>Cerataphis lataniae</i> (Boisduval, 1867)	1909	Ha, Ma, Oa	Fullaway, 1910; Messing et al. 2012
<i>Cinara cupressi</i> (Buckton, 1881)	2000	Ha, Ka, Ma	Foottit et al. 2012; Messing et al. 2012
<i>Cinara watsoni</i> Tissot, 1939	2003	Ka, Ma, Mo	Foottit et al. 2012
<i>Coloradoa campestrella</i> Ossiannilsson, 1959	2003	Oa	Foottit et al. 2012- Single collection, established?
<i>Dysaphis foeniculus</i> (Theobald, 1923)	1942	Ha, Ka Ma, Oa	Foottit et al. 2012- previously misidentified
<i>Ericaphis scammelli</i> (Mason, 1940) group	2003	Ma	Messing et al. 2006 (referred to as <i>E. fimbriata</i> ); Foottit et al. 2012
<i>Glyphinaphis bambusae</i> van der Goot, 1917	2009	Ka	Foottit et al. 2012
<i>Greenidea ficicola</i> Takahashi, 1921	2011	Oa	Nagamine and Garcia 2012
<i>Hyadaphis coriandri</i> (Das, 1918)	2003	Ha, Ma, Oa	Messing et al., 2006; Foottit et al. 2012
<i>Hyadaphis foeniculi</i> (Passerini, 1860)	2003	Ha, Ka	Foottit et al. 2012
<i>Hyperomyzus carduelinus</i> (Theobald, 1915)	1975	Ha, Ka, Ma, Mo, O	Messing et al., 2006; Foottit et al. 2012

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Illinoia borealis</i> (Mason, 1925)	1965	Ma	Foottit et al. 2012- Single collection, established?
<i>Illinoia goldamaryae</i> (Knowlton, 1938)	2005	Mo	Foottit et al. 2012 - Single collection, established?
<i>Macrosiphum rosae</i> (Linnaeus, 1758)	2004	Ka	Foottit et al. 2012; Previous records of this species (Kirkaldy 1908, Zimmerman 1948b) refer to <i>Sitobion ibarae</i>
<i>Metopolophium dirhodum</i> (Walker, 1849)	2003	Ka, Ma	Messing et al. 2006
<i>Micromyzus katoi</i> (Takahashi, 1925) group	1983	Ha, Ka, Oa	Foottit et al. 2012; possibly collected earlier- previous collection identified as <i>Pentalonia nigronervosa</i> may be this species
<i>Myzus hemerocallis</i> Takahashi, 1921	2003	Ka, Oa	Messing et al. 2006; Foottit et al. 2012
<i>Nearctaphis bakeri</i> (Cowen, 1895)	1938	Ha	Foottit et al. 2012 – one slide only, established?
<i>Neotoxoptera oliveri</i> (Essig, 1935)	1939	Ka, Ma	Foottit et al. 2012
<i>Pemphigus populitransversus</i> Riley, 1879	1990	Ha, Ma, Oa	Kumashiro et al. 2002- as <i>Pemphigus</i> sp.; Foottit et al. 2012; Messing et al. 2012
<i>Pentalonia caladiei</i> van der Goot, 1917	1939	Ha, Ka, Ma, Mo, Oa	Foottit et al. 2010; Foottit et al. 2012
<i>Sipha elegans</i> del Guercio, 1905	2005	Mo	Foottit et al. 2012
<i>Stobion anselliae</i> (Hall, 1932)	1948	Ha, Oa	Foottit et al. 2012
<i>Stobion fragariae</i> (Walker, 1848)	2003	Ha, Ka, Ma	Messing et al., 2006; Foottit et al. 2012
<i>Stobion phyllanthi</i> (Takahashi, 1937)	2003	Ha, Ka, Ma, Mo, Oa	Messing et al., 2006; Foottit et al. 2012

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Takecallis arundinariae</i> (Essig, 1917)	1997	Ha	Kumashiro et al. 2002
<i>Uroleucon erigeronense</i> (Thomas, 1878)	2003	Ma	Footitt et al. 2012- Single collection, established?
<b>Asterolecaniidae</b>			
<i>Planchonia stentae</i> Brain, 1920	2007	Ha, Ma , Oa	NSR <sup>+</sup>
<b>Carsidaridae</b>			
<i>Mesohomotoma hibisci</i> (Froggatt, 1901)	2005	Oa	HDOA 2006
<b>Cicadellidae</b>			
<i>Draeculacephala portola</i> Ball, 1927	2013	Ha	NSR <sup>+</sup> - Single collection?
<i>Homalodisca viripennis</i> Germar, 1821	2004	Oa	Heu et al. 2004b- as <i>Homalodisca coagulata</i> (Say)
<i>Macrosteles</i> sp. nr. <i>severini</i> Hamilton, 1983	2001	Oa	Smith et al. 2002
<b>Coccidae</b>			
<i>Ceroplastes eugineae</i> Hall, 1931	2008	Ha, Oa	HDOA 2010- as <i>Ceroplastes rusci</i> (Linnaeus); NIR <sup>+</sup>
<i>Ceroplastes stellifer</i> (Westwood, 1871)	1998	Ha, Oa	Kumashiro et al. 2002- as <i>Vinsonia stellifera</i> (Westwood); Peronti et al. 2008- name change; NIR <sup>+</sup>
<i>Pulvinariella mesembryanthemi</i> (Vallot, 1829)	2011	Ha, Ma, Oa	NSR <sup>+</sup>
<b>Coreidae</b>			
<i>Acanthocoris</i> sp. <i>A</i>	2009	Ka	NSR <sup>+</sup>



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Physomerus grossipes</i> (Fabricius, 1794)		1997	Ha, Ka, Ma, Oa	Kumashiro et al. 2002; NIR <sup>+</sup>
<b>Cydnidae</b>				
<i>Fromundus biimpressus</i> (Horváth, 1919)		1982	Ha, Ka, Ma, Oa	Howarth and Preston 2002 as Genus? sp. A; Species identified and NIR <sup>+</sup>
<i>Pangaeus bilineatus</i> (Say, 1825)		2009	Oa	Garcia 2011a
<b>Diaspididae</b>				
<i>Andaspis numerata</i> Brimblecombe, 1959		2011	Oa	NSR <sup>+</sup>
<i>Aonidiella orientalis</i> (Newstead, 1894)		2009	Oa	Single collection, possibly not established <sup>+</sup>
<i>Aspidiella sacchari</i> (Cockerell, 1893)		1993	Oa	Kumashiro et al. 2002
<i>Aulacaspis yasumatsui</i> Takagi, 1977		1998	Ha, Ka, Oa	Kumashiro et al. 2002
<i>Fiorinia phantasma</i> Cockerell & Robinson, 1915		2004	Ha, Ka, Ma,	HDOA 2010; Garcia 2011b; NIR <sup>+</sup>
<i>Fiorinia proboscidiaria</i> Green, 1900		1994	Oa	Beardsley 2002
<i>Odonaspis saccharicaulis</i> (Zehntner, 1897)		2012	Ma, Oa	Matsunaga 2013a
<i>Odonaspis</i> sp.		1998	Ha	Kumashiro et al. 2002- apparently undescribed
<i>Pseudaonidia trilobitiformis</i> (Green, 1896)		2004	Ha, La, Oa	HDOA 2006; NIR <sup>+</sup>
<i>Pseudaulacaspis brimblecombei</i> Williams, 1973		<2000	Ma	HDOA 2007
<i>Pseudaulacaspis pentagona</i> (Targioni-Tozzetti, 1886)		1997	Ha, Ka, Ma, Oa	Kumashiro et al. 2002; NIR <sup>+</sup>
<b>Eriococcidae</b>				
<i>Eriococcus ironsidei</i> Williams, 1973		2005	Ha	Conant et al. 2005; HDOA 2006

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Tectococcus ovatus</i> Hempel, 1900		2011 <sup>r</sup>	Ha, La, Ma, Oa	Johnson pers. comm. 2015; Johnson 2016
<b>Kerriidae</b>				
<i>Paratachardina pseudolobata</i> Kondo & Gullan, 2007		2012	Oa	Garcia 2013
<b>Membracidae</b>				
<i>Stictopelta marmorata</i> Goding, 1892		2003	Oa	NSR <sup>+</sup>
<b>Liviidae</b>				
<i>Diaphorina citri</i> Kuwayama, 1908		2006	Ha, Ka, La, Ma, Mo, Oa	Conant et al. 2006; HDOA 2007; Formerly Psyllidae
<b>Miridae</b>				
<i>Microtechnites minutus</i> (Reuter, 1885)		2000?	Ka, Oa	HDOA 2001- as <i>Halticus tibialis</i> Reuter
<i>Kundakimuka queenslandica</i> Cassis, 1995		2002	Oa	NSR <sup>+</sup>
<i>Polymerus testaceipes</i> Stal, 1860		2012	Ha	NSR <sup>+</sup>
<i>Rubrocuneocoris calvertae</i> Henry, 2017		2011	Ha	Henry 2017
Undetermined genus sp. A [of T.J. Henry]		2011	Ha	Ex. <i>Citrus</i> sp.
<b>Nabidae</b>				
<i>Stenonabis</i> sp. A		2006	Ma, Oa	Howarth et al. 2012
<b>Pentatomidae</b>				
<i>Bagrada hilaris</i> (Burmeister, 1835)		2014	Ha, Ka, Ma, Mo, Oa	Matsunaga 2016; NIR <sup>+</sup>
<i>Nezara viridula</i> f. <i>aurantiaca</i> Costa, 1884		2004	Ha	Golden and Follett 2006

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Piezodorus oceanicus</i> (Montrouzier, 1865)		2006	Ma, Oa	Howarth and Preston 2007– as <i>P. hybneri</i> (Gmelin); NIR <sup>+</sup>
<b>Pseudococcidae</b>				
<i>Antonina pretiosa</i> Ferris, 1953		1997	Ha, Ma	Kumashiro et al. 2002; NIR <sup>+</sup>
<i>Delottococcus confusus</i> (DeLotto, 1977)		2009	Ma	Miller and Giliomee 2011
<i>Hypogeococcus pungens</i> Granara de Willink, 1981		2005	Oa	HDOA 2007
<i>Paracoccus marginatus</i> Williams & Granara de Willink, 1992		2004	Ha, Ka, La, Ma, Oa	Heu et al. 2004a; HDOA 2005
<i>Phenacoccus solenopsis</i> (Tinsley, 1898)		1996	Ma, Oa	Kumashiro et al. 2002
<i>Planococcus minor</i> (Maskell, 1897)		2005	Ha, Oa	Rung et al. 2008
<i>Pseudococcus elisae</i> Borchsenius, 1947		1984	Mo, Oa	Beardsley 1986
<i>Pseudococcus</i> sp. A		2010	Ha, Oa	NSR <sup>+</sup> Near <i>P. aurantiacus</i> and <i>P. cryptus</i> , possibly undescribed.
<i>Vryburgia brevicurris</i> (McKenzie, 1960)		2011	Ha	NSR <sup>+</sup>
<b>Psyllidae</b>				
<i>Cacopsylla tobirae</i> (Miyatake, 1964)		2013	Oa	Conant 2013 <sup>+</sup>
<b>Reduviidae</b>				
<i>Sinea rileyi</i> Montandon, 1893		1999	Ma	Howarth and Preston 2002
<b>Rhizoecidae</b>				
<i>Rhizoecus americanus</i> (Hambleton, 1946)		2006	Ha	HDOA 2007

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Rhyparocromidae</b>			
<i>Horridipamera inconspicua</i> (Dallas, 1852)	2009	Ha	NSR <sup>+</sup>
<b>Tingidae</b>			
<i>Corythucha gossypii</i> (Fabricius, 1794)	2001	Ha, Ka, Ma, Oa	Miller and Nagamine 2005
<b>INSECTA: HYMENOPTERA</b>			
<b>Agonidae</b>			
<i>Josephiella microcarpae</i> Beardsley & Rasplus 2001	1989	Ha, Ka, Ma, Mo, Oa	Beardsley and Perreira 2000 as <i>Josephiella</i> n. sp.; Beardsley and Rasplus 2001
<i>Josephiella</i> sp. A [of J.-Y. Rasplus]	2012	Ha, Ka(?), Ma Mo(?), Oa	Apparently undescribed; stem galler ex. <i>Ficus</i> spp.; NSR <sup>+</sup>
<i>Platyscapa quadraticeps</i> (Mayr, 1885)	2006	Oa	HDOA 2008
<b>Aphelinidae</b>			
<i>Encarsia cubensis</i> Gahan, 1931	2008	Ha, Oa	NSR <sup>+</sup>
<i>Encarsia diaspidicola</i> Silvestri, 1909	2012 <sup>+</sup>	Ha <sup>r</sup> , Oa <sup>+</sup>	Follet et al. 2015 <sup>r</sup> ; NSR <sup>+</sup>
<i>Encarsia dispersa</i> (= <i>haitiensis</i> ) Polaszek, 2004	1979	Oa	Lai et al. 1982 as <i>E. ?haitiensis</i> ; Polaszek et al. 2004
<i>Encarsia brasiliensis</i> (= <i>hispida</i> ) (Hempel, 1904)	1998 <sup>r</sup>	Ha <sup>r</sup> , Oa <sup>r</sup>	Culliney et al. 2003; now established
<i>Encarsia inaron</i> (Walker, 1839)	1992	Oa	Kumashiro et al. 2002
<i>Encarsia lutea</i> (Masi, 1910)	1992; 1998 <sup>r</sup>	Ha <sup>r</sup> , Mo, Oa <sup>r</sup>	Kumashiro et al. 2002; Culliney et al. 2003
<i>Encarsia luteola</i> Howard, 1895	1990 <sup>r</sup> ; 1998 <sup>r</sup>	Ha <sup>r</sup> , Oa <sup>r</sup>	Kumashiro et al. 2002; Culliney et al. 2003



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Encarsia mineoi</i> Viggiani, 1982	1998 <sup>r</sup>	Ha <sup>r</sup> , Oa <sup>r</sup>	Culliney et al. 2003
<i>Encarsia nigricephala</i> Dozier, 1937	1992	Ha	Kumashiro et al. 2002
<i>Encarsia strenua</i> (Silvestri, 1927)	1993	Ha	Kumashiro et al. 2002
<b>Apidae</b>			
<i>Ceratina smaragdula</i> (Fabricius, 1787)	1984	Ha, Oa, Ma, Mo	Arakaki et al. 2001; Howarth and Preston 2007; Magnacca pers. comm. 2018 (visual observations only)
<b>Bethylidae</b>			
<i>Goniozus cf. foveolatus</i> Ashmead, 1887	2000	Ma	Updated to current name; Howarth and Preston 2002- as <i>G. cf. columbianus</i> Ashmead
<b>Braconidae</b>			
<i>Apanteles</i> sp. nr. <i>carpatus</i> (Say, 1836)	2000	Ma	Howarth and Preston 2002
<i>Ascogaster</i> sp. A	2000	Ma	Howarth and Preston 2002
<i>Glyptapanteles</i> sp. A	2000	Ma	Howarth and Preston 2002
<i>Heterospilus</i> sp. A	2000	Ma	Howarth and Preston 2002
<i>Leiophron</i> sp. A	1997	Ha	Gruner 2004
<i>Phanerotoma</i> sp. A	2000	Ma	Howarth and Preston 2002
<i>Phanerotoma</i> sp. B	2000	Ma	Howarth and Preston 2002
<b>Chalcididae</b>			
<i>Dirhinus</i> sp. A	2006	Ma	Howarth and Preston 2007; et al. 2012

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Colletidae</b>			
<i>Hylaeus (Hylaeus) leptocephalus</i> (Morawitz, 1871)	1994	Oa	Magnacca et al. 2013– possible rediscovery
<i>Hylaeus (Prosopistemon) sp.</i>	2012	Oa	Magnacca et al. 2013– single specimen, possible interception?
<i>Hylaeus strenuus</i> (Cameron, 1897)	2007	Ka, Oa	Magnacca et al. 2011; Magnacca and King 2013; Magnacca 2015
<b>Encyrtidae</b>			
<i>Agentaspis citricola</i> Logvinovskaya, 1983	2000	Ha, Ka, Ma, Mo, Oa	Nagamine and Heu 2000; HDOA 2001
<i>Anagyrus agraeensis</i> Saraswat, 1975	1999	Oa	Beardsley and Triapitsyn 2002
<i>Diaphorencyrtus aligharensis</i> Shafée, Alam, & Agarwal, 1975	2012	Oa	Matsunaga 2014– Parentheses were placed were placed around authors in error
<i>Psyllaephagus bliteus</i> Riek, 1962	2006	Ma, Oa <sup>+</sup>	Daane et al. 2005; NIR <sup>+</sup>
<i>Psyllaephagus pilosus</i> Noyes, 1988	2002	Ha, Ma	HDOA 2006
<i>Psyllaephagus sp. A</i>	2017	Oa	NSR <sup>+</sup> ; ex. <i>Cacopsylla tobirae</i> ; not <i>P. blastopsyllae</i>
<b>Eulophidae</b>			
<i>Aleuroctonus vittatus</i> (Dozier, 1933)	2007	Ha, Ma, Oa	HDOA 2009
<i>Aprostocetus sp. #3</i> [of HDOA, 2007]	2006	Oa	HDOA 2007; ex. <i>Hypogeococcus pungens</i>
<i>Aroplectrus dimerus</i> Lin, 1963	2010 <sup>r</sup>	Ha, Ka, Ma, Oa	Bautista et al. 2014
<i>Asecodes sp. A</i>	1997	Ha	Gruner 2004
<i>Cirrospilus sp. A</i> [of La Salle]	2001	Oa	<i>C. sp. not vittatus</i> ; NSR <sup>+</sup>

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>?Closterocerus</i> sp. A [of La Salle]	2005	Ma	? <i>C.</i> sp. not <i>utahensis</i> ; NSR <sup>+</sup>
<i>Elasmus</i> sp. A	2000	Ma	Howarth et al. 2012
<i>Elasmus</i> sp. B	2000	Ma	Howarth et al. 2012
<i>Entedon erythrinae</i> Gumovsky & Ramadan, 2011	2006	Ma, Oa	Gumovsky and Ramadan 2011
<i>Epichrysocharis burwelli</i> Schauff, 2000	2001	Ma <sup>+</sup> , Oa	HDOA 2006; NIR <sup>+</sup>
<i>Horismenus</i> sp. A	2000	Ma	Howarth and Preston 2002
<i>Ophelimus</i> sp. A [of La Salle]	2005	Ma	Not <i>O. maskelli</i> , possibly not <i>O. eucalypti</i> ; NSR <sup>+</sup>
<i>Quadrastichus erythrinae</i> Kim, 2004	2005	Ha, Ka, Ma, Mo, Oa	Heu et al. 2005b
<i>Tamarixia</i> sp. prob. <i>radiata</i> (Waterston, 1922)	2012	Oa	Matsunaga 2014
<i>Zagrammosoma</i> sp. A	2006	Ma	Howarth and Preston 2007- possibly <i>Z. multilineatum</i> (Ashmead, 1888)
<b>Eurytomidae</b>			
<i>Eurytoma erythrinae</i> Gates & Delvare, 2008	2008 <sup>r</sup>	Ha, Ka, Ma, Mo, Oa	HDOA 2009
<i>Eurytoma</i> sp. A	1999	Ma	Howarth and Preston 2002
<b>Formicidae</b>			
<i>Monomorium dichroum</i> Forel, 1902	-	Ha, Ka, Kh, Ma, Mo,	Starr and Starr 2011 & Antweb 2017 as <i>Monomorium bicolor</i> complex <sup>+</sup>
<i>Monomorium indicum</i> Forel, 1902	2005	Ha	HDOA 2008

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Pheidole navigans</i> Forel, 1901	2000	Ha, Ma, Oa	As <i>Pheidole moerens</i> in Gruner et al. 2003, Starr and Starr 2013; NIR <sup>+</sup>
<i>Solenopsis globularia</i> (Smith, 1858)	2005	Oa	HDOA 2008
<i>Solenopsis</i> sp. HI01	2000	Ha, Mo, Oa	Heu and Chun 2000; Gruner et al. 2003; AntWeb 2017
<i>Tapinoma sessile</i> (Say, 1836)	2009	Ma	Buczowski and Krushelnysky 2012
<i>Technomyrmex difficilis</i> Forel, 1892	1994?	Ka, Ko, Ma, Mo, Oa	Bolton 2007; Antweb 2017; Starr and Starr 2012
<i>Technomyrmex pallipes</i> Smith, 1876	-	Oa	Antweb 2017
<i>Technomyrmex vitiensis</i> Mann, 1921	-	Ha, Ka, Ma, Mo, Oa	Bolton 2007; Antweb 2017
<i>Tetramorium caldarium</i> (Roger, 1857)	-	Ha, Ka, Ma, Oa	Bolton 1997; Antweb 2017
<i>Tetramorium insolens</i> (F. Smith, 1861)	1993	Ha	Kumashiro et al. 2002; Previously misidentified as <i>T. bicarinatum</i>
<i>Tetramorium lanuginosum</i> Mayr, 1870	2008	Oa	HDOA 2010a
<b>Halictidae</b>			
<i>Lasioglossum (Dialictus) imbrex</i> Gibbs, 2010	2005	Ha, Mo, Oa	Magnacca et al. 2013
<i>Lasioglossum (Dialictus) microleporoides</i> (Ellis, 1914)	2010	Oa	Magnacca et al. 2013
<b>Ichneumonidae</b>			
<i>Hypsicerca</i> sp. A	2000	Ma	Howarth and Preston 2002–not <i>H. femoralis</i>



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Hypsicera</i> sp. B	2000	Ma	Howarth and Preston 2002- not <i>H. femoralis</i>
<i>Triclistus</i> nr. <i>aitkeni</i> (Cameron, 1897)	1998?	Ha, Ka, Ma, Oa	Kaufman et al. 2008
<i>Woldstedius flavolineatus</i> (Gravenhorst, 1829)	2006	Ha, Ma, Oa	Cappadonna et al. 2009
Cremastini Genus? sp. [of Howarth and Preston, 2002]	2000	Ma	Howarth and Preston 2002
<b>Leucospidae</b>			
<i>Leucospis</i> sp. A	2000	Ma	Howarth and Preston 2007- not <i>L. affinis</i>
<b>Megachilidae</b>			
<i>Megachile lanata</i> (Fabricius, 1775)	2008	Ka, Ma, Mo, Oa	Magnacca et al. 2013; Magnacca 2015; NIR <sup>+</sup>
<b>Mymaridae</b>			
<i>Gonatocerus ashmeadi</i> Girault, 1915	2004	Oa	HDOA 2006
<i>Gonatocerus</i> sp. A	2000	Ma	Howarth and Preston 2002
<b>Platygastridae</b>			
<i>Aphanomerus rufescens</i> Perkins, 1905	1998	Ha	Gruner 2004
<b>Pteromalidae</b>			
<i>Callocleononymus swezeyi</i> (Yoshimoto & Ishii, 1965)	2000	Ma	Howarth Preston 2006
<i>Idioporus affinis</i> LaSalle & Polaszek, 1997	2005	Oa	HDOA 2005
<i>Pachyneuron</i> sp. A	2000	Ma	Howarth and Preston 2002

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Zolotarewskyia</i> sp. A	1995	Ha, Mo	Gruner 2004
<b>Scelionidae</b>			
<i>Baeus</i> sp. A	2006	Ma	Howarth and Preston 2007
<i>Trimorus</i> sp. A	1997	Ha	Gruner 2004– single specimen, established?
<b>Trichogrammatidae</b>			
<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti, 1970	2011	Ka, Oa	Wright and Stouthamer 2011
<b>Vespidae</b>			
<i>Parancistrocerus fulvipes</i> (de Saussure, 1855)	1998	Mi	Nishida and Beardsley 2002
<i>Polistes dominula</i> (Christ, 1791)	2006	(Ha, Ma, Oa) <sup>+</sup>	HDOA 2007; Established? <sup>+</sup>
<i>Polistes jokahamae</i> Radoszkowski, 1887	1905	Ha, Ku, Mi, Oa	Specimens previously misidentified <sup>+</sup> Carpenter 2008
<b>INSECTA: LEPIDOPTERA</b>			
<b>Choreutidae</b>			
<i>Choreutis</i> sp. A	2001	Ha, Ka, Ma, Oa	HDOA 2004; NIR <sup>+</sup>
<b>Cosmopterygidae</b>			
<i>Ithome lassula</i> Hodges, 1961	1986	Oa	Kumashiro et al. 2002
<b>Crambidae</b>			
<i>Diaphania nitidalis</i> (Stol, 1781)	2003	Ha, Ka, Ma, Oa	HDOA 2005; Heu et al. 2005a

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Erebidae</b>				
<i>Oraesia excavata</i> (Butler, 1878)		2009	Ka, Ma, Oa	Haines et al. 2011
<i>Secusio extensa</i> (Butler, 1880)		2013 <sup>r</sup>	Ha <sup>r</sup> , Ma <sup>r</sup>	NSR <sup>+</sup>
<b>Autostichidae</b>				
Undetermined genus (nr. <i>Autosticha</i> ) sp. A		2000	Ma	Howarth and Preston 2002- as Gelechiidae
<b>Geometridae</b>				
<i>Scopula personata</i> (Prout, 1913)		1976	Ma, Oa	Howarth and Preston 2002
Undetermined genus sp. A [of F.G. Howarth]		2007	Oa	Pending identification; NSR <sup>+</sup>
<b>Gracillariidae</b>				
<i>Caloptilia coruscans</i> Walsingham, 1908		1991 <sup>r</sup> –1994	Ha <sup>r</sup>	Markin 2001- as <i>C. sp. nr. schinella</i> (Walsingham); Davis et al. 2011
<i>Phyllocnistis citrella</i> Stainton, 1856		2000	Ha, Ka, Ma, Mo, Oa	Nagamine and Heu 2000; HDOA 2001
<b>Limacodidae</b>				
<i>Darna pallivitta</i> (Moore, 1887)		2001	Ha, Ma, Oa	Conant et al. 2001; HDOA 2003
<b>Lycaenidae</b>				
<i>Zizina otis</i> (Fabricius, 1787)		2008	Ha, Ka, Oa	Snyder et al. 2008; NIR <sup>+</sup>
<b>Noctuidae</b>				
<i>Ctenoplusia albostrigata</i> Bremer & Gray, 1853		1996	Ma, Oa	Howarth and Preston 2002; Confirmed M.G. Pogue, 6.V.2013

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>		<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Feltia subterranea</i> (Fabricius, 1794)		2006	Ha, La, Ma	Prestes 2014
<b>Pieridae</b>				
<i>Abaeis nicippe</i> (Cramer, 1779)		2013	Ha, Ka, Ko, Ma, Mo, Oa	Rubinoff et al. 2015
<i>Phoebis agartithe</i> (Boisduval, 1836)		2004	Ka, Ma, Oa	HDOA 2005; NIR <sup>+</sup>
<b>Pyralidae</b>				
<i>Loryma</i> cf. <i>recusata</i> (Walker, 1863)		1998	Ha, Ma	Howarth and Preston 2002 -as unknown Crambid; Howarth et al. 2012
<b>Sphingidae</b>				
<i>Hippotion rosetta</i> (Swinhoe, 1892)		1998	Ha, Ka, Ma, Oa	Kumashiro et al. 2002; Howarth and Preston 2002
<b>Tineidae</b>				
Genus sp. [of Howarth and Preston, 2002]		2000	Ma, Oa	Howarth and Preston 2002
<b>INSECTA: NEUROPTERA</b>				
<b>Chrysopidae</b>				
<i>Mallada albofacialis</i> Winterton, 1995		2007	Oa	Tauber and Tauber 2011 - single specimen, established?
<b>INSECTA: ORTHOPTERA</b>				
<b>Gryllidae</b>				
<i>Anele ulia</i> Otte, Shaw & Carvalho, 2003		2002	Ma	Otte et al. 2003
<i>Nanixipha nahoa</i> Otte, Shaw & Carvalho, 2003		2002	Ha, Oa <sup>+</sup>	Otte et al. 2003; NIR <sup>+</sup>



**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Trigonidium</i> sp.	1997	Ha	Kumashiro et al. 2002
<b>INSECTA: PHASMATODEA</b>			
<b>Diapheromeridae</b>			
<i>Sipylodea sipylus</i> (Westwood, 1859)	1994	Ha, Ka, Oa	Kumashiro et al. 2002- as Heteronemiidae; <i>Necrosia</i> sp.; Leiner 2013
<b>INSECTA: PSOCOPTERA</b>			
<b>Archipsocidae</b>			
<i>Archipsocus</i> sp. A	2003	Ma	Howarth and Preston 2006
<b>Caeciliidae</b>			
<i>Stenocaeecilius</i> sp. A	2002	Ha	Krushelnicky et al. 2013
<b>Ectopsocidae</b>			
<i>Ectopsocus briggsi</i> McLachlan, 1899	1997	Ha	Gruner 2004
<i>Ectopsocus californicus</i> (Banks, 1903)	2002–2003	Ma	Krushelnicky et al. 2007
<i>Ectopsocus vachoni</i> Badonnel, 1945	2002–2003	Ma	Krushelnicky et al. 2007
<b>Elipsocidae</b>			
<i>Elipsocus hyalinus</i> (Stephens, 1836)	2002–2003	Ma	Krushelnicky et al. 2007
<b>Lachesillidae</b>			
<i>Lachesilla tectorum</i> Badonnel, 1931	2002–2003	Ma	Krushelnicky et al. 2007

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>Lepidopsocidae</b> <i>Pteroxanium kelloggi</i> (Ribaga, 1905)	2005	Ha	Krushelnicky et al. 2013
<b>Liposcelidae</b> <i>Liposcelis bostrychophila</i> Badonnel, 1931	2002–2003	Ma	Krushelnicky et al. 2007
<i>Liposcelis deltachi</i> Sommerman, 1957	2002	Ha	Mockford & Krushelnicky 2008
<i>Liposcelis rufa</i> Broadhead, 1950	2002	Ha	Mockford & Krushelnicky 2008
<b>Myopsocidae</b> <i>Myopsocus</i> sp. A	2006	Ma	Howarth and Preston 2012
<b>Philotarsidae</b> <i>Aaroniella</i> sp. A	2003	Ma	Howarth and Preston 2012
<i>Haplophallus talilus</i> ? Thornton & New	2002–2003	Ma	Krushelnicky et al. 2007
<i>Haplophallus</i> sp. A	1997	Mo	Gruner 2004– same as <i>H.</i> sp. B?
<i>Haplophallus</i> sp. B	2000	Ma	Howarth and Preston 2012– same as <i>H.</i> sp. A?
<b>Pseudocaeciliidae</b> <i>Austropsocus</i> sp. A	2002	Ha	Krushelnicky et al. 2013
<b>INSECTA: THYSANOPTERA</b>			
<b>Phlaeothripidae</b> <i>Adraneothrips alajuela</i> Mound & Marullo, 1996	2016	Ha	Mound et al. 2017
<i>Adraneothrips russatus</i> (Haga, 1973)	2016	Ha	Mound et al. 2017

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Androthrips ramachandrai</i> Karney, 1926	2006	Oa	Boyd and Held 2006
<i>Azaleothrips siamensis</i> Okajima, 1978	2016	Ha	Mound et al. 2017
<i>Cartomothrips nevoissi</i> Mound & Walker, 1982	2016	Ha	Mound et al. 2017
<i>Gynaikothrips uzeli</i> (Zimmerman, 1900)	2003	Ha, Oa	Held and Boyd 2008; Mound et al. 2017
<i>Haplothrips kurdjumovi</i> Karny, 1913	2011	Ha	Mound and Matsunaga 2017
<i>Hoplandrothrips</i> sp. A	2002–2003	Ma	Krushehnycky et al. 2007
<i>Hoplothrips magnaccai</i> Mound, 2017	2016	Ma, Oa	Mound 2017
<i>Klambothrips myopori</i> Mound & Morris, 2007	2009	Ha	Conant et al. 2009; HDOA 2010a
<i>Dolichothrips franae</i> Mound & Okajima, 2015	2010	Ha, Ka, Oa	Mound and Okajima 2015; Mound et al. 2017
<i>Plectrothrips</i> sp. A	2016	Ha, Oa	Mound et al. 2017
<i>Pygothrips</i> sp. A	2016	Ha	Mound et al. 2017
<i>Sophiothrips annulatus</i> Okajima, 1994	2016	Ha	Mound et al. 2017
<b>Thripidae</b>			
<i>Anisopilothrips venustulus</i> (Priesner, 1923)	2010	Ha	Mound et al. 2016
<i>Baileyothis arizonensis</i> (Morgan, 1913)	1980	Oa	Bianchi 1981
<i>Chirothrips manicatus</i> Haliday, 1836	2002–2003	Ha, Ma	Krushehnycky et al. 2007; Mound et al. 2017
<i>Coremothis pallidus</i> Hood, 1925	2016	Ha, Oa	Mound et al. 2017
<i>Dichromothrips smithi</i> Zimmermann, 1900	2007	Ha	HDOA 2009; Hollingsworth et al. 2012

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<i>Frankliniella cephalica</i> (D.L. Crawford, 1910)	1998	Ha, Oa	Kumashiro et al. 2002
<i>Frankliniella occidentalis</i> (Pergande, 1895) “invasive greenhouse/glasshouse strain”	2010	Ha	Species is established, but first record of the “invasive greenhouse strain” <sup>2+</sup>
<i>Frankliniella crotonariae</i> Mound & Marullo, 1996	2002–2003	Ma	Krushelnysky et al. 2007
<i>Hercinothrips bicornutus</i> (Bagnall, 1919)	1998	Ha, Oa	Kumashiro et al. 2002
<i>Holothrips</i> sp. A (of Nakahara)	2009	Oa	NSR <sup>+</sup>
<i>Pezothrips kellyanus</i> (Bagnall, 1916)	2001	Ha, Ma, Oa	HDOA 2007; Mound et al. 2017
<i>Scirtothrips perseae</i> Nakahara, 1997	2006	Ha, Ma	HDOA 2007; Mound et al. 2016; Mound et al. 2017
<i>Thrips safrus</i> Mound & Masumoto 2005	2003	Ma	Misidentified as <i>Thrips imaginis</i> Bagnall, 1926 in HDOA 2007; Mound et al. 2017
<i>Thrips maculicollis</i> (Hood, 1918)	2000	Ha	Hollingsworth 2003- as <i>Thrips</i> sp. nr. <i>leeuweni</i> (Priesner, 1938); Mound et al. 2016
<i>Thrips parvispinus</i> (Karny, 1922)	2006	Ha, Oa	HDOA 2008
<b>INSECTA: THYSANURA</b>			
<b>Lepismatidae</b>			
<i>Lepisma saccharina</i> Linnaeus, 1758	2010	Oa	NSR <sup>+</sup>
<b>INSECTA: TRICHOPTERA</b>			
<b>Hydroptilidae</b>			
<i>Hydroptila icona</i> Mosely, 1937	2001	Ma, Mo, Oa	Flint et al. 2003

**Table 1.** New records of immigrant terrestrial arthropods post–Nishida 2002 (continued).

<b>TAXON</b>	<b>Year 1st detected</b>	<b>Island distribution<sup>1</sup></b>	<b>Citation and notes</b>
<b>CHILOPODA: GEOPHILOMORPHA</b>			
<b>Mecistocephalidae</b>			
<i>Tygarrup javanicus</i> Attems, 1929	1964	Ha, Oa	Bonato et al. 2004
<b>DIPLOPODA: POLYDESMIDA</b>			
<b>Paradoxosomatidae</b>			
<i>Helicorthis holstii</i> (Pocock, 1895)	2008	Oa	Howarth and Shelley 2010
<b>CRUSTACEA: MAXILLOPODA: PENTASTOMIDA:</b>			
<b>Raillietiellidae</b>			
<i>Raillietiella indica</i> Gêdoelst, 1921	<2004	Oa	Barton and Riley 2004- parasite of toads

1 = Island distribution: Ha=Hawaii, Ka=Kauai, Kh=Kahoolawe, Ku=Kure, Ln=Lanai, Ma=Maui, Mi=Midway, Mo=Molokai, Ne=Necker, Oa=Oahu

+ = Indicates accompanying text in Collection Data and New Record Summaries section

r = Biological control release. NIR = New Island Record. NSR = New State Record



**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002.

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<b>ARACHNIDA: ARANEAE</b>		
<b>Clubionidae</b>		
<i>Corinna cetrata</i> (Simon, 1888)	<b>Corinnidae</b> <i>Creugas gulosus</i> Thorell, 1878	Bonaldo 2000
<b>Clubionidae</b>		
<i>Meriola arcifera</i> (Simon, 1886)	<b>Trachelidae</b> <i>Meriola arcifera</i> (Simon, 1886)	Ramírez 2014
<b>Linyphiidae</b>		
<i>Lepthyphantes tenuis</i> (Blackwall, 1852)	<i>Tenuiphantes tenuis</i> (Blackwall, 1852)	Merrett 2004
<b>Pholcidae</b>		
<i>Artema mauritiana</i> Walkenaer, 183	<i>Artema atlanta</i> Walkenaer, 1837	Beatty et al.2008
<i>Hedysilus culicinus</i> (Simon, 1893)	<i>Modisimus culicinus</i> (Simon, 1893)	Beatty et al.2008
<i>Pholcus phalangoides</i> (Fuesslins, 1775)	Delete	Misidentified; Beatty et al.2008
<b>Salticidae</b>		
<i>Habronattus ?tarsalis</i> (Banks, 1904)	<i>Habronattus tarsalis</i> (Banks, 1904)	Nishida 2002- Unk.; Proszynski 2002- Est. Ha; Howarth et al. 2012- Est. Ma
<b>INSECTA: COLEOPTERA</b>		
<b>Anobiidae</b>		
	Moved into <b>Ptinidae</b>	Arango & Young 2012
<b>Cerambycidae</b>		
<i>Prosopius bankii</i> (Fabricius, 1775)	<i>Rhytiphora bankii</i> (Fabricius, 1775)	Slipinski & Escalona 2013

+ Indicates accompanying text in Collection Data and New Record Summaries section  
 Est. = Established, adventive; End. = Endemic; Ind. = Indigenous; Unk. = Unknown establishment

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
The species in the following genera listed in Nishida 2002 have been separated from Curculionidae to the Dryophthoridae.		
<b>Curculionidae</b>	<b>Dryophthoridae</b>	Bouchard et al. 2011
<i>Cosmopolites</i>	<i>Cosmopolites</i>	“
<i>Dioclandra</i>	<i>Dioclandra</i>	“
<i>Dryophthorus</i>	<i>Dryophthorus</i>	“
<i>Myocalandra</i>	<i>Myocalandra</i>	“
<i>Polytus</i>	<i>Polytus</i>	“
<i>Rhabdoscelus</i>	<i>Rhabdoscelus</i>	“
<i>Scyphophorus</i>	<i>Scyphophorus</i>	“
<i>Sitophilus</i>	<i>Sitophilus</i>	“
<i>Sphenophorus</i>	<i>Sphenophorus</i>	“
<i>Stenommatius</i>	<i>Stenommatius</i>	“
<b>Curculionidae</b>	<b>Brachyiceridae</b>	Bouchard et al. 2011
<i>Stenopelmus</i>	<i>Stenopelmus</i>	“
<b>Elateridae</b>		
<i>Brachylacon beardsleyi</i>	<i>Adelocera oblongus</i> (Fleutiaux, 1934)	Johnson 2002
<b>Nitidulidae</b>		
<i>Stelidota</i> sp. [of Beardsley et al., 1992]	<i>Stelidota chontalensis</i> Sharp, 1890	Ewing 2004

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<b>INSECTA: DIPTERA</b>		
<b>Ceratopogonidae</b>		
<i>Dasyhelea excellentis</i> Borkent, 1997	<i>Dasyhelea bifida</i> Zilahi-Sebess, 1936	Dominiak 2012- Synonymy, End. to Adv. species; Borkent 2013
<b>Drosophilidae</b>		
<i>Drosophila bizonata</i> Kikkawa and Peng	<i>Drosophila bizonata</i> Kikkawa & Peng	Nishida 2002- Not Est.; Leblanc et al. 2009- Est. Ha, Ma
<i>Scaptomyza graminum</i> (Fallén, 1823)	<i>Scaptomyza elmoi</i> Takada, 1970	Leblanc et al. 2009
<b>Otitidae</b>	All Hawaiian species moved to <b>Ulidiidae</b>	Evenhuis 2004
<b>Tethinidae</b>	Moved to subfamily within <b>Canacidae</b>	Munari and Evenhuis 2011
<b>Tipulidae</b>		
Limoniinae	Subfamily raised to <b>Limoniidae</b>	Evenhuis 2004
<b>INSECTA: HETEROPTERA</b>		
	Moved to suborder within <b>HEMIPTERA</b>	Forero 2008
<b>INSECTA: HOMOPTERA</b>		
	Split into suborders Auchenorrhyncha and Sternorrhyncha within order <b>HEMIPTERA</b>	Forero 2008
<b>Aleyrodidae</b>		
<i>Aleurothrixus antidesmae</i> Takahashi, 1933	<i>Asiothrixus antidesmae</i> Takahashi, 1933	Dubey et al. 2010
<i>Aleurotuberculatus minutus</i> (Singh, 1933)	<i>Minutaleyrodes minuta</i> (Singh, 1933)	Evans 2008
<i>Bemisia argentifolii</i> Bellows & Perring, 1994	<i>Bemisia tabaci</i> (Gennadius, 1889)	De Barro et al. 2005; Evans 2008

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Crenidorsum</i> sp. [of Nakahara 1985]	<i>Crenidorsum aroidephagus</i> Martin and Aguiar, 2001	Martin et al. 2001
<i>Paraleyrodes naranjæ</i> Dozier, 1927	<i>Paraleyrodes pseudonaranjæ</i> Martin, 2001	Martin 2001
<i>Dialeurodes citrifolii</i> (Morgan, 1893)	<i>Singhiella citrifolii</i> (Morgan, 1893)	Jensen 2001
<b>Anthocoridae</b>		
<i>Alofa sodalis</i> (White, 1878)	<i>Alofa sodalis</i> (White, 1878)	Lattin 2007- Adv. to Ind. species
<i>Cardiastethus fulvescens</i> (Walker, 1872)	<i>Amphiareus constrictus</i> (Stal, 1860)	Brenner and Lattin 2001
Lycotocorinae	Subfamily raised to <b>Lycotocoridae</b>	Lattin 2007
<i>Macrotrachelia thripiformis</i> Champion, 1901	= <i>Montandoniola confusa</i> (in part) = <i>Macrotrachelia nigronitens</i> (Stal, 1860)	Misidentified; Lattin 2005; 2007+ Misidentified; Lattin 2005; 2007+ (in part) possibly not established
<i>Montandoniola moraguesi</i> (Puton, 1896)	<i>Montandoniola confusa</i> Streito and Matocq, 2009	Lattin 2007; Pluot-Sigwalt et al. 2009+
<i>Physopleurella mundula</i> (White, 1877)	<i>Physopleurella mundula</i> (White, 1877)	Lattin 2007- Adv. to Ind. species
<i>Xylcoris discalis</i> (Van Duzee, 1914)	<i>Xylcoris galactinus</i> (Fieber, 1837)	Lattin 2007
<b>Aphididae</b>		
<i>Acyrtosiphon porosus</i> (Sanderson, 1901)	<i>Rhodobium porosum</i> (Sanderson, 1901)	Footitt et al. 2012
<i>Anuraphis tulipæ</i> (Boyer de Fonscolombe, 1841)	<i>Dysaphis tulipæ</i> (Boyer de Fonscolombe, 1841)	Footitt et al. 2012- Est.?
<i>Aphis citricola</i> Van der Goot, 1912	<i>Aphis fabæ</i> Scopoli, 1763 [in part]	Footitt et al. 2012- <i>A. citricola</i> was treated as a senior syn. of <i>A. spiræcola</i> but is now considered a syn. of <i>A. fabæ</i>

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Aphis citricola</i> Van der Goot, 1912	<i>Aphis spiraeicola</i> Patch, 1914 [in part]	Foottit et al. 2012- <i>A. spiraeicola</i> was treated as a junior syn. of <i>A. citricola</i>
<i>Aphis papaveris</i> Fabricius (of Kirkaldy, 1909)	Unknown, possibly <i>Aphis fabae</i>	Foottit et al. 2012
<i>Aulacorthum circumflexum</i> (Buckton, 1876)	<i>Neomyzus circumflexus</i> Buckton, 1876	Foottit et al. 2012
<i>Cerataphis palmae</i> (Ghesquiere, 1934)	<i>Cerataphis brasiliensis</i> (Hempel, 1901)	Messing et al. 2012; Foottit et al. 2012
<i>Cerataphis orchidearum</i> (Westwood, 1879)	A mix of: <i>C. brasiliensis</i> (Hempel, 1901) <i>C. lataniae</i> (Boisduval, 1867) and <i>C. orchidearum</i> (Westwood, 1879)	Foottit et al. 2012
<i>Eriosoma lanigera</i> (Hausmann, 1802)	<i>Eriosoma lanigerum</i> (Hausmann, 1802)	Foottit et al. 2012
<i>Eulachnus</i> sp. [of Funasaki, 1975]	<i>Eulachnus rileyi</i> (Williams, 1911)	Mondor et al. 2007
<i>Greenidea formosana</i> (Maki, 1917)	<i>Greenidea psidii</i> van der Goot, 1917	Messing et al. 2006; Foottit et al. 2012
<i>Lipaphis erysimi</i> (Kaltenbach, 1843)	<i>Lipaphis pseudobrassicae</i> (Davis, 1914)	Blackman and Eastop 2000; Foottit et al. 2012
<i>Pleotrichophorus chrysanthemi</i> (Theobald, 1920)	Delete?	Foottit et al. 2012- Extripated?
<i>Reticulaphis distylii fci</i> (Takahashi, 1923)	<i>Reticulaphis distylii</i> (van der Goot, 1917)	Foottit et al. 2012
<i>Siphonotrophia cupressi</i> (Swain, 1918)	Delete?	Foottit et al. 2012- Extripated?
<i>Tetraneura nigriabdominalis</i> (Sasaki, 1899)	<i>Tetraneura fusiformis</i> Matsumura, 1917	Blackman and Eastop 2006; Foottit et al. 2012
<i>Therioaphis maculata</i> (Buckton, 1899)	<i>Therioaphis trifolii</i> (Monell, 1882)	Foottit et al. 2012
<i>Uroleucon illini</i> (Hottes & Frison, 1931)	Delete?	Foottit et al. 2012- Unsupported record
<b>Asterolecaniidae</b>		
<i>Asterolecanium bambusae</i> (Boisduval, 1869)	<i>Bambusaspis bambusae</i> (Boisduval, 1869)	Borchsenius 1960 in Ben-Dov 2006



**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Asterolecanium miliaris</i> (Boisduval, 1869)	<i>Bambusaspis miliaris</i> (Boisduval, 1869)	Stumpf and Lambdin 1999
<i>Asterolecanium pseudomiliaris</i> Green, 1922	<i>Bambusaspis miliaris</i> (Boisduval, 1869)	Stumpf and Lambdin 1999
<i>Asterolecanium pustulans</i> (Cockerell, 1892)	<i>Russellaspis pustulans pustulans</i> (Cockerell, 1892)	Borchsenius 1960 in Ben-Dov 2006
<i>Asterolecanium robustum</i> Green, 1908	<i>Bambusaspis miliaris</i> (Boisduval, 1869)	Stumpf and Lambdin 1999
<i>Asterolecanium scirrosus</i> Russell, 1941	<i>Pauroaspis scirrosus</i> (Russell, 1941)	Tang and Hao 1995
<b>Cicadellidae</b>		
<i>Sophonia rufofascia</i> (Kuoh & Kuoh, 1983)	<i>Sophonia orientalis</i> (Matsumura, 1912)	Webb and Viraktamath 2004
<b>Coccidae</b>		
<i>Coccus acutissimus</i> (Green, 1896)	<i>Prococcus acutissimus</i> (Green, 1896)	Avasthi 1993
<i>Vinsonia stellifera</i> (Westwood, 1871)	<i>Ceroplastes stellifer</i> (Westwood, 1871)	Kumashiro et al. 2002- Est. Oa; Peronti et al. 2008- new combination
<b>Cydnidae</b>		
<i>Geotomus pygmaeus</i> (Dallas, 1851)	<i>Fromundus pygmaeus</i> (Dallas, 1851)	Lis 1994
<i>Microporus shiromai</i> Froeschner, 1976	<i>Byrsinus varians</i> (Fabricius, 1803)	Lis and Zack, 2010
<b>Diaspididae</b>		
<i>Abgrallaspis palmae</i> (Cockerell, 1893)	<i>Hemiberlesia palmae</i> (Cockerell, 1893)	Williams and Watson, 1988
<i>Andaspis leucophloeae</i> Rao, 1952	<i>Andaspis leucophleae</i> Rao in Rao and Ferris, 1952	Nishida 2002- Misspelled; Miller et al. 2015
<i>Carulaspis minima</i> (Targioni-Tozzetti, 1868)	<i>Carulaspis minima</i> (Signoret, 1869)	Signoret, 1869; Miller et al. 2015
<i>Chortinaspis subcortina</i> (Laing, 1929)	<i>Chortinaspis subchortina</i> (Laing, 1929)	Nishida 2002- Misspelled; Miller et al. 2015

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Genaparlatoria pseudaspidiotus</i> (Lindinger, 1905)	<i>Parlatoria pseudaspidiotus</i> Lindinger, 1905	Miller et al. 2015
<i>Lepidosaphes machili</i> (Maskell, 1898)	<i>Lepidosaphes pinnaeformis</i> (Bouche, 1851)	Miller et al. 2015
<i>Melanaspis aliena</i> (Newstead, 1901)	<i>Acutaspis aliena</i> (Newstead, 1901)	Deitz and Davidson 1986
<i>Odonaspis saccharicaulis</i> (Zehntner)	<i>Odonaspis saccharicaulis</i> (Zehntner)	Nishida 2002- Unk. Est.; Matsunaga 2013a- Not Est. to Est.
<i>Pseudaulacaspis major</i> (Cockerell, 1894)	<i>Rutherfordia major</i> (Cockerell, 1894)	Miller et al. 2015
<b>Eriococcidae</b>		
<i>Eriococcus coccineus</i> Cockerell, 1894	<i>Acanthococcus coccineus</i> (Cockerell, 1894)	Hodgson and Miller 2010
<b>Anthocoridae</b>		
<i>Lyctocoris</i>	Genus moved to <b>Lyctocoridae</b>	Henry 2008
<i>Lyctocoris hawaiiensis</i> (Kirkaldy, 1902)	<i>Lyctocoris campestris</i> (Fabricius, 1794)	Lattin 2007- End. to Adv.
<b>Margarodidae</b>		
<i>Icerya</i>	Genus moved to <b>Monophlebidae</b>	Hodgson and Foldi 2006, García Morales et al. 2016
<b>Miridae</b>		
<i>Halticus bractatus</i> (Say, 1832)	<i>Microtechnites bractatus</i> (Say, 1832)	Tatarnic and Cassis 2012
<i>Halticus chrysolepis</i> Kirkaldy, 1904	<i>Microtechnites chrysolepis</i> (Kirkaldy, 1904)	Tatarnic and Cassis 2012
<b>Ortheziidae</b>		
<i>Nipponothezia guadalcanalia</i> Morrison, 1952	<i>Nipponothezinella guadalcanalia</i> (Morrison, 1952)	Kozár 2004
<i>Orthezia insignis</i> Browne, 1887	<i>Insignorthezia insignis</i> (Browne, 1887)	Kozár 2004

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<b>Pseudococcidae</b>		
<i>Chorizococcus lounsburyi</i> (Brain, 1912)	<i>Vryburgia amaryllidis</i> (Bouché, 1837)	Ben-Dov and Cox 1990
<i>Ferrisia consobrina</i> Williams & Watson, 1988	<i>Ferrisia malvastra</i> (McDaniel, 1962)	Williams 1996
<i>Geococcus</i>	Genus moved to <b>Rhizoecidae</b>	Hodgson 2012
<i>Rhizoecus</i>	Genus moved to <b>Rhizoecidae</b>	“
<i>Riperstiella</i>	Genus moved to <b>Rhizoecidae</b>	“
<b>Psyllidae</b>		
<i>Blastopsylla</i>	Genus moved to <b>Aphalaridae</b>	Burckhardt and Ouvraud 2012
<b>Psyllidae</b>		
<i>Calophya</i>	Genus moved to <b>Calophyllidae</b>	“
<i>Diaphorina</i>	Genus moved to <b>Liviidae</b>	“
<i>Leptynoptera</i>	Genus moved to <b>Triozidae</b>	“
<b>INSECTA: HYMENOPTERA</b>		
<b>Agonidae</b>		
<i>Josephiella</i> n. sp. [of Beardsley & Perreira, 2000]	<i>Josephiella microcarpae</i> Beardsley & Rasplus 2001	Beardsley and Rasplus 2001
<b>Anthophoridae</b>		
	Moved to subfamily within <b>Apidae</b>	Danforth et al. 2013
<b>Aphelinidae</b>		
<i>Aspidiotiphagus citrinus</i> (Craw, 1891)	<i>Encarsia citrina</i> (Craw, 1891)	Noyes 2016

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Aspidiotiphagus lounsburyi</i> (Berlese & Paoli, 1916)	<i>Encarsia lounsburyi</i> (Berlese & Paoli 1916)	Schmidt and Polaszek 2007; Noyes 2016
<i>Encarsia ?haitiensis</i> Dozier, 1932	<i>Encarsia dispersa</i> Polaszek, 2004	Polaszek et al. 2004; Noyes 2016
<i>Encarsia hispida</i> De Santis, 1948	<i>Encarsia brasiliensis</i> (Hempel, 1904)	Noyes 2016
<i>Encarsia opulenta</i> Silvestri, 1927	<i>Encarsia perplexa</i> Huang & Polaszek, 1998	Misidentification; HDOA 2002; Culliney et al. 2003; Huang & Polaszek 1998
<i>Encarsia transvena</i> (Timberlake, 1926)	<i>Encarsia sophia</i> (Girault & Dodd, 1915)	Noyes 2016
<b>Aphidiidae</b>	Moved to subfamily within <b>Braconidae</b>	Achterberg 1984; Shaw & Huddleston 1991
<b>Braconidae</b>		
<i>Lysiphlebus ambiguus</i> (Haliday, 1834)	<i>Lysiphlebus ambiguus</i> (Haliday, 1834)	Culliney et al. 2003- Est. on Ha
<b>Elasmidae</b>	Moved to tribe within <b>Eulophidae</b>	Gauthier et al. 2000
<b>Encyrtidae</b>		
<i>Cheiloneurus americanus</i> (Perkins, 1906)	<i>Cheiloneurus flaccus</i> (Walker, 1847)	Guerrieri and Viggiani 2005
<i>Tetracnemoidea pretiosus</i> (Timberlake, 1929)	<i>Tetracnemoidea brevicornis</i> (Girault, 1915)	Gruner 2004- Est. on Ka
<b>Formicidae</b>		
<i>Cardiocondyla nuda</i> (Mayr, 1866)	<i>Cardiocondyla minutior</i> Forel, 1899	Misidentification- Seifert 2003
<i>Cardiocondyla wroughtoni</i> (Forel, 1890)	<i>Cardiocondyla obscurior</i> (Wheeler, 1929)	Seifert 2003
<i>Monomorium destructor</i> (Jerdon, 1851)	<i>Trichomyrmex destructor</i> (Jerdon, 1851)	Ward et al. 2014

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Monomorium sechellense</i> Emery, 1894	<i>Syllophopsis sechellensis</i> (Emery, 1894)	“
<i>Paratrechina bourbonica</i> (Forel, 1886)	<i>Nylanderia bourbonica</i> (Forel, 1886)	LaPolla et al. 2010
<i>Paratrechina clandestina</i> (Mayr, 1870)	<i>Nylanderia clandestina</i> (Mayr, 1870)	“
<i>Paratrechina vaga</i> (Forel, 1901)	<i>Nylanderia vaga</i> (Forel, 1901)	“
<b>Scelionidae</b> <i>Aphanomerus</i>	Genus moved to <b>Platygasteridae</b>	Gruner 2004
<b>Signiphoridae</b> <i>Thysanus dactylopii</i> (Ashmead, 1900)	<i>Chartocerus dactylopii</i> (Ashmead, 1900)	Gruner 2004
<i>Thysanus aspidioti</i> Ashmead, 1900	<i>Signiphora aspidioti</i> Ashmead, 1900	Gruner 2004
<b>Vespidae</b> <i>Polistes carnifex carnifex</i> (Fabricius, 1775)	Delete	Dubious record- No published records or vouchers known
<i>Polistes jadowigae</i> Dalla Torre, 1904	<i>Polistes jokahamae</i> Radoszkowski, 1877	Misidentification & synonym- Carpenter 2008
<i>Polistes tepidus malayanus</i> Cameron, 1906	Delete	Record based on labeling error- Carpenter 2008
<i>Vespula vulgaris</i> (Linnaeus, 1758)	<i>Vespula alascensis</i> (Packard, 1870)	Removed from synonymy/ revised name- Carpenter and Glare 2010

**INSECTA: LEPIDOPTERA**

**Crambidae**

*Synclitla oblitteralis* (Walker, 1859) *Elophila oblitteralis* (Walker, 1859) Pohl et al. 2016



**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

Name in Nishida 2002		Current name/Status	Reference/Notes
<b>Gelechiidae</b>			
<i>Autosticha</i>		Genus moved to <b>Autostichidae</b>	Hodges 1998; Van Nieukerken et al. 2011
<b>Noctuidae</b>			
<i>Discestra trifolii</i> Hufnagel, 1767		<i>Anarta trifolii</i> (Hufnagel, 1767)	Fibiger and Hacker 2005
<i>Pseudaletia unipuncta</i> (Haworth, 1809)		<i>Mythimna unipuncta</i> (Haworth, 1809)	Hacker et al. 2002
<i>Trichoclea edwardsi</i> Smith, 1888		<i>Anarta edwardsii</i> (Smith, 1888)	Mustelin 2006
<i>Trichoclea postica</i> Smith, 1891		<i>Anarta decepta</i> (Grote, 1883)	“
The species in the following genera listed in Nishida 2002 have been separated from the Noctuidae to the Erebidae.			
<b>Noctuidae</b>	<b>Erebidae</b>		
<i>Achaea</i>	<i>Achaea</i>		Lafontaine and Schmidt 2010;
<i>Anomis</i>	<i>Anomis</i>		Zahiri et al. 2012
<i>Antiblemma</i>	<i>Antiblemma</i>		“
<i>Ascalapha</i>	<i>Ascalapha</i>		“
<i>Athetis</i>	<i>Athetis</i>		“
<i>Bocana</i>	<i>Bocana</i>		“
<i>Eublemma</i>	<i>Eublemma</i>		“
<i>Eudocina</i>	<i>Eudocina</i>		“
<i>Hypena</i>	<i>Hypena</i>		“
<i>Hypocala</i>	<i>Hypocala</i>		“
<i>Melipotis</i>	<i>Melipotis</i>		“

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Ophiusa</i>	<i>Ophiusa</i>	Zahiri et al. 2012
<i>Pandesma</i>	<i>Pandesma</i>	“
<i>Polydesma</i>	<i>Polydesma</i>	“
<i>Schrankia</i>	<i>Schrankia</i>	“
<i>Simplicia</i>	<i>Simplicia</i>	“
<b>Pyralidae</b>		
<i>Coreya cephalonica</i> (Stianton, 1866)	<i>Aphomia cephalonica</i> (Stainton, 1866)	Pohl et al. 2016
<i>Ectomyelois ceratoniae</i> (Zeller, 1839)	<i>Apomyelois ceratoniae</i> (Zeller, 1848)	“
<b>Sphingidae</b>		
<i>Deilephila nerii</i> (Linnaeus, 1758)	<i>Daphnis nerii</i> (Linnaeus, 1758)	Kitching 2017a
<i>Psilogramma menephron</i> (Cramer, 1780)	<i>Psilogramma increta</i> (Walker, 1865)	Previously misidentified-Kitching 2017b
<b>INSECTA: THYSANOPTERA</b>		
<b>Thripidae</b>		
<i>Apterothrips septicornis</i> (Trybom, 1896)	<i>Apterothrips apteris</i> (Daniel, 1904)	Mound et al. 2016
<i>Ceratothrips frici</i> (Uzel, 1895)	<i>Tenothrips frici</i> (Uzel, 1895)	Bhatti 1990
<i>Chirothrips fulvus</i> Moulton, 1936	<i>Arorathrips fulvus</i> (Moulton, 1936)	Nakahara and Footitt 2012
<i>Chirothrips mexicanus</i> Crawford, 1909	<i>Arorathrips mexicanus</i> (Crawford, 1909)	Nakahara and Footitt 2012
<i>Dolichothrips</i>	Genus moved to <b>Phlaeothripidae</b>	Mound et al. 2016
<i>Dolichothrips nesius</i> [prob.] Stannard, 1961	<i>Dolichothrips indicus</i> (Hood, 1919)	Mound and Okajima 2015

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<i>Scolothrips priesneri</i> Sakimura, 1954	<i>Scolothrips takahashii</i> Priesner, 1950	Mound 2011
<i>Trichromothrips oahuensis</i> (Nakahara, 1993)	Delete	Quarantine interception only
<b>Phlaeothripidae</b>		
<i>Haplothrips fissus</i> Bianchi, 1947	<i>Haplothrips davisi</i> Bianchi, 1946	Mound and Matsunaga 2017
<i>Haplothrips sesuvii</i> Priesner, 1933	<i>Haplothrips robustus</i> Bagnall, 1918	Mound and Matsunaga 2017
<i>Hoplothrips intermedius</i> (Bagnall, 1910)	<i>Hoplothrips perkinsi</i> (Bagnall, 1910)	Mound 2017
<i>Hoplothrips hawaiiensis</i> Moulton, 1936	<i>Hoplothrips lanaiensis</i> (Bagnall, 1910)	Mound 2017
<i>Hoplothrips mauiensis</i> Moulton, 1928	<i>Hoplothrips laticornis</i> (Bagnall, 1910)	Mound 2017
<i>Hoplothrips nigricans</i> (Bagnall, 1910)	<i>Hoplothrips perkinsi</i> (Bagnall, 1910)	Mound 2017
<i>Hoplothrips swezeyi</i> Moulton, 1928	<i>Hoplothrips perkinsi</i> (Bagnall, 1910)	Mound 2017
<i>Nesothrips brevicollis</i> (Bagnall, 1914)	<i>Nesothrips minor</i> (Bagnall, 1921)	Okajima 2006
<b>INSECTA: TRICHOPTERA</b>		
<b>Hydropsychidae</b>		
<i>Cheumatopsyche pettiti</i> (Banks, 1901)	<i>Cheumatopsyche analis</i> (Banks, 1903)	Flint et al. 2003
<b>Hydroptilidae</b>		
<i>Hydroptila arcia</i> Ross, 1938	<i>Hydroptila potosina</i> Bueno-Soria, 1984	Flint et al. 2003
<b>CHILOPODA: GEOPHILOMORPHA</b>		
<b>Geophilidae</b>		
<i>Honuaphilus alohanus</i> Chamberlin, 1926	<i>Tuoba sydneyensis</i> (Pocock, 1891)	Bonato et al. 2004- Synonymy, End. to Ind. or Adv.?

**Table 2.** Name changes and deletions to the names of alien species listed in Nishida 2002 (continued).

<b>Name in Nishida 2002</b>	<b>Current name/Status</b>	<b>Reference/Notes</b>
<b>Mecistocephalidae</b>		
<i>Fusichila waipaheenas</i> Chamberlin, 1953	Delete	Bonato et al. 2004
<b>Schendylidae</b>		
<i>Marsikomerus lanaius</i> (Chamberlin, 1953)	<i>Marsikomerus bryanus</i> (Chamberlin, 1953)	Bonato et al. 2004- Synonymy
<i>Marsikomerus pacificus</i> Attems, 1938	<i>Marsikomerus bryanus</i> (Chamberlin, 1953)	Bonato et al. 2004- Synonymy
<i>Nyctunguis bryanus</i> Chamberlin, 1926	<i>Marsikomerus bryanus</i> (Chamberlin, 1953)	Bonato et al. 2004
+ Indicates accompanying text in Collection Data and New Record Summaries section Est. = Established, adventive; End. = Endemic; Ind. = Indigenous; Unk. = Unknown establishment		