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Technical Report No. 53

A REVIEW OF THE HAWAIIAN COCCINELLIDAE

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ISLAND ECOSYSTEMS IRP

U. S. International Biological Program

February 1975

ABSTRACT

This is the first taxonomic study of the Hawaiian Coccinellidae. There are forty species, subspecies or varieties in the State. Island distribution, a key, nomenclatural changes, introduction data, hosts and world wide distribution are given.

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INTRODUCTION

The Coccinellidae comprise a large family in the Coleoptera with about 490 genera and 4200 species (Sasaji, 1971). The majority of these species are predacious on insect and mite pests and are therefore of economic and scientific importance. Several species are phytophagous and are pests themselves. To date, none of these occur in Hawaii.

The Coccinellidae are all thought to have been introduced into the Hawaiian Islands. Three species, Scymnus discendens (= Diomus debilis LeConte), Scymnus ocellatus and Scymnus vividus (= Scymnus (Pullus) loewii Mulsant) were described by Sharp (Blackburn and Sharp, 1885) from specimens collected in Hawaii. There is no record of their introductions. The first beneficial insect introduction into Hawaii was made by Koebele in 1890 when he introduced Rodolia cardinalis (Mulsant). Koebele is credited with the establishment of at least seventeen Coccinellidae in the state (Swezey, 1923; Williams, 1931). The early introductions were from Australia, the Orient, California and Mexico. Numerous coccinellids have been introduced since 1890. Those which have not become established are not covered in this paper.

The primary purposes of this paper are to provide a workable key to the known Hawaiian Coccinellidae and to provide their currently accepted names. Specimens from the University of Hawaii, the Hawaii State Department of Agriculture and the Bernice P. Bishop Museum collections were examined in constructing the key and in determining island distributions (Table 1). References in the Proceedings of the Hawaiian Entomological Society and Zimmerman (1948, 1957) were also used in determining island distributions, synonymy, introduction data and hosts. Undoubtedly some species have wider distributions and host ranges than given. Revisions of the key and paper will be required as new species become established and more information on

the currently established coccinellids becomes available.

The key is designed to facilitate the identification of the coccinellids currently found in Hawaii. I have composed the key using gross morphological characters and constant color patterns, of the specimens examined. A dissecting microscope or good hand lens should be sufficient for running a specimen through the key. Sasaji (1971) was the basis for the morphological terminology used.

Each species is listed under its currently accepted name, followed by the name and reference under which it was first described, the type locality when known, the first reference to the currently accepted name and a list of its name changes as found in Hawaiian literature, primarily in the Proceedings of the Hawaiian Entomological Society. This is followed by information on its introduction, its hosts in Hawaii and its worldwide distribution. Under distribution, Hawaiian Islands refers to the presence of the species on one or more of the seven major islands. No records were found for Kahoolawe. Other islands in the Hawaiian Chain are listed separately.

Crotch (1874), Korschefsky (1931, 1932), Chapin (1965), DeBach (1965) and Sasaji (1971) were the references other than the original descriptions used in determining correct nomenclature and distributions outside the state.

Table 1. Distributional List of Hawaiian Coccinellidae

Insect	Niihau	Kauai	Oahu	Molokai	Lanai	Maui	Hawaii
1. <u>Azya orbiger</u>	X	X	X	X		X	
2. <u>Brumoides suturalis</u>			X				
3. <u>Chilocorus circumdatus</u>			X	X		X	X
4. <u>C. nigrinus</u>			X				
5. <u>Coelophora inaequalis</u>	X	X	X	X	X	X	X
6. <u>C. inaequalis</u> var. <u>novemmaculata</u>			X				
7. <u>C. pupillata</u>			X			X	X
8. <u>Coccinella septempunctata brucki</u>			X				X
9. <u>Cryptolaemus montrouzieri</u>	X	X	X	X	X	X	X
10. <u>Curinus coeruleus</u>	X	X	X			X	X
11. <u>Diomus debilis</u>			X	X	X	X	X
12. <u>D. notescens</u>		X	X	X	X	X	X
13. <u>D. pumilio</u>							X*
14. <u>D. near pumilio</u>			X	X			X
15. <u>D. sp. 1.</u>			X				
16. <u>Harmonia conformis</u>							X
17. <u>Hippodamia convergens</u>			X			X	X
18. <u>H. quinquesignata punctulata</u>			X				
19. <u>Hyperaspis fimbriolala</u>			X			X	X
20. <u>H. jocosa</u>		X	X	X		X	X
21. <u>H. silvestrii</u>			X			X	X
22. <u>Lindorus lophanthae</u>			X	X	X	X	X
23. <u>Nephus bilucernarius</u>	X	X	X			X	X
24. <u>N. roepkei</u>			X			X	
25. <u>Olla abdominalis</u>			X	X	X	X	X

*Introduced February 3, 1973, Establishment uncertain.

Table 1. Distributional List of Hawaiian Coccinellidae (cont.)

Insect	Nihoa	Kauai	Oahu	Molokai	Lanai	Maui	Hawaii
26. <u>O. abdominalis</u> var. <u>plagiata</u>			X				
27. <u>Orcus chalybeus</u>		X	X	X			X
28. <u>Pseudoscymnus anomolus</u>			X				
29. <u>Rhizobius ventralis</u>	X	X	X	X	X	X	X
30. <u>Rodolia cardinalis</u>	X	X	X		X	X	X
31. <u>Scymnodes lividigaster</u>	X	X	X	X	X	X	X
32. <u>Scymnus ocellatus</u>			X	X	X	X	X
33. <u>S. varipes</u>			X				X
34. <u>S. (Pullus) dorcatomoides</u>			X				
35. <u>S. (Pullus) loewii</u>		X	X	X	X	X	X
36. <u>S. (Pullus) uncinatus</u>			X				X
37. <u>Serangium maculigerum</u>			X				
38. <u>Stethorus siphonulus</u>			X			X	X
39. <u>Sticholotis ruficeps</u>			X	X	X	X	X
40. <u>Telsimia nitida</u>		X	X				

SYSTEMATICS

Key to Species of the Hawaiian Coccinellidae

- 1a. Elytral epipleura horizontal (fig. 1) or slightly inclined below.....2.
- b. Elytral epipleura strongly inclined below (fig. 2).....30.
- 2a. Elytral pubescence lacking or sparse, when lacking elytra punctate, when sparse elytra smooth and shiny.....3.
- b. Elytra densely pubescent.....11.
- 3a. Dorsum dark, shiny, lacking punctation; short light hairs sparsely distributed on elytra.....4.
- b. Elytra punctate.....5.
- 4a. Body hemispherical; dorsum strongly convex, elytral epipleura extending past first abdominal sternite; elytral epipleura with two notches, one for leg two the other for leg three; length 1.25-1.5 mm, width 1.0-1.25 mm.....Serangium maculigerum Blackburn
- b. Body elliptical elytral epipleura not extending past first abdominal sternite; elytral epipleura lacking notches; length 1.25-1.5 mm, width 0.75-1.0 mm.....Diomus sp. 1
- 5a. Outer margin of elytra distinctly expanded laterally.....6.
- b. Outer margin of elytra not expanded or only slightly expanded.....9.
- 6a. Length 1.7-2.0 mm, width 1.2-1.5 mm; black with four orange-brown spots on elytra in a 2-2 pattern, first two spots may coalesce at elytral suture.....Sticholotis ruficeps Weise
- b. Larger species, length 2.5 mm or more; color pattern not as above.....7.

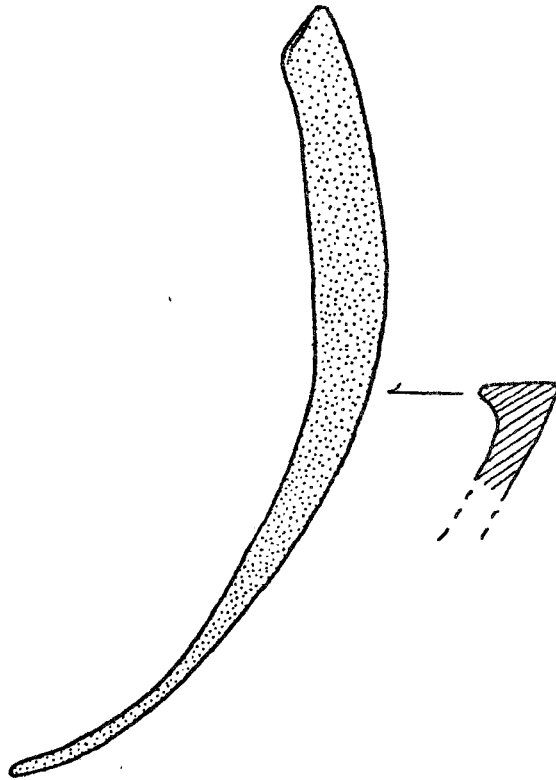


Figure 1. Elytral epipleura horizontal or slightly inclined below.

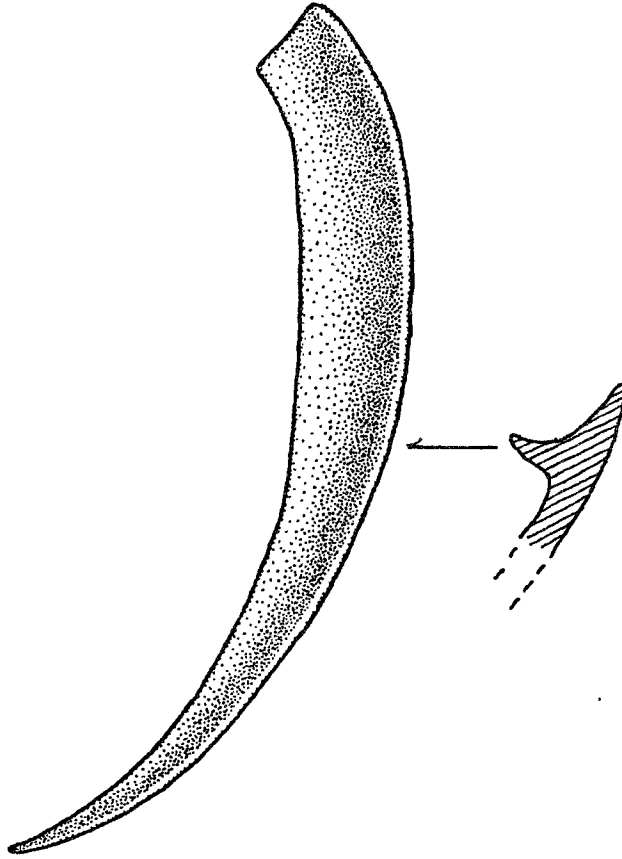


Figure 2. Elytral epipleura strongly inclined below.

- 7a. Length 2.5-3.5 mm, width 1.5-2.5 mm; elytra black, each with two yellow-gold longitudinal stripes, one stripe along anterior (outer) margin, stripes meeting at apex; males with six abdominal sternites, females with five
.....Brumoides suturalis (Fabricius)
- b. Larger species, length 5.0 mm or greater; markings not as above.....8.
- 8a. Pronotum black with two yellow commas, corners and anterior margin yellow; face about half black, half yellow; elytra orange, elytral markings extremely variable, most commonly with twelve spots arranged in a 2-4-2-2-2 pattern sometimes appearing as a 2-4-4-2 pattern.....
.....Hippodamia convergens Guerin
- b. Pronotum black, commonly with two yellow dots, at least front corners yellow, anterior margin not yellow; face about two thirds black, one third yellow; elytra orange, elytral markings extremely variable, most commonly lacking spots.....Hippodamia quinquesignata punctata LeConte
- 9a. Pronotum and elytra with yellow spots.....10
- b. Pronotum entirely dark or with yellow lateral margins; elytra with yellow stripe along anterior (outer) margins, not extending to elytral apex.....Hyperaspis fimbriolata Melsheimer
- 10a. Elytra with four yellow spots in a 2-2 pattern.....
..... Hyperaspis silvestrii Weise
- b. Elytra with ten yellow spots in a 4-4-2 pattern.....
.....Hyperaspis jocosa (Mulsant)

- 11a. Elytral pubescence of uniform length and appearance.....12.
- b. Elytral pubescence of two lengths: short, fine golden-brown setae and longer erect setae....Lindorus lophanthae (Blaisdall)
- 12a. Abdomen with five visible sternites.....13.
- b. Abdomen with six visible sternites.....18.
- 13a. Length 2.5 mm or more; elytra entirely black.....14.
- b. Length 2.5 mm or less; elytra black with yellow-brown to orange mark on larger specimens; elytra entirely black on smaller specimens.....15.
- 14a. Legs darker than abdomen; elytral epipleura without distinct deep impressions for reception of legs (fig. 1).....
.....Rhizobius ventralis Erichson
- b. Legs same orange-brown color as abdomen; deep impressions elytral epipleura for reception of legs two and three (fig. 3); pubescence bicolored on elytra, black setae form a single large circular spot on each elytron.....Azya orbigera Mulsant
- 15a. Length 1.75-2.5 mm, width 1.25-2.0 mm; a yellow-brown to orange band covering about one-third elytral area, but not reaching elytral margin; leg one and face black in females; leg one orange-brown, face yellow-brown to orange in males, legs two and three black in both sexes...Diomus notescens (Blackburn)
- b. Not as above.....16.
- 16a. Entire body and legs tan to yellow-brown; length 1.25-1.5 mm, width 0.75-1.0 mm.....Diomus debilis (LeConte)
- b. Length 1.5-2.0 mm, width 1.0-1.25 mm; color entirely yellow brown.....17.

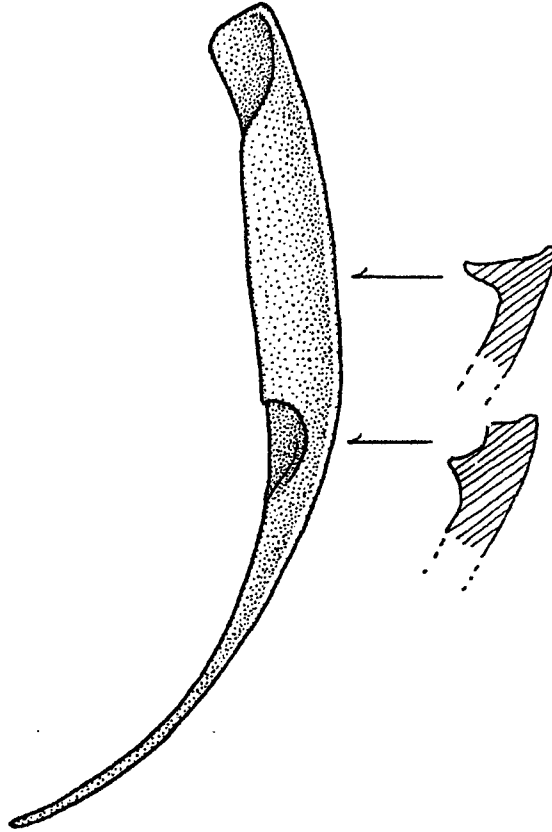


Figure 3. Elytral epipleura with distinct deep impressions for reception of legs two and three.

- 17a. Elytra dark brown to black; face black or yellow-brown, when yellow-brown hypomeron and anterior edge of pronotum yellow-brown; ventor black; legs black, legs one and two dark brown when face yellow-brown.....Diomus pumilio Weise
- b. Elytra brown to dark brown, face yellow-brown to dark brown, pronotum yellow-brown to dark brown, legs all lighter than ventor.....Diomus near pumilio
- 18a. Clypeus distinctly expanded laterally in front of eyes; labrum and antennal insertion not visible from front.....Telsimia nitida Chapin
- b. Not as above.....19.
- 19a. Elytra unicolorous.....20.
- b. Elytra bicolored.....22.
- 20a. Small insect, 1.5 mm long or shorter body dark brown to black; distal tip of femora, tibiae and tarsi yellow-brown; mouthparts and antennæ yellow-brown; face black or yellow-brown.....
..... Stethorus siphonulus Kapur
- b. Larger insect, 2.5-4.0 mm.....21.
- 21a. Prothorasic hypomera yellow-brown to orange-brown, remainder black.....Scymnodes lividigaster (Mulsant)
- b. Entire pronotum dark brown.....Scymnus varipes (Blackburn)
- 22a. Head, prothorax and apical third or less of elytra yellow-brown to orange, remainder of elytra black.....23.
- b. Not as above.....25.
- 23a. Legs one yellow-brown to orange in males, dark in females; legs two and three dark; length 3.8-5.0 mm, width 2.0-3.0 mm.....
.....Cryptolaemus montrouzieri Mulsant
- b. All legs yellow-brown to orange; length 1.8-2.3 mm, width 1.1-1.5 mm.
.....24.

- 24a. Two sensory setae on terminal antennal segment longer than last three antennal segments.....Pseudoscymnus anomolus Chapin
- b. Antennae without long sensory setae.....
.....Scymnus (Pullus) dorcatomoides Weise
- 25a. Elytra orange-red; sutural stripe black, diamond shaped in second fifth; two black spots per elytron, anterior spot curving behind of humeral callus, posterior spot reaching elytral margin and extending to apex and sutural stripe.....Rodolia cardinalis (Mulsant)
- b. Not as above.....26.
- 26a. Elytra with two yellow-brown to orange spots or bands, majority of elytra dark brown to black.....27.
- b. Elytra with two yellow-brown to orange longitudinal stripes, remainder of elytra brown to black, area covered by each color variable.....28.
- 27a. Elytra mostly dark brown, each with a single large yellow-brown to orange dot covering about one-third the total area; ventor and legs orange brown.....Nephus roepkei (Fluiter)
- b. Elytra mostly black, each with a yellow-brown to orange spot covering about one-fifth the total area, spot located on apical half of elytron; ventor black; legs orange-brown to yellow-brown.....Nephus bilucernarius Mulsant
- 28a. Elytra yellow-brown to orange-brown; sutural stripe brown to black, broad at base, narrowing apically, not reaching apex of elytron.....29.
- b. Elytra brown with wide yellow-brown longitudinal band appearing notched; apical elytral margin yellow-brown.....
.....Scymnus (Pullus) uncinatus Sicard

- 29a. Coxal arch incomplete, directed toward basal margin of sternite near lateral margin but failing to reach basal margin (Fig. 4).....Scymnus ocellatus Sharp
- b. Coxal arch complete, joining basal margin of sternite near lateral margin (Fig. 5).....Scymnus (Pullus) loewii Mulsant
- 30a. Clypeus extended in front of eyes; antennal insertion not visible from front.....31.
- b. Clypeus not extended in front of eyes; antennal insertion variable.....33.
- 31a. Tibial spurs present on legs two and three; prothoracic hypomera without setae; body dark blue with prothoracic hypomera orange-brown.....Curinus coeruleus Mulsant
- b. Tibial spurs absent; prothoracic hypomera with fine setae; coloration not as above.....32.
- 32a. Dorsum orange-brown with lateral elytral edge black.....Chilocorus circumdatus (Schonherr)
- b. Dorsum black with prothoracic hypomera orange-brown to brown.....Chilocorus nigritus (Fabricius)
- 33a. Tibial spurs absent.....34.
- b. Tibial spurs on legs two and three.....35.
- 34a. Metallic blue to green; males with prothoracic hypomera yellow.....Orcus chalybeus (Boisduval)
- b. Orange to yellow-brown; eighteen black spots on elytra arranged in a 5-6-5-2 pattern.....Harmonia conformis (Boisduval)

- 35a. Pronotum orange-brown to yellow-brown without markings; elytra orange-brown to yellow-brown with ten black spots encircled by lighter orange-brown to yellow-brown rings, spots arranged in a 4-4-2 pattern....Coelophora pupillata (Schonherr)
- b. Not as above.....36.
- 36a. Prothoracic hypomera with round shallow depressions at anterior inner portions.....37.
- b. Prothoracic hypomera without such depressions.....38.
- 37a. Pronotum black with orange-brown to yellow-brown markings across anterior margin; elytra orange-brown to yellow-brown; elytral suture black; elytra with nine irregular spots which may coalesce with each other or with elytral margins.....Coelophora inaequalis (Fabricius)
- b. Pronotum orange-brown to yellow-brown with two black spots; elytra orange-brown to yellow-brown; elytral suture not black; elytra with eight or nine spots in a 2-4-2 or 2-4-2-1 pattern.....Coelophora inaequalis var. novemmaculata (Fabricius)
- 38a. Pronotum black with yellow hypomera; elytra orange-brown to yellow-brown with seven black spots in a 1-2-2-2 pattern, sometimes appearing as a 1-4-2 pattern, spot one located on elytral suture behind two yellow areas.....
.....Coccinella septempunctata brucki Mulsant
- b. Not as above.....39.
- 39a. Gray to tan; pronotum with seven black spots; elytra with sixteen black spots in a 8-6-2 pattern.....Olla abdominalis (Say)
- b. Black; yellow markings across anterior pronotal margin; two yellow spots on elytra.....Olla abdominalis var. plagiata (Casey)

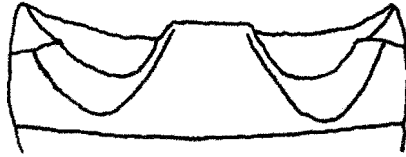


Fig. 4. Coxal arch incomplete, directed toward basal margin of sternite near lateral margin but failing to reach basal margin (after Chapin, 1965).

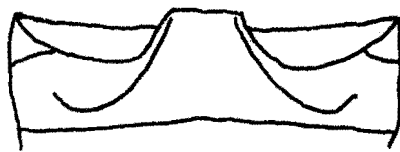


Fig. 5. Coxal arch complete, joining basal margin of sternite near lateral margin (after Chapin, 1965).

GENUS AZYA MULSANT

Azya Mulsant, 1850, Spec. Trim. Securipalp. :928.

Type species: Azya luteipes Mulsant, 1850. By subsequent designation of Crotch (1874. Revis. Coccinellidae :279).

1. Azya orbigera Mulsant

Azya orbigera Mulsant, 1850. Spec. Trip. Securipalp. :930.

Azya luteipes Mulsant, Fullaway, 1914. Proc. Hawaii. Entomol. Soc. 3(1):8. Misidentification.

Introduced from Mexico in 1908 by Koebele (Ehrhorn, 1916. Proc. Hawaii. Entomol. Soc. 3(3):144).

Host: Lecanine scales, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):241.

Coccus viridis (Green), Hartung, 1932. Proc. Hawaii. Entomol. Soc. 8(1):26.

Ferrisiana virgata (Cockerell), Zimmerman, 1948. Insects of Hawaii 5:271. (= Ferrisia virgata (Cockerell), Beardsley, 1960. Insects of Micronesia 6(7):414).

Distribution: California, Central and South America, Guam, Hawaiian Is.

This species is known as A. luteipes Mulsant in Hawaiian literature. The State Department of Agriculture has a specimen from Maui determined as A. orbigera by Chapin in 1964. Charanasri (1972) studied A. luteipes (A. orbigera) in her thesis research on the coccinellid predators of Coccus viridis.

GENUS BRUMOIDES CHAPIN

Brumoides Chapin, 1965. Bull. Mus. Comp. Zool. Harv. Univ. 133(4):237.

Type species: Coccinella suturalis Fabricius, 1798. Suppl. Ent. Syst. :78.

By original designation of Chapin, 1965.

2. Brumoides suturalis (Fabricius)

Coccinella suturalis Fabricius, 1798. Suppl. Entomol. Syst. :78.

Brumoides suturalis (Fabricius), Chapin, 1965. Bull. Mus. Comp. Zool. Harv. Univ. 133(4):237.

Brumoides suturalis (Fabricius), Mau. Proc. Hawaii. Entomol. Soc. 22(2): (in press) (Notes and Exhibitions For Aug. 1974).

Introduced in 1974 (accidental). Found at Hickam Air Force Base (Mau.

Proc. Hawaii. Entomol. Soc. 22(2):(in press) (Notes and Exhibitions For Aug. 1974)).

Host: not known.

Distribution: Ceylon, Hawaiian Is., India, Luzon.

GENUS CHILOCORUS LEACH

Chilocorus Leach, 1815. In Brewster, Edinbur. Encycl. 9:116.

Type species: Coccinella cacti Linnaeus, 1767. Syst. Nat. ed. 12:584.

Monobasic.

3. Chilocorus circumdatus (Schonherr)

Coccinella circumdata Schonherr, 1808. Syn. Ins. 2:152.

Chilocorus circumdatus, Mulsant, 1850, Spec. Trim. Securipalp. :454.

Chilocorus circumdatus, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):243.

Introduced from S. China in 1895 by Koebele (Fullaway, 1920. Proc. Hawaii.

Entomol. Soc. 4(2):243; Timberlake, 1927. Proc. Hawaii. Entomol. Soc. 6(3):532).

Host: Diaspine scales, Fullaway, 1920, Proc. Hawaii. Entomol. Soc.

4(2):243.

Coccus viridis (Green), Illingworth, 1929, Proc. Hawaii. Entomol. Soc.

7(2):248.

Pinnaspis buxi (Bouche), Illingworth, 1938. Proc. Hawaii. Entomol.

Soc. 10(1):24.

Lepidosaphes beckii (Newman), Zimmerman, 1948. Insects of Hawaii

5:418.

Distribution: Ceylon, China, Hawaiian Is., India, Sumatra.

4. Chilocorus nigritus (Fabricius)

Coccinella nigrita Fabricius, 1798. Suppl. Entomol. Syst. :79.

Chilocorus nigritus, Mulsant, 1850. Spec. Trim. Securipalp. :463.

Chilocorus nigritus (Fabricius), Davis, 1959. Proc. Hawaii. Entomol.

Soc. 17(1):65.

Introduced from Ceylon in 1958 by Krauss (Davis, 1959. Proc. Hawaii.

Entomol. Soc. 17(1):65).

Host: Aspidiotus spp., Davis, 1959. Proc. Hawaii. Entomol. Soc. 17(1):65.

Distribution: Burma, Ceylon, China, Hawaiian Is., Himalaya area, India,

Java, Mauritius, Seychelles, Sumatra.

GENUS COELOPHORA MULSANT

Coelophora Mulsant, 1850. Spec. Trim. Securipalp. :390.

Type species: Coccinella inaequalis Fabricius, 1775. Syst. Entomol. :80.

By subsequent designation of Crotch (1874. Revis. Coccinellidae :148).

5. Coelophora inaequalis (Fabricius)

Coccinella inaequalis Fabricius, 1775. Syst. Entomol. :80.

Coelophora inaequalis, Mulsant, 1850. Spec. Trim. Securipalp. :404.

Coccinella repanda, Kotinsky, 1906. Proc. Hawaii. Entomol. Soc. 1(1):8.

Coelophora inaequalis Fab., Giffard, 1908. Proc. Hawaii. Entomol. Soc.
1(5):173.

Coccinella inaequalis Fab., Illingworth, 1929, Proc. Hawaii. Entomol.
Soc. 7(2):249.

Coelophora inaequalis (Fab.), Swezey and Bryan, 1929. Proc. Hawaii.
Entomol. Soc. 7(2):298.

Introduced from Ceylon, Australia and China in 1894 by Koebele (Fullaway,
Swezey and Giffard, 1922. Proc. Hawaii. Entomol. Soc. 5(1):26; Swezey,
1923. Proc. Hawaii. Entomol. Soc. 5(2):301).

Host: Aphids and young leaf hoppers, Swezey, 1906. Proc. Hawaii. Entomol.
Soc. 1(1):18.

Aphis sacchari Zehntner, Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc.
1(3):100.

Myzus citricidus Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc. 1(3):101.
(=Aphis citricidus (Kirkaldy), Zimmerman, 1948. Insects of Hawaii
5:75).

Aphis maidis Fitch, Swezey, 1928. Proc. Hawaii. Entomol. Soc. 7(1):
181. (= Rhopalosiphum maidis (Fitch), Zimmerman, 1948. Insects of
Hawaii 5:80).

Toxoptera aurantiae Koch, Illingworth, 1929. Proc. Hawaii. Entomol.
Soc. 7(2):249.

Neophyllaphis araucariae Takahashi, Zimmerman, 1948. Insects of Hawaii
5:66.

Aphis gossypii Glover, Zimmerman, 1948. Insects of Hawaii 5:77.

Aphis medicaginis Koch, Peterson, 1957. Proc. Hawaii. Entomol. Soc.
16(2):204.

Myzus persicae (Sulzer). Peterson, 1957. Proc. Hawaii. Entomol. Soc.
16(2):204.

Rhopalosiphum pseudobrassicae (Davis), Peterson, 1957. Proc. Hawaii.
Entomol. Soc. 16(2):204.

Aphis nerii Boyer de Fonscolombe, Beardsley, 1966. Proc. Hawaii.
Entomol. Soc. 19(2):124.

Distribution: Australia, Borneo, Celebes, Ceylon, China, Christmas Is.,
Formosa, Hawaiian Is., India, Japan, Java, Johnson Is., Kure Is.,
Malaysian Archipelago, Marianas, Micronesia, Midway Atoll, New Caledonia,
New Guinea, Nihoa Is., Palmyra Atoll, Philippines, Sumatra, Tasmania.

6. Coelophora inaequalis var. novemmaculata (Fabricius)

Coccinella novemmaculata Fabricius, 1781. Spec. Ins. 1:97.

Coelophora inaequalis var. novemmaculata (Fabricius), Chapin, 1965.
Insects of Micronesia 16(5); 215-216.

See Coelophora inaequalis (Fabricius).

See Timberlake (1922) for a discussion of the hereditary basis of the
color variants of this species.

7. Coelophora pupillata (Swartz)

Coccinella pupillata Swartz, in Schonherr, 1808. Syn. Ins. 2:184.

Coelophora pupillata, Mulsant, 1850. Spec. Trim. Securipalp. :397.

Coelophora pupillata, Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc.
1(3):101.

Introduced from Hong Kong in 1895 by Koebele (Swezey, 1923. Proc. Hawaii.
Entomol. Soc. 5(2):301, Timberlake, 1927. Proc. Hawaii. Entomol. Soc.
6(3):532).

Host: Myzus citricidus Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc. 1(3):
101. (= Aphis citricidus (Kirkaldy), Zimmerman, 1948. Insects of
Hawaii 5:75).

Thoracaphis fici (Takahashi), Zimmerman, 1948. Insects of Hawaii
5:128.

Selenothrips rubrocinctus (Giard), see fn 3.

Distribution: China, Hawaiian Is., Java.

fn 3: I first collected Coelophora pupillata larvae feeding on Selenothrips rubrocinctus on May 19, 1974 on mango in McCully, Oahu. This is a new host record for Hawaii.

GENUS COCCINELLA LINNAEUS

Coccinella Linnaeus, 1758. Syst. Nat. 10:364.

Type species: Coccinella 7-punctata Linnaeus, 1758. By subsequent designation of Crotch (1874. Revis. Coccinellidae :105).

8. Coccinella septempunctata brucki Mulsant (* see foot note)

Coccinella brucki Mulsant, 1866. Monogr. Cocc. :90-91. Type locality: Japan.

Coccinella septempunctata brucki, Mader, 1930. Evidenz pal. Cocc. :148.

Coccinella septempunctata bruckii Mulsant, Van Zwaluwenburg, 1947.

Proc. Hawaii. Entomol. Soc. 13(1):19. Misspelling of Coccinella septempunctata brucki Mulsant.

Coccinella 7-punctata var. brucki Mulsant, Nakao, 1970, Proc. Hawaii.

Entomol. Soc. 20(3):503. Misspelling of Coccinella 7-punctata var. brucki Mulsant.

Introduced from Okinawa in 1958 (Nakao, 1970, Proc. Hawaii. Entomol. Soc. 20(3):503).

Host: Aphids, Nakao, 1970, Proc. Hawaii. Entomol. Soc. 20(3):503.

Distribution: China, Hawaiian Is., India, Iwo Jima, Japan, Korea, Okinawa.

*Authorities differ as to raising this varietal name to the subspecies level or not. I follow Sasaji (1971) and raise it.

GENUS CRYPTOLAEMUS MULSANT

Cryptolaemus Mulsant, 1853. Soc. Linn. Lyon. Ann. 1:268.

Type species: Cryptolaemus montrouzieri Mulsant, 1853. Monobasic.

Type locality: Australia.

9. Cryptolaemus montrouzieri Mulsant

Cryptolaemus montrouzieri Mulsant, 1853, Soc. Linn. Lyon Ann. 1:268.

Type locality: Australia.

Cryptolaemus montrouzieri, Swezey, 1906. Proc. Hawaii. Entomol. Soc.
1(1):18.

Introduced from Australia via California (Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):300) by Koebele (Timberlake, 1907. Proc. Hawaii. Entomol. Soc. 6(3):532).

Host: Myzus citricidus Kirkaldy, 1907, Proc. Hawaii. Entomol. Soc. 1(3):101.
(=Aphis citricidus (Kirkaldy), Zimmerman, 1948. Insects of Hawaii 5:75).

Pseudococcus calceolariae Maskell, Ehrhorn, 1914, Proc. Hawaii. Entomol. Soc. 3(1): 1. (Misidentification of Dysmicoccus borinsis (Kuwana), Zimmerman, 1957. Insects of Hawaii 6:197; Zimmerman, 1948. Insects of Hawaii 5:188).

Pseudococcus bromeliae, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):240. (= Dysmicoccus brevipes (Cockerell), Zimmerman, 1957, Insects of Hawaii 6:197; Zimmerman, 1948. Insects of Hawaii 5:189).

Pseudococcus sacchari, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):241. (= Saccharicoccus sacchari (Cockerell), Zimmerman, 1957. Insects of Hawaii 6:198; Zimmerman, 1948. Insects of Hawaii 5:266).

Pulvinaria psidii Mask., Fullaway, Swezey & Gifford, 1922. Proc. Hawaii. Entomol. Soc. 5(1):26.

- Pseudococcus filamentosus (Cockerell), Fullaway, 1923. Proc. Hawaii. Entomol. Soc. 5(2):319. (= Nipaecoccus vasator (Maskell), Beardsley, 1960. Proc. Hawaii. Entomol. Soc. 17(2):235; Zimmerman, 1948. Insects of Hawaii 5:245).
- Pseudococcus brevipes Cockerell, Illingworth, 1929. Proc. Hawaii. Entomol. Soc. 7(2):248. (= Dysmicoccus brevipes (Cockerell), Zimmerman, 1957. Insects of Hawaii 6:197).
- Coccus viridis (Green), Illingworth, 1928. Proc. Hawaii. Entomol. Soc. 10(1):3.
- Eriococcus araucariae Maskell, Swezey, 1946. Proc. Hawaii. Entomol. Soc. 12(3):470.
- Pseudococcus boninsis (Kuwana), Zimmerman, 1948. Insects of Hawaii 5:185. (= Dysmicoccus boninsis (Kuwana), Zimmerman, 1957. Insects of Hawaii 6:197).
- Pseudococcus nipae (Maskell), Zimmerman, 1948. Insects of Hawaii 5:229. (= Nipaecoccus nipae (Maskell), Zimmerman, 1957. Insects of Hawaii 6:197).
- Trionymus insularis Ehrhorn, Zimmerman, 1948. Insects of Hawaii 5:260.
- Ferrisiana virgata (Cockerell), Zimmerman, 1948. Insects of Hawaii 5:271. (= Ferrisia virgata (Cockerell), Beardsley, 1960. Insects of Micronesia 6(7):414).
- Pseudococcus adonidum (L.), Carter, 1950. Proc. Hawaii. Entomol. Soc. 14(1):8. (= Pseudococcus longispinus Targioni-Tozzetti, Lotto, 1965. J. Entomol. Soc. S. Africa 27(2):228).
- Dactylopius opuntiae (Cockerell), Bess, 1951. Proc. Hawaii. Entomol. Soc. 14(2):207.

Spodoptera mauritia (Boisduval) eggs, Tanada & Beardsley, 1958.

Proc. Hawaii. Entomol. Soc. 16(3):431.

Pseudococcus obscurus Essig, Davis & Chong, 1968. Proc. Hawaii.

Entomol. Soc. 20(1):26.

Distribution: Aitutaki (Cook Is.), Australia, Algeria, California, Celebes, Central America, China, Egypt, Formosa, Hawaiian Is., Italy, Java, Micronesia, New Caledonia, New Zealand, Puerto Rico, South Africa, Southern France, Spain, Tasmania.

Charanasri (1972) studied Cryptolaemus montrouzieri in her thesis research of coccinellid predators of Coccus viridis.

GENUS CURINUS MULSANT

Orcus (Curinus) Mulsant, 1850. Spec. Trim. Securipalp.:472.

Curinus, Crotch, 1874. Revis. Coccinellidae :190.

Type species: Orcus (Curinus) coeruleus Mulsant, 1850. Monobasic.

10. Curinus coeruleus Mulsant

Orcus (Curinus) coeruleus Mulsant, 1850. Spec. Trim. Securipalp. :472.

Curinus coeruleus, Crotch, 1874. Revis. Coccinellidae :190.

Curinus coeruleus Muls., Swezey, 1923. Proc. Hawaii. Entomol. Soc.

5(2):300.

Introduced from Mexico in 1922 (Swezey, 1923. Proc. Hawaii. Entomol. Soc.

5(2):300).

Host: Pseudococcus nipae (Maskell), Swezey, 1923, Proc. Hawaii. Entomol.

Soc. 5(2):300. (= Nipaecoccus nipae (Maskell), Zimmerman, 1957.

Insects of Hawaii 6:197).

Chrysomphalus aonidum, Swezey, 1928. Proc. Hawaii. Entomol. Soc.

7(1):27. (= Chrysomphalus ficus Ashmead, Zimmerman, 1948. Insects of Hawaii. 5:369).

Chrysomphalus ficus Ashmead, Zimmerman, 1948. Insects of Hawaii 5:369.

Distribution: Brazil, Chile, Christmas Is., Guatamala, Hawaiian Is., Mexico.

GENUS DIOMUS MULSANT

Diomus Mulsant, 1850. Spec. Trim. Securipalp. :951.

Type species: Coccinella thoracica Fabricius, 1801. Syst. Eleuth. 1:378.

By unknown subsequent designation. Reference taken from Korschefsky (1931. Col. Cat. 118:116).

11. Diomus debilis (LeConte)

Scymnus debilis LeConte, 1852. Proc. Acad. Phila. 6:137.

Type locality: San Jose, California.

Scymnus discendens Sharp, Blackburn and Sharp, 1885. Sci. Trans. Roy.

Dublin Soc. 3(2):147. Junior synonym. Type locality: Oahu, Hawaii.

Diomus debilis Lec., Casey, 1899. J. N. York Ent. Soc. 7:159.

Scymnus debilis, Ehrhorn, 1914, Proc. Hawaii. Entomol. Soc. 3(1):1.

Diomus discendens (Sharp), Bridwell, 1920. Proc. Hawaii. Entomol. Soc. 4(2):279.

Scymnus debilis Lec., Swezey, 1928. Proc. Hawaii. Entomol. Soc. 7(1): 182.

Introduction data not available.

Host: Dactylopiinae species, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):240.

Pseudococcus insularis Ehrhorn, Swezey, 1928, Proc. Hawaii. Entomol.

Soc. 7(1):182. (= Trionymus insularis Ehrhorn, Zimmerman, 1948.

Insects of Hawaii 5:260).

Saccharicoccus sacchari Ckll., Bianchi, 1968. Proc. Hawaii. Entomol.

Soc. 20(1):11-12.

Distribution: California, Hawaiian Is.

Dizon (1964) studied Scymnus debilis (= Diomus debilis) for his thesis research.

12. Diomus notescens (Blackburn)

Scymnus notescens Blackburn, 1889. Trans. Roy. Soc. S. Austr. 11:197.

Type locality: Port Lincoln, Australia.

Diomus notescens (Blackburn), first use not found.

Scymnus notescens Blackburn, Giffard, 1908. Proc. Hawaii. Entomol. Soc.
1(5):174.

Diomus notescens (Blkb.), Swezey, 1923. Proc. Hawaii. Entomol. Soc.
5(2):301.

Scymnus notescens (Blackburn), Bryan, 1926. Proc. Hawaii. Entomol. Soc.
6(2):282.

Diomus notescens (Blackburn), Illingworth, 1927. Proc. Hawaii. Entomol.
6(3):393.

Scymnus notescens Blackburn, Swezey and Bryan, 1927. Proc. Hawaii.
Entomol. Soc. 6(3):416.

Diomus notescens (Blackburn), Swezey and Bryan, 1929. Proc. Hawaii.
Entomol. 7(2):298.

Scymnus notescens (Blkb.), Swezey, 1934. Proc. Hawaii. Entomol. Soc.
8(3):534.

Diomus notescens (Blackburn), Holdaway and Look, 1942. Proc. Hawaii.
Entomol. Soc. 11(2):258.

Scymnus notescens Blackburn, Krauss, 1944. Proc. Hawaii. Entomol. Soc.
12(1):11.

Diomus notescens (Blackburn), Krauss, 1953. Proc. Hawaii. Entomol. Soc.
15(1):219.

Scymnus notescens (Blackburn), Suehiro, 1960, Proc. Hawaii. Entomol.
Soc. 17(2):295.

Introduced from Australia in 1894 by Koebele (Giffard, 1908. Proc. Hawaii.
Entomol. Soc. 1(5):174).

Host: Aphids, Giffard, 1908. Proc. Hawaii. Entomol. Soc. 1(5):174.

Aphis citricidus (Kirkaldy), Zimmerman, 1948. Insects of Hawaii 5:75.

Pseudococcus citri (Risso), Zimmerman, 1948. Insects of Hawaii 5:201.

(=Planococcus citri (Risso), Zimmerman, 1957. Insects of Hawaii 6:197).

Distribution: Australia, Hawaiian Is., Johnston Is., Kure Atoll, Midway Atoll, Palmyra Atoll.

13. Diomus pumilio Weise

Diomus pumilio Weise, 1885. Stett. Entomol. Zeit. 46:237.

Diomus sp., Leeper, Proc. Hawaii Entomol. Soc. 22(1):(in press) (Notes and Exhibitions for March 1973).

Introduced from Australia via California on February 5, 1973 (Leeper. Proc. Hawaii. Entomol. Soc. 22(1):(in press) (Notes and Exhibition for March 1973)).

Host: Psylla uncatoides (Ferris & Klyver), Leeper. Proc. Hawaii. Entomol. Soc. 22(1):(in press) (Notes and Exhibitions for March 1973).

Distribution: Australia, California, Hawaiian Is.

This species is the only one listed for which establishment is uncertain. Establishment is also uncertain in California.

14. Diomus near pumilio

Introduction data not available.

The following hosts are given with specimens in the University of Hawaii collection.

Host: Pseudococcus sp.

Pseudococcus montanus

Trionymus rostellum

Distribution: Hawaiian Is.

15. Diomus sp. 1

This species was first collected by Ken Kawamura at Hickam Air Force Base, Oahu in August, 1973. It is collected in grass sweepings but its hosts are not known. The specific name has not been determined.

GENUS HARMONIA MULSANT

Harmonia Mulsant, 1846. Hist. Nat. Coleop. France, Securipalp. :108.

Type species: Coccinella marginepunctata Schaller, 1783. Abh. Naturf. Ges.

Halle 1:260. (= Coccinella quadripunctata Pontoppidan, 1763. Danske Atlas 1:669, t. 29). By subsequent designation of Timberlake (1943. Bull. Expt. St. Hawaii. Sugar Plant. Ass. Entomol. Series 22:17).

16. Harmonia conformis (Boisduval)

Coccinella conformis Boisduval, 1835. Voyage Astrolabe :604.

Type locality: Australia.

Harmonia conformis (Boisduval), first use not found.

Coccinella conformis, Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc.

1(3):101.

Callineda conformis (Boisd.), Swezey, 1923. Proc. Hawaii. Entomol. Soc.

5(2):301.

Harmonia conformis (Boisduval), Timberlake, 1943. Bull. Expt. St. Hawaii.

Sugar Plant. Ass. Entomol. Series 22:17.

Leis conformis (Boisduval), Zimmerman, 1948. Insects of Hawaii 5:75.

Harmonia conformis (Boisduval), Leeper. Proc. Hawaii. Entomol. Soc.

22(1):(in press) (Notes and Exhibitions for March 1973).

Introduced from Australia in 1894 by Koebele; reintroduced in 1904 but disappeared after 1906 (Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):301; Timberlake, 1943. Bull. Expt. St. Hawaii. Sugar Plant. Ass. Entomol. Series 22:17). Reintroduced from Australia via California in

January 1973 (Leeper, Proc. Hawaii. Entomol. Soc. 22(1):(in press)
(Notes and Exhibitions for March 1973).

Host: Myzus citricidus Kirkaldy, Kirkaldy, 1907, Proc. Hawaii. Entomol.
Soc. 1(3):101. (= Aphis citridicus (Kirkaldy), Zimmerman, 1948.
Insects of Hawaii 5:75).

Psylla uncatoides (Ferris & Klyver), Leeper, Proc. Hawaii. Entomol.
Soc. 22(1):(in press) (Notes and Exhibitions for March 1973).

Distribution: Australia, California, Hawaiian Is.

I worked with this species in the laboratory and found that it would feed on a wide range of aphids but could not survive more than three generations feeding solely on aphids. This is probably why Harmonia conformis did not become established prior to the accidental introduction of Psylla uncatoides.

GENUS HIPPODAMIA DEJEAN

Hippodamia Dejean, 1835. Cat. Col. :460.

Type species: Coccinella tredecimpunctata Linnaeus, 1758. Syst. Nat. ed. 10:
366. By subsequent designation of Crotch (1874, Revis. Coccinellidae :94).

17. Hippodamia convergins Guerin

Hippodamia convergins Guerin, 1842. Icon. Regne Animal 7:321.

Hippodamia convergins Guerin, Lopez 1931. Proc. Hawaii. Entomol. Soc.
7(3):345.

Introduced from California in 1896, 1905, 1910, 1952 (Weber, 1953. Proc.
Hawaii. Entomol. Soc. 15(1):129) and in 1963 (Davis & Krauss, 1964.
Proc. Hawaii. Entomol. Soc. 18(3):396). Establishment was not confirmed
until 1964 and only at the higher altitudes on Maui and Hawaii (Beardsley,
1965, Proc. Hawaii. Entomol. Soc. 19(1):25-26, 34; Bianchi, 1965. Proc.
Hawaii. Entomol. Soc. 19(1):27; Chong, 1965. Proc. Hawaii. Entomol. Soc.
19(1):38). This species is a chance immigrant occasionally collected

on Oahu.

Host: Aphids, Weber, 1953. Proc. Hawaii. Entomol. Soc. 15(1):129.

Amphoraphora sonchi (Oestlund), see fn 1.

Macrosiphum avenae (Fabricius), see fn 1.

Distribution: Central America, Cuba, Hawaii, Italy, North America,
Southern France.

See fn 2.

18. Hippodamia quinquesignata punctulata LeConte

Hippodamis punctulata LeConte, 1852. Proc. Acad. Nat. Sci. Phila.

6:131. Type locality: San Francisco, California.

Hippodamia 5-signata punctulata LeConte, Williams, 1948. Proc.

Hawaii. Entomol. Soc. 13(2):203.

Introduced from California in 1952 (Weber, 1953. Proc. Hawaii. Entomol.
Soc. 15(1):129).

Chance immigrants reported: 1947 (Williams, 1948. Proc. Hawaii. Entomol.
Soc. 13(2):203) and 1951 (Adachi, 1952. Proc. Hawaii. Entomol. Soc.
14(3):361). This species has not become established but is occasionally
collected as a chance immigrant on Oahu.

Host: Aphids, Weber, 1953. Proc. Hawaii. Entomol. Soc. 15(1):129.

Distribution: Hawaii, North America.

See fn 2.

fn 1: Amphoraphora sonchi (Oestlund) and Macrosiphum avenae (Fabricius) are
new host records for the state. On April 9, 1974 John W. Beardsley, La-
rry Nakahara and John R. Leeper collected Hippodamia convergens Guerin
from Pohakaloa, Hawaii feeding on the above aphids.

fn 2: Both Hippodamia species above are extremely variable in their color
patterns. Only one color pattern of each has been found in the state.
See Chapin (1946) for color pattern variations.

GENUS HYPERASPIS REDTENBACHER

Hyperaspis Redtenbacher, 1843. Tentamen. Dispos. Gen. :8, 12.

Type species: Coccinella reppensis Herbst, 1783. Arch. Insectengesch

4:48. By subsequent designation of Crotch (1874. Revis. Coccinellidae :213).

19. Hyperaspis fimbriolata Melsheimer

Hyperaspis fimbriolata Melsheimer, 1847. Proc. Acad. Phila. 3:180.

Type locality: Pennsylvania.

Hyperaspis limbalis Casey, 1899. J. N. York Entomol. Soc. 7:126.

Synonym (see Dobzhansky, 1941. Smithson. Misc. Coll. 10:54.).

Hyperaspis limbatus Casey, Beardsley, 1955. Proc. Hawaii. Entomol.

Soc. 15(3):385. Misspelling of Hyperaspis limbalis Casey.

Hyperaspis limbalis Casey, Beardsley, 1967. Proc. Hawaii. Entomol.

Soc. 19(3):338.

Introduced from California in 1906 by Koebele (Beardsley, 1955. Proc.

Hawaii. Entomol. Soc. 15(3):385).

Host: Trionymus insularis Ehrhorn, Beardsley, 1967. Proc. Hawaii. Entomol.

Soc. 19(3):338.

Distribution: Hawaiian Is., U. S. A.

20. Hyperaspis jocosa (Mulsant)

Cleothera jocosa Mulsant, 1850. Spec. Trim. Securipalp. 632, 634.

Type locality: Mexico.

Hyperaspis jocosa, Crotch, 1874. Revis. Coccinellidae :222.

Hyperaspis jocosa (Mulsant), Ehrhorn, 1914, Proc. Hawaii. Entomol.

Soc. 4(2):240.

Introduced from Mexico in 1907 by Koebele (Ehrhorn, 1914. Proc. Hawaii.

Entomol. Soc. 3(1):8.

Host: Orthezia insignis Browne, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):240.

Distribution: Central and South America, Hawaiian Is., Kenya.

21. Hyperaspis silvestrii Weise

Hyperaspia silvestrii Weise, 1909. Boll. Lab. Zool. Portici 3:205.

Hyperaspis silvestrii Weise, Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):300.

Introduced from Mexico in 1922 by Osborn (Fullaway, 1923. Proc. Hawaii. Entomol. Soc. 5(2):305).

Host: Pseudococcus nipae (Maskell), Swezey, 1923. Proc. Hawaii. Ent. Soc. 5(2):300. (= Nipaecoccus nipae (Maskell), Zimmerman, 1957. Insects of Hawaii 6:197.

Avocado mealy bug, Swezey, 1925. Proc. Hawaii. Entomol. Soc. 6(1):47.

Pseudococcus pseudonipae (Cockerell), Swezey, 1948. Proc. Hawaii. Entomol. Soc. 13(2):204. (= Nipaecoccus nipae (Maskell), Zimmerman, 1948. Insects of Hawaii 5:229; Zimmerman, 1957. Insects of Hawaii 6:197.

Distribution: Mexico, Hawaiian Is.

Fullaway (1929. Proc. Hawaii. Entomol. Soc. 5(3):373-374) described the immature stages of Hyperaspis silvestrii Weise.

GENUS LINDORUS CASEY

Lindorus Casey, 1899. J. N. York Entomol. Soc. 7: 162.

Type species: Scymnus lophanthae Blaisdell, 1892. Entomol. News 3:51.

By original designation of Casey.

Type locality: Coronado, California.

22. Lindorus lophanthae (Blaisdell)

Scymnus lophanthae Blaisdell, 1892. Entomol. News 3:51. Type locality:
Coronado, California.

Lindorus lophanthae, Fullaway, 1919. Proc. Hawaii. Entomol. Soc.
4(1):2.

Introduced from California in about 1894 (Swezey, 1923. Proc. Hawaii.
Entomol. Soc. 5(2):300) by Koebele (Timberlake, 1927. Proc. Hawaii.
Entomol. Soc. 6(3):532).

Host: Phenacaspis eugeniae, Fullaway, 1919, Proc. Hawaii. Entomol. Soc.

4(1):2. (= Phenacaspis cockerelli (Cooley), Zimmerman, 1948.

Insects of Hawaii 5:386; Beardsley, 1957. Proc. Hawaii. Entomol.
Soc. 16(2):184).

Lepidosaphes beckii, Fullaway, 1920. Proc. Hawaii. Entomol. Soc.
4(2):245.

Saissetia oleae (Bernard), Zimmerman, 1948. Insects of Hawaii 5:328.

Aulacaspis rosae (Bouche), Zimmerman, 1948. Insects of Hawaii 5:381.

(= Aulacaspis rosarum Borchsenius, Beardsley. Proc. Hawaii. Entomol.
Soc. 22(1):(in press) (Notes and Exhibitions)).

Phenacaspis sandwicensis (Fullaway), Swezey, 1952. Proc. Hawaii.

Entomol. Soc. 14(3):378. (= Phenacaspis cockerelli (Cooley), Beardsley,
1957. Proc. Hawaii. Entomol. Soc. 16(2):184).

Aspidiotus destructor Signoret, Beardsley, 1970. Proc. Hawaii. Entomol.
Soc. 20(3):508.

Distribution: Australia, California, Hawaii, Palmyra Atoll.

GENUS NEPHUS MULSANT

Scymnus (Nephus) Mulsant, 1846. Hist. Nat. Coleopt. France Securipalp. :237.

Type species: Sphaeridium quadrimaculatus Herbst, in Fuessly, 1783. Arch. Ins.

4:30. By subsequent designation of Korschefsky (1931. Col. Cat. 118:116).

23. Nephus bilucernarius Mulsant

Scymnus (Nephus) bilucernarius Mulsant, 1850. Spec. Trim. Securipalp. :997.

Nephus bilucernarius (Muls.), Swezey, 1935. Proc. Hawaii. Entomol. Soc.

9(1):32.

Scymnus bilucernarius, Browne, 1939. Proc. Hawaii. Entomol. Soc. 10(2):

177.

Nephus bilucernarius Muls., Swezey et al., 1939. Proc. Hawaii. Entomol.

Soc. 10(2):350.

Scymnus bilucernarius (Mulsant), Beardsley, 1959. Proc. Hawaii. Entomol.

Soc. 17(1):59.

Introduced from Mexico in 1930 (Swezey et al., 1939. Proc. Hawaii. Entomol.

Soc. 10(2):350.

Host: Pineapple mealybugs, Swezey, 1935. Proc. Hawaii. Entomol. Soc. 9(1):32.

Pseudococcus brevipes (Cockerell), Zimmerman, 1948. Insects of Hawaii

5:189. (= Dysmicoccus brevipes (Cockerell), Zimmerman, 1957. Insects

of Hawaii 6:197).

Distribution: Hawaiian Is., Mexico.

24. Nephus roepkei (Fluiter)

Scymnus roepkei Fluiter, 1938. Arch. Koffiecultuur Ned.-Ind. 12(1):49.

Type locality: Java.

Nephus roepkei (Fluiter), Chapin, 1965. Insects of Micronesia 16(5):201.

Scymnus bipunctatus, Fullaway, 1920, Proc. Hawaii. Entomol. Soc. 4(2):

240. Misidentified.

Nephus sp. near bipunctatus Kugel., Swezey, 1923. Proc. Hawaii.

Entomol. Soc. 5(2):300.

Scymnus bipunctatus, Fullaway, 1923. Proc. Hawaii. Entomol. Soc. 5(2):

319. Misidentified.

Nephus sp. near bipunctatus, Swezey, 1935. Proc. Hawaii. Entomol. Soc.

9(1):97.

Scymnus roepkei Fluiter, Beardsley, 1956. Proc. Hawaii. Entomol. Soc.

16(1):18.

Introduced from Japan in 1895, S. China in 1906, the Philippines in 1914

(Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):241).

Host: Pseudococcus kraunhiaae, Fullaway, 1920. Proc. Hawaii. Entomol.

Soc. 4(2):241.

Pseudococcus filamentosus, Fullaway, 1920. Proc. Hawaii. Entomol.

Soc. 4(2):241. (= Nipaecoccus vastator (Maskell), Zimmerman, 1957.

Insects of Hawaii 6:197, Zimmerman, 1948. Insects of Hawaii 5:245.

Pseudococcus virgatus, Fullaway, 1920. Proc. Hawaii. Entomol. Soc.

4(2):241.

Spodoptera mauritiae (Boisduval) eggs, Tanada and Beardsley, 1958.

Proc. Hawaii. Entomol. Soc. 16(3):431.

Distribution: California, China, Hawaiian Is., Japan, Java, Micronesia,

Nihoa Is., Philippines.

GENUS OLLA CASEY

Olla Casey, 1899. J. N. York Entomol. Soc. 7:84, 93.

Type species: Coccinella abdominalis Say, 1824. J. Acad. Sci. Phila. 4:95.

By subsequent designation of Korschefsky (1932. Coleopterorum Catalogus pars 120, Coccinellidae 2:288).

Type locality: Arkansas.

25. Olla abdominalis (Say)

Coccinella abdominalis Say, 1824. J. Acad. Sci. Phila. 4:95. Type
locality: Arkansas.

Coccinella abdominalis, Kotinsky, 1906. Proc. Hawaii. Entomol. Soc.
1(1):8.

Olla abdominalis (Say), Timberlake, 1918. Proc. Hawaii. Entomol. Soc.
3(5):401.

Coccinella abdominalis Mulsant, Krauss, 1944. Proc. Hawaii. Entomol.
Soc. 12(1):86.

Olla abdominalis (Say), Suehiro, 1960. Proc. Hawaii. Entomol. Soc.
17(2):295.

Introduced from Mexico in 1908 (Fullaway, 1920. Proc. Hawaii. Entomol.
Soc. 4(2):241).

Host: Aphis sacchari Zehntner, Kirkaldy, 1907. Proc. Hawaii. Entomol.
Soc. 1(3):100.

Ferrisiana virgata (Cockerell), Zimmerman, 1948. Insects of Hawaii
5:271. (= Ferrisia virgata (Cockerell), Beardsley, 1960. Insects
of Micronesia 6(7):414).

Saissetia oleae (Bernard), Zimmerman, 1948. Insects of Hawaii 5:328.

Distribution: Central America, North America, northern South America,
Guam, Hawaii, Midway Atoll.

26. Olla abdominalis var. plagiata (Casey)

Olla plagiata Casey 1899. J. N. York Entomol. Soc. 7:94.

See Olla abdominalis (Say).

GENUS ORCUS MULSANT

Orcus Mulsant, 1850. Spec. Trim. Securipalp. :465.

Type species: Orcus janthinus Mulsant, 1850. By subsequent designation of Crotch (1874. Revis. Coccinellidae :188).

Type locality: Java.

27. Orcus chalybeus (Boisduval)

Coccinella chalybea Boisduval, 1835. Voyage Astrolabe :595.

Type locality: Australia.

Orcus chalybeus, Mulsant, 1850. Spec. Trim. Securipalp. :471.

Orcus chalybeus, Perkins, 1906. Proc. Hawaii. Entomol. Soc. 1(1):9.

Introduced from Australia in 1894 by Koebele (Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):246; Timberlake, 1927. Proc. Hawaii. Entomol. Soc. 6(3):532).

Host: Macrosiphum rosae (Linne), Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc. 1(3):100.

Parlatoria ziziphus, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):246.

Diaspine scales, Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):300.

Coccus viridis (Green), Illingworth, 1929. Proc. Hawaii. Entomol. Soc. 7(2):248.

Saissetia oleae (Bernard), Zimmerman, 1948. Insects of Hawaii 5:328.

Spodoptera mauritia eggs, Tanada & Beardsley, 1958. Proc. Hawaii. Entomol. Soc. 16(3):431.

Distribution: Australia, Hawaiian Is.

Charanasri (1972) studied Orcus chalybeus in her research of coccinellid predators of Coccus viridis.

GENUS PSEUDOSCYMNUS CHAPIN

Pseudoscymnus Chapin, 1962. Psyche 69(1):50.

Type species: Scymnus hareja Weise, 1879. Deutsche Entomol. Zeitschr.
23:150. By original designation.

Type locality: Japan.

28. Pseudoscymnus anomolus Chapin

Pseudoscymnus anomolus Chapin, 1965. Insects of Micronesia 16(5):210.

Type locality: Wena (Moen), Truk, Caroline Is.

Pseudoscymnus anomolus Chapin, Beardsley, 1970. Proc. Hawaii. Entomol.
Soc. 20(3):508.

Introduced from Guam in 1970 by Owen (Davis, 1972. Proc. Hawaii Entomol.
Soc. 21(1):61).

Host: Aspidiotus destructor Signoret, Davis, 1972. Proc. Hawaii. Entomol.
Soc. 21(2):188.

Distribution: Hawaii, Micronesia.

GENUS RHIZOBIUS STEPHENS

Rhizobius Stephens, 1831. Ill. Brit. Entomol. Mand. 4:396.

Type species: Nitidula litura Fabricius, 1787. Mant. Ins. 1:52, 75.
Monobasic.

29. Rhizobius ventralis (Erichson)

Scymnus ventralis Erichson, 1843. Arch. Naturgesch. 9:239.

Rhizobius ventralis, Mulsant, 1850. Spec. Trim. Securipalp.:1005.

Rhizobius ventralis Erichson, Swezey, 1906. Proc. Hawaii. Entomol. Soc.
1(1):18.

Lindorus sp., Fullaway, 1923. Proc. Hawaii. Entomol. Soc. 5(2):181.

Lindorus ventralis (Erichson), Timberlake, 1927. Proc. Hawaii. Entomol.
Soc. 6(3):532.

Rhizobius ventralis (Erichson), Illingworth, 1928. Proc. Hawaii.

Entomol. Soc. 7(1):44.

Introduced from California in 1894 by Koebele (Swezey, 1923. Proc. Hawaii.

Entomol. Soc. 5(2):300; Timberlake, 1927. Proc. Hawaii. Entomol. Soc.

6(3):532).

Host: Pseudococcus citri, Swezey, 1912. Proc. Hawaii. Entomol. Soc. 2(4):

158. (= Planococcus citri (Risso), Zimmerman, 1957. Insects of Hawaii
6:197).

Pseudococcus nipae (Maskell), Fullaway, 1920. Proc. Hawaii. Entomol.

Soc. 4(2):158. (= Nipaecoccus nipae (Maskell), Zimmerman, 1957.

Insects of Hawaii 6:197).

Saissetia oleae (Bernard), anonymous, 1922. Proc. Hawaii. Entomol.

Soc. 5(1):25.

Pseudococcus brevipes (Cockerell), Illingworth, 1929. Proc. Hawaii.

Entomol. Soc. 7(2):248. (= Dysmioccus brevipes (Cockerell), Zimmer-
man, 1957. Insects of Hawaii. 6:197).

Pseudococcus filamentosus, Illingworth, 1929. Proc. Hawaii. Entomol.

Soc. 7(2):249. (= Nipaecoccus vastator (Maskell), Beardsley, 1960.

Proc. Hawaii. Entomol. Soc. 17(2):235; Zimmerman, 1948. Insects
of Hawaii 5:245).

Spodoptera mauritia eggs, Rosa, 1933. Proc. Hawaii. Entomol. Soc.

8(2):226.

Aphis citricidus (Kirkaldy), Zimmerman, 1948. Insects of Hawaii 5:75.

Distribution: Australia, California, Hawaiian Is., Midway Atoll, New Zealand.

GENUS RODOLIA MULSANT

Rodolia Mulsant, 1850. Spec. Trim. Securipalp. :902.

Type species: Rodolia ruficollis Mulsant, 1850. By subsequent designation of Crotch (1874. Revis. Coccinellidae :280).

Type locality: Bengal, India.

30. Rodolia cardinalis (Mulsant)

Vedalia cardinalis Mulsant, 1850. Spec. Trim. Securipalp. :906.

Rodolia (Macronovius) cardinalis (Mulsant), Weise, 1905. Deutsche ent. Zeitschr. :220.

Vedalia cardinalis, Swezey, 1905. Proc. Hawaii. Entomol. Soc. 1(1):18.

Novius cardinalis, Kotinsky, 1908. Proc. Hawaii. Entomol. Soc. 2(1):25.

Vedalia (Novius) cardinalis Muls., Fullaway, Swezey & Giffard, 1922.

Proc. Hawaii. Entomol. Soc. 5(1):22.

Novius cardinalis, Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):299.

Rodolia cardinalis Mulsant, Holdaway & Look, 1942. Proc. Hawaii.

Entomol. Soc. 11(2):258.

Introduced from Australia via California in 1890 by Koebele (Swezey, 1923.

Proc. Hawaii. Entomol. Soc. 5(2):299).

Host: Cottony cushion scale, Swezey, 1905. Proc. Hawaii. Entomol. Soc.

1(1):18.

Pulvinaria mammeae Maskell, Zimmerman, 1948. Insects of Hawaii 5:333.

Distribution: Aitutaki (Cook Is.), Argentina, Australia, Bahamas, Bermuda,

Chile, Cyprus, Ecuador, Egypt, Formosa, France, Greece, Guam, Hawaiian

Is., India, Israel, Italy, Japan, Kwajalein (Marshall Is.), Madeira,

Malta, Midway Atoll, Morocco, New Zealand, Palestine, Peru, Portugal,

Puerto Rico, Samoa, South Africa, Spain, Tripoli, Tunisia, Turkey,

Uruguay, U. S. A., U. S. S. R., Venezuela.

Hale (1970) discussed the life history of Rodolia cardinalis.

GENUS SCYMNODES BLACKBURN

Scymnodes Blackburn, 1899. Trans. Roy. Soc. S. Austr. 11:187-190.

Type species: Scymnodes difficilis Blackburn, 1899. Monobasic.

Type locality: Port Lincoln, Australia.

31. Scymnodes lividigaster (Mulsant)

Platyomus lividigaster Mulsant, 1853. Ann. Soc. Linn. Lyon 1(3):101.

Type locality: Australia.

Scymnodes lividigaster Mulsant, Weise, 1917. Tijdschr. Entomol. 60:222.

Platyomus lividigaster, Kirkaldy, 1907. Proc. Hawaii. Entomol. Soc.

1(3):101.

Scymnodes lividigaster (Muls.), Timberlake, 1927. Proc. Hawaii. Entomol.

Soc. 6(3):532.

Platyomus lividigaster Muls., Illingworth, 1929. Proc. Hawaii. Entomol.

Soc. 7(2):249.

Scymnodes lividigaster (Mulsant), Ford, 1961. Proc. Hawaii. Entomol.

Soc. 17(3):318.

Introduced from Australia in 1894 by Koebele (Swezey, 1923. Proc. Hawaii.

Entomol. Soc. 5(2):301; Illingworth, 1927. Proc. Hawaii. Entomol. Soc.

6(3):393).

Host: Myzus citricidus Kirkaldy, Kirkaldy, 1907. Proc. Hawaii. Entomol.

Soc. 1(3):101. (= Aphis citricidus (Kirkaldy), Zimmerman, 1948.

Insects of Hawaii 5:75).

Toxoptera aurantiae Koch, Illingworth, 1929. Proc. Hawaii. Entomol.

Soc. 7(2):249.

Aphis gossypii Glover, Illingworth, 1929. Proc. Hawaii. Entomol.

Soc. 7(2):251.

Distribution: Australia, Hawaiian Is., Midway.

GENUS SCYMNUS KUGELANN

Scymnus Kugelann, 1794. Neues Mag. Liebh. Entomol. 1(5):545.

Type species: Scymnus nigrinus Kugelann, 1794. By subsequent designation of Korschefsky (1931. Col. Cat. 118:115).

32. Scymnus ocellatus Sharp

Scymnus ocellatus Sharp, 1885. Sci. Trans. Roy. Dublin Soc. 3(2):147.

Type locality: Hawaii.

Scymnus ocellatus, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):240.

Introduction data not available.

Host: Eriococcus araucariae, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):240.

Pseudococcus insularis Ehrhorn, Swezey, 1928. Proc. Hawaii. Entomol.

Soc. 7(1):182. (= Trionymus insularis Ehrhorn, Zimmerman, 1948.

Insects of Hawaii 5:257).

Distribution: Hawaiian Is.

33. Scymnus varipes (Blackburn)

Scymnodes koebeli var. varipes Blackburn, 1892. Trans. Roy. Soc. S. Austr. 15:243.

Scymnus varipes, Blackburn, 1895. Trans. Roy. Soc. S. Austr. 19:252.

Scymnus varipes (Blackburn), Timberlake, 1923. Proc. Hawaii. Entomol. Soc. 5(2):181.

Introduction data not available, probably by Koebele, first specimens collected January 1, 1905 (Fullaway, 1923. Proc. Hawaii. Entomol. Soc. 5(2):181).

Host: Not Known.

Distribution: Australia, Hawaiian Is.

SUBGENUS PULLUS MULSANT

Scymnus (Pullus) Mulsant, 1846, Hist. Nat. Coleopt. France Securipalp. :241.

Type species: Scymnus subvillosus Goeze, 1777. Entomol. Beytr. 1:247.

(=Scymnus fasciatus Fourc., 1785. Entomol. Paris 1:149. By subsequent designation of Korschefsky (1931. Col. Cat. 118:116 & 137).

34. Scymnus (Pullus) dorcatomoides Weise

Scymnus dorcatomoides Weise, 1879. Deutsche entomol. Zeitschr. 32:151-152.

Scymnus (Pullus) dorcatomoides Weise, Kurisaki, 1923. Ins. World,
Gifu 27:16.

Scymnus dorcatomoides Weise, Swezey, 1925. Proc. Hawaii. Entomol. Soc.
6(1):26.

Scymnus sp. near dorcatomoides Weise, Beardsley, 1957. Proc. Hawaii.
Entomol. Soc. 16(2):210.

Introduction data not available, probably by Koebele (Swezey, 1925. Proc.
Hawaii. Entomol. Soc. 6(1):26).

Host: Trionymus rostellum Lobdell, Beardsley, 1957. Proc. Hawaii. Entomol.
Soc. 16(2):210.

Distribution: China, Formosa, Hawaiian Is., Japan.

35. Scymnus (Pullus) loewii Mulsant

Scymnus (Pullus) loewii Mulsant, 1850. Spec. Trim. Securipalp. :980.
Type locality: Mexico.

Scymnus vividus Sharp, Blackburn and Sharp, 1885. Sci. Trans. Roy.
Dublin Soc. 3(2):146-147. Junior synonym. Type locality: Hawaii.

Scymnus vividus, Swezey, 1906. Proc. Hawaii. Entomol. Soc. 1(1):18.

Scymnus loewii Muls., Fullaway, 1914. Proc. Hawaii. Entomol. Soc.
3(1):21.

Scymnus kinbergi Boh., Muir, 1924. Proc. Hawaii. Entomol. Soc. 5(3):
353. Misidentification.

Pullus kinbergi (Boh.), Swezey and Williams, 1932. Proc. Hawaii.
Entomol. Soc. 8(1):184. Misidentification.

Scymnus kinbergi Boh., Bryan, 1933. Proc. Hawaii. Entomol. Soc. 8(2):
245. Misidentification.

Pullus kinbergi (Boh.), Sakimura and Linford, 1940. Proc. Hawaii.
Entomol. Soc. 10(3):452. Misidentification.

Pullus loewii Mulsant, Holdaway and Look, 1942. Proc. Hawaii. Entomol.
Soc. 11(2):258.

Scymnus vividus Sharp, Krauss, 1944. Proc. Hawaii. Entomol. Soc. 12(1):
86.

Pullus kinbergi (Boh.), Krauss, 1945. Proc. Hawaii. Entomol. Soc. 12(2):
314. Misidentification.

Scymnus loewii Mulsant, Chilson, 1953. Proc. Hawaii. Entomol. Soc.
15(1):83.

Pullus kinbergi (Boheman), Butler, 1961. Proc. Hawaii. Entomol. Soc.
17(3):384. Misidentification.

Scymnus loewii Mulsant, Butler, 1961. Proc. Hawaii. Entomol. Soc.
17(3):384.

Scymnus lowei Mulsant, Beardsley, 1966. Proc. Hawaii. Entomol. Soc.
19(2):174. Misspelling of Scymnus loewii Mulsant.

Scymnus loewi Mulsant, Beardsley, 1966. Proc. Hawaii. Entomol. Soc.
19(2):184. Misspelling of Scymnus loewii Mulsant.

Introduction data not available.

Host: Aphids, Swezey, 1906. Proc. Hawaii. Entomol. Soc. 1(1):18.

Platycoccus, Beardsley, 1966. Proc. Hawaii. Entomol. Soc. 19(2):164.

Trionymus insularis, Beardsley, 1966. Proc. Hawaii. Entomol. Soc.
19(2):177.

Distribution: French Frigate Shoals (Trig Is., Whale-Skate Is.), Hawaiian Is., Johnston Is., Kaula Is., Laysan Is., Lisianski Is., Micronesia, Necker Is., Nihoa Is., Pearl and Hermes Atoll (North Is., Southeast Is.), Southern U. S. A. to Colombia.

36. Scymnus (Pullus) uncinatus Sicard

Pullus uncinatus Sicard, 1924. Ann. Mag. Nat. Hist. (9) 14:532.

Scymnus uncinatus, Schilder, 1928. Arb. Biol. Reichsanst. Dahlem 14:244.

Pullus uncinatus, Swezey, 1940. Proc. Hawaii. Entomol. Soc. 10(3):362.

Scymnus (Pullus) unicinctus Sicard, Swezey, 1945. Proc. Hawaii. Entomol. Soc. 12(2):225-226. Misspelling of Scymnus (Pullus) uncinatus Sicard.

Scymnus (Pullus) uncinatus Sic., Krauss, 1945. Proc. Hawaii. Entomol. Soc. 12(2):314.

Introduced from Mexico in 1922 by Osborn (Swezey, 1945. Proc. Hawaii. Entomol. Soc. 12(2):225-226).

Host: Pseudococcus brevipes (Cockerell), Swezey, 1945. Proc. Hawaii. Entomol. Soc. 12(2):226. (= Dysmicoccus brevipes (Cockerell), Zimmerman, 1957. Insects of Hawaii 6:197).

Pseudococcus filamentosus (Cockerell), Swezey, 1945. Proc. Hawaii. Entomol. Soc. 12(2):226. (= Nipaecoccus vastator (Maskell), Zimmerman, 1957. Insects of Hawaii 6:197, Zimmerman, 1948. Insects of Hawaii 5:245).

Distribution: Hawaiian Is., Mexico.

GENUS SERANGIUM BLACKBURN

Serangium Blackburn, 1889. Trans. Roy. Soc. S. Austr. 11:210.

Type species: Serangium mysticum Blackburn, 1889. By monotypy.

Type locality: Port Lincoln, Australia.

37. Serangium maculigerum Blackburn.

Serangium maculigerum Blackburn, 1892. Roy. Soc. S. Austr. 15(2):73.

Type locality: near Toowooba, Queensland, Australia.

Serangium maculigerum, Giffard, 1908. Proc. Hawaii. Entomol. Soc.

1(5):173.

Cyrema nigellum, Fullaway, 1919. Proc. Hawaii. Entomol. Soc. 4(1):

5. Misidentification.

Serangium maculiferum, Fullaway, 1919. Proc. Hawaii. Entomol. Soc.

4(1):5. Misspelling of Serangium maculigerum.

Introduced from Australia in 1894 by Koebele (Giffard, 1908. Proc. Hawaii.

Entomol. Soc. 1(5):173).

Host: Diaspine scales, Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):300.

Aleurocanthus spiniferus (Quaintance), Mau. Proc. Hawaii. Entomol.

Soc. 22(2):(in press) (Notes and Exhibitions for Nov. 1974).

Distribution: Australia, Hawaii.

GENUS STETHORUS WEISE

Scymnus (Stethorus) Weise, 1885. Best.-Tab. Europ. Col. 2 (ed. 2):65.

Stethorus Weise, 1899. Arch. Naturg. 65(1):64.

Type species: Coccinella minimus Rossi, 1794. (preoccupied) (= Stethorus

punctillum Weise, 1891. Cat. Col Europ. :781). By subsequent designation

of Sicard (1909. Ann. Soc. Entomol. France 78:146).

38. Stethorus siphonulus Kapur

Stethorus siphonulus Kapur, 1948. Bull. Entomol. Res. 39:314. Type locality: Penang, Malaya.

Stethorus vagans Blackburn, Fullaway, 1922. Proc. Hawaii. Entomol. Soc. 5(1):80. Misidentification.

Scymnus vagans (Blackb.), Krauss, 1944. Proc. Hawaii. Entomol. Soc. 12(1):86. Misidentification.

Stethorus vagans, Garnett & Haramoto, 1967. Proc. Hawaii. Entomol. Soc. 19(3):405. Misidentification.

Stethorus siphonulus Kapur, Beardsley. Proc. Hawaii. Entomol. Soc. 22(1):(in press) (Notes and Exhibitions for March 1973).

Introduction data not available. This species was first collected in Hawaii in 1904 (Fullaway, 1922. Proc. Hawaii. Entomol. Soc. 5(1):80).

Host: leaf mites, Swezey, 1923. Proc. Hawaii. Entomol. Soc. 5(2):304.

Distribution: Hawaiian Is., Orient.

Determination of this species as Stethorus siphonulus was made by Dr.

E. B. Britton. Raros and Haramoto (1974) studied the biology of Stethorus siphonulus.

GENUS STICHOLOTIS CROTCH

Sticholotis Crotch, 1874, Revis. Coccinellidae :200.

Type species: Sticholotis substriatus Crotch, 1874. By original designation.

Type locality: Japan.

39. Sticholotis ruficeps Weise

Sticholotis ruficeps Weise, 1902, Term. Fuzetek 25:511.

Sticholotis punctatas, Fullaway, 1920, Proc. Hawaii. Entomol. Soc. 4(2):243. Misidentification.

Sticholotis punctata Crotch, Illingworth, 1938. Proc. Hawaii. Entomol. Soc. 10(1):24. Misidentification.

Sticholotis punctatus Crotch, Zimmerman, 1948. Insects of Hawaii 5:283.

Introduction data not available.

Host: Diaspine scales, Fullaway, 1920. Proc. Hawaii. Entomol. Soc. 4(2):243.

Eriococcus araucariae Maskell, Zimmerman, 1948. Insects of Hawaii 5:283.

Pinnaspis buxi (Bouche), Zimmerman, 1948. Insects of Hawaii 5:390.

Distribution: China, Hawaii, Japan, Malaya, Mariana Is.

Sticholotis punctata Crotch was introduced from China and Japan in 1895 (Giffard, 1908, Proc. Hawaii. Entomol. Soc. 1(5):174) but was never recovered. Sticholotis ruficeps Weise was collected and misidentified as S. punctata. George Funasaki informed me that Chapin determined specimens from Maui as S. ruficeps in 1964. This has not been previously reported in Hawaiian literature.

GENUS TELSIMIA CASEY

Telsimia Casey, 1899. J. N. York Entomol. Soc. 7:109-110,1165.

Type species: Telsimia tetrastica Casey, 1899. By subsequent designation of Chapin (1926. Proc. Biol. Soc. Washington 39:129).

Type locality: Wellington, South Africa.

40. Telsimia nitida Chapin

Telsimia nitida Chapin, 1926. Proc. Biol. Soc. Washington 39:130-131.

Type locality: Guam.

Cryptogonus nigripennis Weise, Fullaway, 1928. Proc. Hawaii. Entomol. Soc. 7(1):6. Misidentification.

Telsimia nitida Chapin, Swezey, 1941. Proc. Hawaii. Entomol. Soc. 11(1):11.

Introduced from Guam in 1936 by Swezey (Swezey, 1939. Proc. Hawaii.

Entomol. Soc. 10(2):180).

Host: Pinnaspis buxi (Bouche), Swezey, 1939. Proc. Hawaii. Entomol. Soc.

10(2):180.

Diaspis boisduvalii Signoret, Swezey, 1951. Proc. Hawaii. Entomol.

Soc. 14(2):223.

Aspidiotus destructor Signoret, Beardsley, 1970. Proc. Hawaii.

Entomol. Soc. 20(3):508.

Distribution: Hawaii, Japan, Micronesia.

ACKNOWLEDGEMENTS

This research was supported in part by the ISLAND ECOSYSTEMS Integrated Research Program of the US/IBP and funds from the McIntire-Stennis Forestry Project 928 through the College of Tropical Agriculture, University of Hawaii. I wish to thank the Bernice P. Bishop Museum and the Hawaii State Department of Agriculture and their staffs for making their coccinellid collections available and aiding me in their use. I want to thank Larry Nakahara and Wayne Gagne for allowing me to incorporate their coccinellid data with mine in writing APPENDIX 1. I want to thank Dr. John W. Beardsley for reviewing this paper and for his helpful suggestions. I am most grateful to Dr. E. B. Britton and Mr. R. D. Pope at the British Museum for determining several species.

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Appendix 1. Coccinellids Found in Hawaii Volcanoes National Park.

Coccinellid	Elevation (Ft)											
	50	100	2500	3500	3800	3900	4000	4200	5400	6700	7000	8000
1. <u>Coelophora</u>												
<u>inaequalis</u>		X		X			X			X		
2. <u>Cryptolaemus</u>												
<u>montrouzieri</u>	X	X		X			X		X	X	X	X
3. <u>Curinus</u>												
<u>coeruleus</u>	X	X	X									
4. <u>Diomus</u> near												
<u>pumilio</u>							X					
5. <u>Harmonia</u>												
<u>conformis</u>								i	i			
6. <u>Hippodamia</u>												
<u>convergins</u>										X	X	X
7. <u>Hyperaspis</u>												
<u>jocosa</u>		X										
8. <u>H. silvestrii</u>		X										
9. <u>Lindorus</u>												
<u>lophanthae</u>									X			
10. <u>Nephus</u>												
<u>bilucernarius</u>	X	X	X	X					X			
11. <u>N. roepkei</u>	X	X										
12. <u>Rhizobius</u>												
<u>ventralis</u>				X		X			X		X	
13. <u>Rodolia</u>												
<u>cardinalis</u>		X							X	X	X	

i: introduced, establishment uncertain.

Appendix 1. Coccinellids Found in Hawaii Volcanoes National Park. (cont'd).

Coccinellid	Elevation (Ft)											
	50	100	2500	3500	3800	3900	4000	4200	5400	6700	7000	8000
14. <u>Scymnus</u>												
<u>varipes</u>					X				X	X	X	X
15. <u>S. (Pullus)</u>												
<u>loewii</u>						X			X			
16. <u>Sticholotis</u>												
<u>ruficeps</u>	X											
17. <u>Telsimia</u>												
<u>nitida</u>	X											

On January 14, 1975 students under Dr. Dougald G. Scott of Cabrillo College, California found Coccinella septempunctata brucki in Kilauea Crater (3640 ft).

Appendix 2. Coccinellids Found in the A. Koiaia Sanctuary, Kohala Mt.
(3200 Ft).

1. Coelophora inaequalis
2. Cryptolaemus montrouzieri
3. Curinus coeruleus
4. Diomus notescens
5. Harmonia conformis
6. Hippodamia convergins
7. Olla abdominalis
8. Orcus chalybeus
9. Rodolia cardinalis
10. Scymnodes lividigaster
11. Scymnus (Pullus) loewii

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