

Synopsis of Hawaiian Encyrtidae
(Genera arranged alphabetically, without regard
to phylogenetic relationships).

Genus **ACEROPHAGUS** E. Smith

Acerophagus E. Smith, 1880, N. Amer. Entomol. 1:83.

Type: *Acerophagus coccois* E. Smith.

Revision: Rosen, 1969, Hillgardia 40:41-72.

Biology: Internal parasites of Pseudococcidae.

KEY TO HAWAIIAN ACEROPHAGUS

1. Color orange yellow: middle portion of forewing faintly infuscate; parasite of *Ferrisia virgata* *texanus*
 Color lemon yellow, forewing without a faint infuscate cloud; parasite of *Phenacoccus gossypii* *coccois*

Acerophagus coccois Smith.

Acerophagus coccois Smith, 1880, N. Amer. Entomol. 1:84; Beardsley, 1972, Proc. Hawaii. Entomol. Soc. 21(2):155.

Type of locality: Peoria, Illinois.

Distribution: North America, Hawaii (Oahu). Accidental immigrant; first collected on Oahu in July, 1971.

Host: *Phenacoccus gossypii* Townsend and Cockerell.

Acerophagus texanus (Howard).

Aphycus texanus Howard, 1898, Proc. U.S. Nat. Mus. 21:245.

Acerophagus texanus: Timberlake, 1916, Proc. U.S. Nat. Mus. 50:576; Beardsley, 1971, Proc. Hawaii. Entomol. Soc. 21:21.

Type locality: Brownsville, Texas.

Distribution: Texas, Mexico, Hawaii (Oahu, Lanai). Accidental immigrant; first collected on Oahu in April, 1960.

Host: *Ferrisia virgata* (Cockerell).

Genus **ACHRYSOPOPHAGUS** Girault

Achrysofophagus Girault, 1915, Mem. Queensland Mus. 4:89.

Type: *Achrysofophagus oviductus* Girault.

Revision: Mercet, 1929, Eos 5:359-364.

Achrysofophagus rex Girault.

Achrysofophagus rex Girault, 1920, Proc. U.S. Nat. Mus. 58:188;

Fullaway, 1956, Proc. Hawaii. Entomol. Soc. 16:18.

Type locality: Manila, Philippine Is.

Distribution: Philippines, Hawaii (Kauai, Oahu, Maui, Hawaii). Accidental immigrant; first collected on Oahu Nov., 1955.

Hosts: Reared from the mealybugs *Planococcus citri* (Risso) and *Pseudococcus* sp. near *gallicola* Ehrhorn, but believed to be a hyperparasite.

Genus **ADELENCYRTUS** Ashmead

Adelencyrtus Ashmead, 1900, Proc. U.S. Nat. Mus. 22:341, 401.

Type: *Encyrtus chionaspidis* Howard.

Revision: Compere and Annecke, 1961, Jour. Entomol. Soc. S. Africa 24:47-58.

Biology: Parasites of diaspidid scale insects.

Adelencyrtus odonaspidis Fullaway.

Adelencyrtus odonaspidis Fullaway, 1913, Rept. Hawaii Agric. Expt. Sta. for 1912, p. 27; Tachikawa, 1963, Mem. Ehime Univ., Sec. VI (Agric.), 9:172.

Type locality: Oahu.

Host: *Odonaspis ruthae* Kotinsky.

Distribution: South Africa, Japan?, North America?, Hawaii (Oahu, Molokai, Maui, Hawaii). Accidental immigrant; apparently present as early as 1904 (Perkins, 1925, Proc. Hawaii. Entomol. Soc. 6:215).

Genus **AENASIUS** Walker

Aenasius Walker, 1846, Ann. Mag. Nat. Hist. 17:181.

Type: *Encyrtus (Aenasius) hyettus* Walker.

Protaenasius Fullaway, 1932, Proc. Hawaii. Entomol. Soc. 8:111, *nomen nudum*.

Revisions: Compere, 1937, Proc. Hawaii. Entomol. Soc. 9:383-404; Kerrich, 1967, Bull. British Mus. (Nat. Hist.) Entomol. 20(5):195-225.

Biology: Internal parasites of Psuedococcidae.

Aenasius advena Compere.

Protaenasius sp., Fullaway, 1932, Proc. Hawaii. Entomol. Soc. 8:111.

Aenasius advena Compere, 1937, Proc. Hawaii. Entomol. Soc. 9:393.

Type locality: Oahu.

Distribution: Tropical America, Philippines, Southeast Asia, Fiji, Johnston I., Hawaii (Kauai, Niihau, Oahu, Maui, Molokai, Lanai, Hawaii). Apparently purposely introduced from Mexico in 1929.

Host: *Ferrisia virgata* (Cockerell).

Genus **ANABROLEPIS** Timberlake

Anabrolepis Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:431.

Type: *Anabrolepis extranea* Timberlake.

Revision: Tachikawa, 1963, Mem. Ehime Univ., Sec. VI (Agric.) 9(1):161-168.

Biology: Parasites of diaspidid scale insects.

KEY TO HAWAIIAN ANABROLEPIS

1. Forewings with four transverse infuscate bands, outer 3 connected by a median longitudinal band; funicle segments 5 and 6 pale *extranea*
 Forewings with two transverse infuscate bands connected by a median longitudinal band; funicle segment 6 only pale *bifasciata*

Anabrolepis bifasciata Ishii

Anabrolepis bifasciata Ishii, 1923, Dept. Agric. and Comm. Japan Imp. Plant Quar. Sta. Bull. 3:106; Tachikawa, 1963, Mem. Ehime Univ., Sec. VI (Agric.), 9:163; Beardsley, 1974, Proc. Hawaii. Entomol. Soc. 22(1):19.

Adelencyrtus bifasciatus: Compere and Annecke, 1961, Jour. Entomol. Soc. S. Africa 24:57.

Type locality: Japan.

Distribution: Japan, India, Hawaii (Oahu). Accidental immigrant; first collected on Oahu during June, 1973.

Host: *Duplaspidiotus claviger* (Cockerell).

Anabrolepis extranea Timberlake.

Anabrolepis extranea Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:434; Compere and Annecke, 1961, Jour. Entomol. Soc. S. Africa 24:59; Tachikawa, 1963, Mem. Ehime Univ., Sec. VI (Agric.), 9:165.

Type locality: Oahu.

Hosts: None recorded in Hawaii. Tachikawa (1963) lists it from *Aonidiella aurantii* Maskell, *Lepidosaphes tubulorum* Ferris and *Pseudaonidia paeoniae* Cockerell. He also lists a record from *Cero-plastes rubens* Maskell which is believed to be incorrect.

Distribution: China, Japan, Hawaii (Oahu, Molokai, Maui, Hawaii). Accidental immigrant; first collected on Oahu in 1919.

Tachikawa (1963) is of the opinion that this species probably is identical with *A. zetterstedtii* (Westwood).

Genus ANAGYRUS Howard

Anagyrus Howard, 1896, Proc. U.S. Nat. Mus. 18:638; Timberlake, 1926, Univ. Calif. Pubs. Entomol. 3:224; Tachikawa, 1963, Mem. Ehime Univ., Sec. VI (Agric.), 9:41.

Type: *Anagyrus greeni* Howard.

Revision: Introduced Hawaiian species were reviewed by Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 20:289-297.

Biology: Primary parasites of Pseudococcidae.

Key: See Beardsley, 1969.

Anagyrus ananatis Gahan.

Anagyrus ananatis Gahan, 1949, Proc. Hawaii. Entomol. Soc. 13:357.

Type locality: Rio de Janeiro, Brazil.

Distribution: Brazil, Hawaii (Kauai?, Oahu, Molokai, Maui). Purposely introduced from Brazil in 1935.

Host: *Dysmicoccus brevipes* (Cockerell).

Anagyrus antoninae Timberlake.

Anagyrus antoninae Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:409.

Type locality: Honolulu, Oahu.

Distribution: Japan, Continental U.S. (Texas, Florida), Mexico, Hawaii

(Kauai, Oahu, Molokai, Lanai, Maui, Hawaii). Accidentally introduced from the Orient; first collected on Oahu in 1919.

Hosts: *Antonina crawii* Cockerell, *A. graminis* Maskell.

Anagyrus dactylopii (Howard).

Aphycus dactylopii Howard, 1898, Proc. U.S. Nat. Mus. 21:242.

Anagyrus dactylopii: Timberlake, 1924, Univ. Calif. Pubs. Entomol. 3:224.

Type locality: Hong Kong, China.

Distribution: China (Hong Kong), Hawaii (Oahu). Purposely introduced in 1925.

Host: *Nipaecoccus vastator* (Maskell).

Anagyrus fusciventris (Girault).

Epidinocarsis fusciventris Girault, 1915, Mem. Queensland Mus. 4:144.

Anagyrus nigricornis Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:197.

Anagyrus fusciventris: Compere, 1943, Bull. Entomol. Res. 34:129.

Type locality: New South Wales, Australia.

Distribution: Australia, Indonesia, California, West Indies, Hawaii (Kauai, Oahu, Maui, Lanai, Hawaii). First collected on Oahu in March, 1910; possibly purposely introduced by Koebele.

Hosts: *Pseudococcus longispinus* (Targioni-Tozzetti), *Pseudococcus* sp. (*gallicola* Ehrhorn complex).

Anagyrus saccharicola Timberlake.

Anagyrus saccharicola Timberlake, 1932, Proc. Hawaii. Entomol. Soc. 8:159.

Type locality: Selangor, Malaya.

Distribution: S. Africa, India, Malaya, Philippines, Formosa, Ryukyu Is., Fiji, S. America, Hawaii (Kauai, Oahu, Molokai, Lanai, Maui, Hawaii). Purposely introduced from Philippine Is. in 1930.

Host: *Saccharicoccus sacchari* (Cockerell).

Anagyrus swezeyi Timberlake.

Anagyrus swezeyi Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:199; Compere, 1939, Bull. Entomol. Res. 30:8; Subba Rao and Rai, 1970, Beitr. Entomol. 20:89.

Type locality: Oahu.

Distribution: S. Africa, India, Hawaii (Kure, Midway, Kauai, Oahu, Molokai, Maui, Hawaii). Apparently accidentally introduced; first collected on Oahu during August, 1910.

Host: *Chorizococcus rostellum* (Lobdell).

Subgenus **NESOANAGYRUS** Beardsley

Nesoanagyrus Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 20:289.

Type: *Anagyrus major* Perkins.

This subgenus is endemic to the Hawaiian Islands, and the species are parasites of endemic Hawaiian mealybugs.

Anagyrus (Nesoanagyrus) fraternus Perkins.*Anagyrus fraternus* Perkins, 1910, Fauna Hawaiiensis 2:635.

Type locality: Kilauea, Hawaii.

Distribution: Hawaii (Hawaii)

Host: Unknown.

Anagyrus (Nesoanagyrus) laeviceps Perkins.*Anagyrus laeviceps* Perkins, 1910, Fauna Hawaiiensis 2:654.

Type locality: Oahu ("near Honolulu, 2000 ft.").

Distribution: Hawaii (Oahu).

Host: I have reared this species from *Pedronia acanthocauda* Beardsley collected on Mt. Kaala and in the Koolau Mts.**Anagyrus (Nesoanagyrus) major** Perkins.*Anagyrus major* Perkins, 1910, Fauna Hawaiiensis 2:652.

Type locality: Kilauea, Hawaii.

Distribution: Hawaii (Maui, Hawaii).

Host: I have reared this species from *Pseudococcus nudus* Ferris collected at Haleakala, Maui and Mauna Loa Strip, Hawaii Volcanoes National Park, Hawaii.**Anagyrus (Nesoanagyrus) nigricans** Perkins.*Anagyrus nigricans* Perkins, 1910, Fauna Hawaiiensis 6:653.

Type locality: Oahu ("near Honolulu, 1500 ft.").

Distribution: Hawaii (Oahu).

Hosts: I have reared this species from *Pedronia hawaiiensis* Ferris and *Pedronia cibotii* Beardsley, collected at several localities in the Koolau Mountains.**Anagyrus (Nesoanagyrus) tantaleus** Perkins.*Anagyrus tantaleus* Perkins, 1910, Fauna Hawaiiensis 2:654.

Type locality: Mt. Tantalus, Oahu.

Distribution: Hawaii (Oahu).

Host: I have reared what appears to be this species from *Pseudococcus montanus* Ehrhorn, collected at Mt. Tantalus, Oahu.**Anagyrus (Nesoanagyrus) xanthogaster** Perkins.*Anagyrus xanthogaster* Perkins, 1910, Fauna Hawaiiensis 6:653.

Type locality: Kilauea, Hawaii.

Distribution: Hawaii (Hawaii).

Host: Unknown.

Anagyrus gilvipes Swezey, *nomen nudum*.*Anagyrus gilvipes* Timberlake (MS.), Swezey, 1935, Proc. Hawaii. Entomol. Soc. 9:6.Timberlake never published the description of this species, which is a parasite of *Chlorococcus straussiae* (Ehrhorn) on Oahu.**Genus ANARHOPUS** Timberlake*Anarhopus* Timberlake, 1929, Univ. Calif. Pubs. Entomol. 5:15.Type: *Anarhopus sydneyensis* Timberlake.

Anarhopus sydneyensis Timberlake.

Anarhopus sydneyensis Timberlake, 1929, Univ. Calif. Pubs. Entomol. 5:18; Beardsley, 1967, Proc. Hawaii. Entomol. Soc. 19:334.

Type locality: Sydney, Australia.

Distribution: Australia, California, Hawaii (Kauai, Oahu, Maui, Hawaii). Accidental immigrant; first collected on Oahu in April, 1964.

Host: *Pseudococcus longispinus* (Targioni-Tozzetti) (= *P. adonidum* L. of authors). For biology see Compere and Flanders, 1934, Jour. Econ. Entomol. 28:966-973.

Genus **ANICETUS** Howard

Anicetus Howard, 1896, Proc. U.S. Nat. Mus. 18:639.

Type: *Anicetus ceylonensis* Howard.

Revision: Annecke, 1967, Trans. Royal Entomol. Soc. London 119:105-130.

Biology: Primary parasites of soft scale insects (Coccidae).

Anicetus annulatus Timberlake.

Anicetus annulatus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:227.

Type locality: Honolulu, Oahu.

Distribution: India, Japan, Australia, California, Hawaii (Kauai, Oahu, Molokai, Lanai, Maui, Hawaii). Apparently an accidental immigrant; first collected in 1912.

Hosts: I have reared this species from *Eucalymnatus tessellatus* (Signoret). It has been reported also from *Coccus hesperidum* L. and *Saissetia coffeae* (Walker).

Genus **APHIDENCYRTUS** Ashmead

Aphidencyrtus Ashmead, 1900, Proc. U.S. Nat. Mus. 22:340, 347, 398.

Type: *Encyrtus aphidiphagus* Ashmead (= *Encyrtus aphidivorus* (Mayr)).

Aphidencyrtus aphidivorus (Mayr).

Encyrtus aphidivorus Mayr, 1876, Zool. Bot. Gesell. Wien. Verh. 25:712,724.

Eupelmus schizoneuræ Ashmead, 1885, Trans. Amer. Entomol. Soc. 12: Proc. p. xvi.

Encyrtus aphidiphagus Ashmead, 1887, Bull. U.S. Dept. Agric. Div. Entomol. 14:19.

Aphidencyrtus schizoneuræ; Ashmead, 1900, Proc. U.S. Nat. Mus. 22:399; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:185.

Aphidencyrtus inquisitor Girault, 1916, Canad. Entomol. 48:342 (not *Encyrtus inquisitor* Howard); Swezey, 1933, Proc. Hawaii. Entomol. Soc. 8:209.

Aphidencyrtus aphidivorus: Mercet, 1921, Fauna Iberica, Encirtidos: 345.

Type locality: Vienna, Austria.

Distribution: Widespread, Hawaii (Kauai, Oahu, Maui, Hawaii). An accidental immigrant; collected in Hawaii as early as 1906.

Hosts: Reared from various aphids; develops as a hyperparasite on primary parasites such as *Aphidius* and *Aphelinus*.

Genus APHYCOMORPHA Timberlake

Aphycomorpha Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:225.

Type: *Aphycomorpha araucariae* Timberlake.

Aphycomorpha araucariae Timberlake.

Aphycomorpha araucariae Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:227.

Type locality: Honolulu, Oahu.

Distribution: Hawaii (Oahu). An accidental immigrant of unknown origin which was first collected here in July, 1906.

Host: *Eriococcus araucariae* Maskell.

Genus APHYCUS Mayr

Aphycus Mayr, 1876, Zool.-Bot. Gesell. Wien Verh. 25:695.

Type: *Encyrtus apicalis* Dalman (designated by Ashmead, 1900).

Pseudococcobius Timberlake, 1916, Proc. U.S. Nat. Mus. 50:563.

Type: *Aphycus terryi* Fullaway.

Biology: The species of *Aphycus* (*s. str.*) are primary parasites of mealybugs.

Aphycus terryi Fullaway.

Aphycus terryi Fullaway, 1913, Proc. Hawaii. Entomol. Soc. 2:281;

Compere, 1941, Univ. Calif. Pubs. Entomol. 8(1):4.

Pseudococcobius terryi; Timberlake, 1916, Proc. U.S. Nat. Mus. 30:565.

Type locality: Hawaii, the exact type locality was not specified. There are eight card-mounted specimens on three pins in the Bishop Museum, labeled as cotypes. One pin is labeled "Hilo Sugar Co.", two pins are labeled "Olowalu/Hana, Maui". Most of the specimens are fragmentary. I have designated an undamaged female labeled "Olowalu/Hana, Maui, V-09, FWT, (= F.W. Terry), ex *Pseudococcus saccharifolia*" as a lectotype.

Distribution: North America (Georgia, Florida, Louisiana), Hawaii (Oahu, Maui, Hawaii). Apparently an accidental immigrant, origin unknown; first collected on Maui in 1909.

Host: *Dysmicoccus boninsis* (Kuwana). Fullaway specified the host as "*Pseudococcus saccharifolia*", but this was a misidentification of *D. boninsis*.

Genus APOANAGYRUS Compere

Apoanagyrus Compere, 1947, Univ. Calif. Pubs. Entomol. 8:18.

Type: *Apoanagyrus californicus* Compere.

Biology: Primary internal parasites of mealybugs.

Apoanagyrus californicus Compere.

Apoanagyrus californicus Compere, 1947, Univ. Calif. Pubs. Entomol. 8:18; Beardsley, 1957, Proc. Hawaii. Entomol. Soc. 16:186; Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 20:298.

Type locality: Riverside, California.

Distribution: California, Hawaii (Oahu, Hawaii). An accidental immigrant; first collected on Oahu in March, 1943.

Host: Has not been reared in Hawaii, but *Phenacoccus solani* Ferris, recorded as a host in California, occurs here and is presumed to be a host.

Genus **APTERENCYRTUS** Ashmead

Apterencyrtus Ashmead, 1905, Canad. Entomol. 37:5.

Type: *Apterencyrtus pulchricornis* Ashmead (= *Cheiloneurus microphagus* Mayr).

Apterencyrtus microphagus (Mayr).

Cheiloneurus microphagus Mayr, 1876, Zool.-Bot. Gessel. Wien Verh. 25:745.

Apterencyrtus pulchricornis Ashmead, 1905, Canad. Entomol. 37:5.

Cheiloneurinus microphagus: Mercet, 1921, Fauna Iberica, Encirtidos: 647.

Apterencyrtus microphagus: Gahan, 1951, Canad. Entomol. 83:171.

Type locality: Europe (Saxony?).

Distribution: Widespread, Hawaii (Oahu). An accidental immigrant; first collected here in September, 1965; not previously reported in Hawaii.

Hosts: This species has not been reared in Hawaii, but it is known elsewhere from a wide range of diaspidid scale insects, and is believed to be hyperparasitic.

Genus **ARRHENOPHAGUS** Aurivillius

Arrhenophagus Aurivillius, 1888, Entomol. Tidsk. 9:144.

Type: *Arrhenophagus chionaspidis* Aurivillius.

Biology: Members of this genus are minute primary parasites diaspidid scales.

Arrhenophagus albitibiae Girault.

Arrhenophagus albitibiae Girault, 1915, Jour. N.Y. Entomol. Soc. 23:241; Annecke and Prinsloo, 1974, Jour. Entomol. Soc. S. Africa 37:36.

Arrhenophagus albipes Girault, 1915, Jour. N.Y. Entomol. Soc. 23:242; Timberlake, 1924, Proc. Hawaii. Entomol. Soc. 5:433; Swezey, 1926, Proc. Hawaii. Entomol. Soc. 6:394.

Arrhenophagus chionaspidis: Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:33. (misidentification).

Type locality: Ceylon.

Distribution: Ceylon, Hong Kong, Japan, Hawaii (Oahu). An accidental immigrant; first collected here in October, 1921.

Host: *Phenacaspis cockerelli* (Cooley). The parasites oviposit in settled first instar hosts of both sexes and the adults emerge from second instar scales.

Previous references to this species in Hawaiian literature have been mostly under the name *Arrhenophagus albipes*. The present use of the name *A. albitibiae* is based upon synonymy proposed by Annecke and Prinsloo (loc. cit.), and my comparison of Hawaiian specimens with their redescription and figures of that species.

Genus AULONOPS Timberlake

Aulonops Timberlake, 1922, Proc. Hawaii Entomol. Soc. 5:158.

Type: *Aulonops bifasciata* Timberlake.

This monotypic genus appears to be endemic to Hawaii, and is closely allied to *Hypergonatopus* Perkins.

Aulonops bifasciata Timberlake.

Aulonops bifasciata Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:159.

Type locality: Waianae Mts., Oahu.

Hosts: Unknown. This species is known only from the holotype.

Genus BLEPYRUS Howard

Blepyrus Howard, 1898, Proc. U.S. Nat. Mus. 21:233; Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:168.

Type: *Blepyrus mexicanus* Howard (= *Encyrtus? insularis* Cameron).

Blepyrus insularis (Cameron).

Encyrtus? insularis Cameron, 1886, in Blackburn and Cameron, Mem. Manchester Lit. Phil. Soc. 10:243.

Blepyrus mexicanus Howard, 1898, Proc. U.S. Nat. Mus. 21:234; Timberlake, 1918, Proc. Hawaii. Entomol. Soc. 3:403.

Blepyrus marsdeni Howard, 1898, Proc. U.S. Nat. Mus. 21:234.

Blepyrus texanus Howard, 1898, Proc. U.S. Nat. Mus. 21:235.

Coccophoctonus dactylopii Ashmead, 1900, Proc. U.S. Nat. Mus. 22:375.

Bothriothorax insularis: Ashmead, 1901, Fauna Hawaiiensis 1:321; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:213.

Blepyrus insularis: Perkins, 1913, Fauna Hawaiiensis 1(6):cvi; Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:170; Kerrich, 1967, Bull. British Mus. (Nat. Hist.) Entomol. 20:226.

Type locality: Honolulu, Oahu.

Distribution: Africa, Southeast Asia, New Guinea, Philippines, Micronesia, Mexico, Texas, Hawaii (Kure, Oahu, Maui, Hawaii). Apparently an accidental immigrant of unknown origin.

Host: *Ferrisia virgata* (Cockerell).

Genus CERAPTOCERUS Westwood

Ceraptocerus Westwood, 1833, Ann. Mag. Nat. Hist. 6:495.

Type: *Ceraptocerus mirabilis* Westwood.

Ceraptocerus mirabilis Westwood.

Ceraptocerus mirabilis Westwood, 1833, Ann. Mag. Nat. Hist. 6:495;
Tachikawa, 1963, Mem. Ehime Univ. 9:151.

Type locality: England.

Distribution: Europe, Japan?, Hawaii (Oahu)?

Hosts: Unknown in Hawaii, in Europe it has been reported from several species of Coccidae, probably developing as a hyperparasite.

This species has not been reported previously in Hawaiian literature and possibly does not occur here. However, there are two card-mounted female specimens in the Bishop Museum labeled in the distinctive handwriting of R.C.L. Perkins: "Konahuanui Ridge 2000 ft., 1903, R.C.L.P." and on a second label: "Note: this probably introduced sp. beaten from trees (Pelea) in company with Eulophid with strong pattern on wings! R.C.L.P.."

If this rather striking encyrtid is established here, it is rather difficult to account for the fact that it has not been recollected during the more than 70 years since Perkins collected it. I presume that it may have once been present but has died out.

Genus CHEILONEUROMYIA Girault

Cheiloneuromyia Girault, 1915, Mem. Queensland Mus. 4:178.

Type: *Cheiloneuromyia simpliciscutellum* Girault.

Cheiloneuromyia javensis Girault.

Cheiloneuromyia javensis Girault, 1916, Proc. U.S. Nat. Mus. 51:480;
Beardsley, 1975, Proc. Hawaii. Entomol. Soc. 22:1.

Type locality: Java.

Distribution: Java, Hawaii (Oahu, Hawaii). Accidental immigrant; first collected on Oahu in November, 1965.

Host: Reared from *Coccus acuminatus* (Signoret) on Oahu.

Genus CHEILONEURUS Westwood

Cheiloneurus Westwood, 1833, London, Edinb. and Dublin Phil. Mag. and Jour. Sci. 3:343.

Type: *Encyrtus elegans* Dalman.

Biology: Most of the species which have been carefully studied have been shown to be hyperparasites.

KEY TO HAWAIIAN CHEILONEURUS

1. Frontovortex narrow, width between eyes less than one-half width of an eye 2
- Frontovortex wider, width between eyes about equal to width of an eye or slightly less sp. 1
2. Antennae with second funicle segment (plus parts of first and third) white; scutum entirely dark sp. 2
- Antennae with funicle and club entirely black; scutum with basal third testaceous *noxius*

Cheiloneurus noxius Compere.

Cheiloneurus noxius Compere, 1925, Univ. Calif. Pubs. Entomol. 3:242;
Beardsley, 1962, Proc. Hawaii Entomol. Soc. 18:16.

Type locality: Pasadena, California.

Distribution: California, Hawaii (Oahu). Accidental immigrant; first collected here in June, 1961.

Host: Reared from *Saissetia coffeae* (Walker); a hyperparasite.

Cheiloneurus sp. 1.

Several dozen specimens of an undetermined *Cheiloneurus* sp. are at hand. Most were collected by sweeping and beating at various lowland localities on Oahu beginning in June, 1961, and at Hilo, Hawaii, Nov., 1970. Both brachypterous and macropterous forms are present.

Host: Several specimens of the brachypterous form were reared from *Antonina graminis* Maskell. It is presumed to be hyperparasitic.

Cheiloneurus sp. 2.

Two specimens of a second distinctive, but as yet undetermined *Cheiloneurus* sp. were collected by sweeping roadside weeds at Ewa, Oahu in September, 1965.

Host: Unknown.

Genus CHRYSOPLATYCERUS Ashmead

Chrysoplatycerus Ashmead, 1889, Canad. Entomol. 21:38.

Riley Howard, 1888, in Smith, Entomol. Amer. 4:80 (preoccupied).

Type: *Riley* *splendens* Howard.

Revision: Timberlake, 1922, Proc. U.S. Nat. Mus. 61:1-10.

Biology: Primary parasites of mealybugs.

Chrysoplatycerus splendens (Howard).

Riley *splendens* Howard, 1888, in Smith, Entomol. Amer. 4:80.

Chrysoplatycerus splendens: Ashmead, 1889, Canad. Entomol. 21:38;
Fullaway, 1947, Proc. Hawaii. Entomol. Soc. 13:11.

Type locality: Los Angeles, California.

Distribution: California, Quebec (greenhouse), Hawaii (Kauai, Oahu, Maui, Hawaii). Accidental immigrant; first collected on Oahu in June, 1946.

Hosts: One specimen from Honolulu is labeled as reared from *Pseudococcus longispinus* (Targioni-Tozzetti). It has been reported from other mealybugs, such as *Planococcus citri* (Risso), elsewhere.

Genus CHRYSOPOPHAGUS Ashmead

Chrysopophagus Ashmead, 1894, Insect Life (U.S. Dept. Agric.) 7:245.

Type: *Chrysopophagus compressicornis* Ashmead.

Saronotum Perkins, 1906, Expt. Sta. Hawaii. Sugar Planters' Assoc., Div. Entomol. Bull. 1:259.

Type: *Saronotum australiae* Perkins.

KEY TO HAWAIIAN CHRYSOPOPHAGUS

1. Pedicel nearly twice as long as first funicle segment, third funicle segment longer than wide; scutellum with apical half darker than base; parasite of dryinid cocoons *americanus*
 Pedicel about as long as first funicle segment, third funicle segment about as wide as long, or wider; scutellum uniformly yellowish; hyperparasite in *Ceroplastes cirripediformis* sp.

Chrysopophagus americanus (Perkins).

Saronotum americanum Perkins, 1906, Expt. Sta. Hawaii. Sugar Planters' Assoc., Div. Entomol. Bull. 1:260.

Chrysopophagus americanus: Muesebeck et al, 1951, U.S. Dept. Agric., Monog. 2:499.

Type locality: Honolulu, Hawaii? (holotype specimen is labeled "bred from *Pseudogonatopus*" without other data).

Distribution: North America (Ohio), Hawaii (Oahu, Maui, Hawaii).

Hosts: Reared from cocoons of dryinids *Pseudogonatopus hospes* Perkins and *Haplogonatopus vitiensis* Perkins.

Chrysopophagus sp.

This is a previously unrecorded immigrant first collected on Molokai in July, 1962 by C.J. Davis. During November, 1968 a series of specimens were reared from *Ceroplastes cirripediformis* Comstock (barnacle scale) collected at Honolulu, Oahu by S.H. Wong. It is presumed to be a hyperparasite.

Genus **CLAUSENIA** Ishii

Clausenia Ishii, 1923, Japan Dept. Agr. and Com., Imp. Plant Quar. Sta. Bull. 3:98.

Type: *Clausenia purpurea* Ishii.

Revision: Kerrich, 1967, Bull. Brit. Mus. (Nat. Hist.) Entomol. 20:181-188.

Biology: Primary parasites of mealybugs.

Clausenia purpurea Ishii.

Clausenia purpurea Ishii, 1923, Japan Dept. Agr. Com., Imp. Plant Quar. Sta. Bull. 3:100; Beardsley, 1975, Proc. Hawaii. Entomol. Soc. 22(1):11.

Type locality: Japan.

Distribution: Japan, Israel, North America (Virginia, Ontario, Vermont), Hawaii (Oahu). Accidental immigrant; first collected here in March, 1973.

Hosts: Reared locally from *Pseudococcus citriculus* Green; also attacks *P. comstocki* Kuwana elsewhere.

Genus **COCCIDENCYRTUS** Ashmead

Coccidencyrtus Ashmead, 1900, Proc. U.S. Nat. Mus. 22:339, 345, 383.

Type: *Encyrtus ensifer* Howard.

Coccidencyrtus ochraeiceps Gahan.

Coccidencyrtus ochraeiceps Gahan, 1927, Proc. U.S. Nat. Mus. 71:18; Timberlake, 1927, Proc. Hawaii. Entomol. Soc. 6:517.

Type locality: Ithaca, New York (in greenhouse).

Distribution: New York, Hawaii (Oahu)?

Host: *Diaspis boisduvalii* Signoret.

The only Hawaiian specimens available are those reared by Fullaway in March-April, 1926, on which Timberlake (1927) based his redescription of the species. Although not stated, it seems possible that these specimens may have been reared from host material intercepted in quarantine, and the species may not be established here. The species is presumed to be of Neotropical origin, based upon its only known host.

Genus COCCIDOXENUS Crawford.

Coccidoxenus Crawford, 1913, Proc. U.S. Nat. Mus. 45:248.

Type: *Coccidoxenus portoricensis* Crawford.

Biology: Primary parasites of Coccidae (*s. str.*).

Coccidoxenus mexicanus Girault.

Coccidoxenus mexicanus Girault, 1917, Descr. Stellarium Nov. (private publication), p. 21; Davis, 1971, Proc. Hawaii. Entomol. Soc. 21:29.

Type locality: Morelos, Mexico.

Distribution: Mexico, West Indies, North America (Florida, Arizona), Hawaii (Oahu, Maui). Purposely introduced from Trinidad in June, 1967.

Host: *Ceroplastes cirripediformis* Comstock.

Genus COELASPIDIA Timberlake

Coelaspida Timberlake, 1923, Proc. Hawaii. Entomol. Soc. 5:326.

Type: *Coelaspida osborni* Timberlake.

Coelaspida osborni Timberlake.

Coelaspida osborni Timberlake, 1923, Proc. Hawaii. Entomol. Soc. 5:330.

Type locality: Vera Cruz, Mexico.

Distribution: Mexico, Hawaii (Oahu)? Purposely introduced from Mexico in 1922 and subsequently reported to be established (Swezey, 1923, Proc. Hawaii. Entomol. Soc. 5:301). However, it has not been recollected during recent years and may have died out.

Host: *Dysmicoccus boninsis* (Kuwana) (= *Pseudococcus calceolariae* of authors).

Genus COELOPENECYRTUS Timberlake

Coelopencyrtus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:218; Burks, 1958, Jour. Washington Acad. Sci. 48:23.

Type: *Coelopencyrtus odyneri* Timberlake.

Nesencyrtus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:223.

Type: *Adelencyrtus kaalae* Ashmead.

Biology: Internal, apparently polyembryonic parasites of aculeate Hymenoptera larvae. The Hawaiian species are endemic and parasitize endemic Vespidae (*Odynerus* spp.) and Hylaeidae (*Nesoproso-pis* spp.).

Coelopencyrtus kaalae (Ashmead).*Adelencyrtus kaalae* Ashmead, 1901, Fauna Hawaiiensis 1:323.*Nesencyrtus kaalae*: Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:224.*Coelopencyrtus kaalae*: Burks, 1958, Jour. Washington Acad. Sci. 48:24.

Type locality: Mt. Kaala, Oahu.

Distribution: Hawaii (Oahu, Molokai, Hawaii).

Hosts: *Nesoprosopis pubescens* Perkins, *N. fuscipennis* (Smith), *N. sp.*, probably *koae* Perkins, *N. caeruleipennis* Perkins?**Coelopencyrtus mauiensis** Timberlake.*Coelopencyrtus mauiensis* Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:137.

Type locality: Near Keanae, Maui.

Host: *Odynerus nigripennis* (Holmgren).**Coelopencyrtus odyneri** Timberlake.*Coelopencyrtus odyneri* Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:221.

Type locality: Waialae, Oahu.

Distribution: Hawaii (Oahu).

Host: *Odynerus nigripennis* (Holmgren).**Coelopencyrtus orbi** Timberlake.*Coelopencyrtus orbi* Timberlake, 1920, Proc. Hawaii. Entomol. 4:422.

Type locality: Kipuka Puaulu, Kilauea, Hawaii.

Distribution: Hawaii (Hawaii).

Hosts: *Odynerus orbis* Perkins, *O. erythrognathus* Perkins.**Coelopencyrtus sexramosus** (Timberlake).*Nesencyrtus sexramosus* Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:141.*Coelopencyrtus sexramosus*: Burks, 1958, Jour. Washington Acad. Sci. 48:24.

Type locality: Kau Desert, Hawaii.

Distribution: Hawaii (Hawaii).

Hosts: Unknown. Species known only from the unique male holotype.

Coelopencyrtus swezeyi Timberlake.*Ageniaspis* sp.? Swezey, 1907, Expt. Sta. Hawaii. Sugar Planters Assoc., Div. Entomol. Bull. 5:52.*Coelopencyrtus swezeyi* Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:222.

Type locality: Pahala, Hawaii.

Distribution: Hawaii (Hawaii).

Host: *Odynerus nigripennis* (Holmgren).Genus **COMPERIA** Gomes*Comperia* Gomes, 1942, Bol. Esc. Nac. Agron. Rio de Janeiro 2:41.Type: *Dicarnosis merceti* Compere.**Comperia merceti** (Compere).*Dicarnosis merceti* Compere, 1938, Bul. Entomol. Res. 29:317.

- Comperia merceti*: Gomes, 1942, Bol. Esc. Nac. Agron. Rio de Janeiro 2:41., Muesebeck et al, 1951, U.S. Dept. Agric. Agric. Mon. 2:476.
Comperia merceti var. *falsicornis* Gomes, 1942, Bol. Esc. Nac. Agron. Rio de Janeiro 2:43.
Metaphycus sp., Pemberton, 1942, Proc. Hawaii Entomol. Soc. 11:139; Zimmerman, 1944, Proc. Hawaii. Entomol. Soc. 12:20.
Comperia falsicornis: Zimmerman, 1946, Proc. Hawaii. Entomol. Soc. 12:464.
 Type locality: Kampala, Uganda.
 Distribution: Africa, North America (Florida, Texas), West Indies, Central and South America, Hawaii (Oahu). Accidental introduction; first discovered here in 1941.
 Host: A primary parasite in eggs of the brown banded cockroach, *Supella longipalpa* (Fabricius) (= *S. supellectilium* (Serv.)).

Genus **COMPERIELLA** Howard

- Comperiella* Howard, 1906, Entomol. News 17:121.
 Type: *Comperiella bifasciata* Howard.
 Revision: Compere, 1926, Univ. Calif. Pubs. Entomol. 4:44.
Comperiella bifasciata Howard.
Comperiella bifasciata Howard, 1906, Entomol. News 17:122; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:190.
Ceraptocerus sp., Fullaway, 1913, Ann. Rept. Hawaii Agric. Expt. Sta. for 1912, p. 26-28.
 Type locality: Hong Kong, China.
 Distribution: Japan, China, California, Hawaii (Oahu). Accidentally introduced (?); first collected in 1905; also purposely introduced in 1908 from Japan.
 Host: Reared from *Chrysomphalus ficus* Ashmead (= *C. aonidium* of authors); commonly reared from *Aonidiella* spp. elsewhere.

Genus **COPIDOSOMA** Ratzeburg

- Copidosoma* Ratzeburg, 1844, Ichn. d. Forstins., 1:40, 157.
 Type: *Copidosoma boucheanum* Ratzeburg.
Litomastix Thomson, 1875, Hymn. Scand. 4:118, 171.
 Type: *Encyrtus chalconotus* Dalman.
Paracopidosomopsis Girault, 1916, Psyche 23:49.
 Type: *Berecynthus floridanus* Ashmead.
 Biology: Internal polyembryonic parasites of Lepidoptera larvae.
Copidosoma truncatellum (Dalman).
Encyrtus truncatellus Dalman, 1820, Svenska. Vetensk. Akad. Handl. 41:168.
Barecynthus floridanus Ashmead, 1900, Proc. USNM 22:365.
Paracopidosomopsis truncatellum: Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:193.
Copidosoma truncatellum: Swezey, 1930, Proc. Hawaii. Entomol. Soc. 7:339; Keck, 1961, Proc. Hawaii. Entomol. Soc. 14:361.

Litomastix floridana: Swezey, 1931, Proc. Hawaii. Entomol. Soc. 7:419.
Type locality: Sweden.

Distribution: Europe, North America, Hawaii (Kauai, Oahu, Molokai, Lanai, Maui, Hawaii). This species was purposely introduced in 1898 (according to Swezey, 1931) but apparently failed to become established. It was not discovered here until 1929, presumably due to an accidental introduction.

Hosts: *Chrysodeixis chalcites* (Esper) (= *Plusia chalcites* Esper). *C. truncatellum* has been reported from other species of noctuid larvae elsewhere but appears to be restricted to *C. chalcites* in Hawaii (see Swezey, 1931).

Genus **DIVERSINERVUS** Silvestri

Diversinervus Silvestri, 1914, Bol. Lab. Zool. Agr. Portici 9:301.

Type: *Diversinervus elegans* Silvestri.

Revision: Compere, 1931, Univ. Calif. Pubs. Entomol. 5:233-245.

***Diversinervus elegans* Silvestri.**

Diversinervus elegans Silvestri, 1914, Bol. Lab. Zool. Agr. Portici 9:303;
Beardsley, 1958, Proc. Hawaii. Entomol. Soc. 16:318.

Type locality: Eritrea.

Distribution: Africa, Australia (Queensland), California, Hawaii (Midway, Oahu, Maui, Hawaii); accidental introduction; first collected here in December, 1956.

Hosts: *Saissetia coffeae* (Walker), *Saissetia nigra* (Nietner), *Saissetia* sp. Beardsley (1958) recorded it from *S. oleae* (Bernard), but this is now believed to have been a misidentification of *S. neglecta* DeLotto or *S. miranda* (Cockerell and Parrott).

Genus **ENCYRTUS** Latreille

Encyrtus Latreille, 1809, Gen. Crust. et. Insect. 4:31.

Type: *Chrysis infidus* Rossi (designated by Latreille, 1810).

Biology: Primary parasites of soft scales (Coccidae).

KEY TO HAWAIIAN SPECIES OF ENCYRTUS

- Upper margin of scape black, remainder pale; longitudinal carina on posterior margin of eye strongly developed, extending onto cheeks below eye *lecaniorum*
Scape uniformly pale; longitudinal carina behind eyes weakly developed, not extending onto cheeks *infelix*
- Encyrtus infelix* (Embleton).**

Comys infelix Embleton, 1902, Trans. Entomol. Soc. London 1902:223 (footnote).

Encyrtus infelix: Embleton, 1904, Trans. Linn. Soc. London, Zool. 2:231; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:183.

Encyrtus fuscus: Ashmead, 1901, Fauna Hawaiiensis 1:321 (misidentification).

Type locality: Cambridge, England (greenhouse).

Distribution: Widespread, Hawaii (Kauai, Oahu, Molokai, Maui, Lanai, Hawaii). Apparently an accidental introduction.

Hosts: *Saissetia coffeae* (Walker), *Saissetia nigra* (Nietner).

Encyrtus lecaniorum (Mayr).

Comys lecaniorum Mayr, 1876, Zool.-Bot. Gessell. Wien, Verh. 25:740.

Encyrtus lecaniorum: Ashmead, 1900, Proc. U.S.N.M. 22:360; Chilson, 1954, Proc. Hawaii. Entomol. Soc. 15:266; Tachikawa, 1963, Mem. Ehime Univ. 9:88.

Encyrtus barbatus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:209.
Type locality: Vienna Austria.

Distribution: Widespread, Hawaii (Oahu, Molokai); accidental introduction; first collected in 1905.

Hosts: *Coccus hesperidum* L., *Saissetia coffeae* (Walker), *Saissetia nigra* (Nietner).

Genus **EUCHALCERINYS** Timberlake

Euchalcerinys Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:161.

Type: *Euchalcerinys apicicornis* Timberlake.

Euchalcerinys apicicornis Timberlake.

Euchalcerinys apicicornis Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:165.

Type locality: Waiahole, Oahu.

Distribution: Hawaii (Kauai, Oahu, Hawaii); endemic?

Hosts: Unknown.

Genus **EURYRHOPALUS** Howard

Euryrhopalus Howard, 1898, Proc. U.S. Nat. Mus. 21:273.

Type: *Euryrhopalus schwarzi* Howard.

Revision: Kerrich, 1967, Bul. British Mus. (Nat. Hist.) Entomol. 20:235-246.

Synaspidia Timberlake, 1923, Proc. Hawaii. Entomol. Soc. 5:379.

Type: *Synaspidia pretiosa* Timberlake.

Euryrhopalus propinquus Kerrich.

Euryrhopalus propinquus Kerrich, 1967, Bul. British Mus. (Nat. Hist.) Entomol. 20:242.

Euryrhopalus pretiosa: Fullaway, 1948, Proc. Hawaii. Entomol. Soc. 13:214; misidentification, not *E. pretiosa* (Timberlake).

Type locality: Oahu.

Distribution: Brazil, British Guiana, Hawaii (Kauai, Oahu). Purposely introduced from British Guiana in 1936. Found established in 1948, but reported under the name *pretiosa* Timberlake, a closely related Central American species which was also introduced here but which apparently failed to become established.

Hosts: *Dysmicoccus brevipes* (Cockerell), and *Dysmicoccus neobrevipes* Beardsley.

Genus **EXORISTOBIA** Ashmead

Exoristobia Ashmead, 1904, Jour. New York Entomol. Soc. 12:115.

Type: *Exoristobia philippinensis* Ashmead.

Revision: Subba Rao, 1970, Proc. Royal Entomol. Soc. London B, 39:109-113.

Exoristobia philippinensis Ashmead.

Exoristobia philippinensis Ashmead, 1904, Jour. New York Entomol. Soc. 12:15; Beardsley, 1964, Proc. Hawaii. Entomol. Soc. 18:337 footnote.

Pseudencyrtus sp., Wilton, 1962, Proc. Hawaii. Entomol. Soc. 18:17.

Type locality: Manila, Philippine Is.

Distribution: Southeast Asia, Indonesia, New Guinea, Philippines, Hawaii (Oahu, Hawaii). Accidental immigrant; first collected here in 1961.

Hosts: *Achaetoneura archippivora* (Williston), *Musca sorbens* Wiedemann, *Lixophaga sphenophori* (Villeneuve), *Parasarcophaga misera* (Walker), *Trichopoda pilipes* (Fabricius). Adult parasites emerge from host puparia; the species probably attacks many kinds of muscoid Diptera.

Genus **GAHANIELLA** Timberlake

Gahaniella Timberlake, 1926, Proc. U.S.N.M. 69:23.

Type: *Gahaniella californica* Timberlake.

Gahaniella saissetiae Timberlake.

Gahaniella saissetiae Timberlake, 1926, Proc. U.S.N.M. 69:27.

Gahaniella sp., Beardsley, 1961, Proc. Hawaii Entomol. Soc. 17:327.

Type locality: Virgin Islands.

Distribution: Virgin Is., Cuba, Brazil, Hawaii (Oahu). Accidental immigrant; first collected here in 1960.

Hosts: Reared from *Saissetia coffeae* (Walker) and *Saissetia nigra* (Nietner); presumed to be a hyperparasite.

Genus **GYRANUSA** Mercet

Gyranusa Mercet, 1921, Fauna Iberica Himenopteros, Fam. Encirtidos; Mus. Nac. de Cien. Nat., Madrid, p. 123.

Type: *Gyranusa matritensis* Mercet.

Gyranusa phenacocci Beardsley.

Gyranusoidea sp., Fullaway, 1953, Proc. Hawaii. Entomol. Soc. 15:11.

Gyranusa phenacocci Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 10:299.

Type locality: Honolulu, Oahu.

Distribution: Hawaii (Oahu, Molokai, Hawaii), an accidental immigrant of unknown origin; first collected on Oahu in 1964.

Host: *Phenacoccus gossypii* Townsend and Cockerell.

Genus **GYRANUSOIDEA** Compere

Gyranusoidea Compere, 1947, Univ. Calif. Publ. Entomol. 8:17.

Type: *Gyranusa citrina* Compere.

Gyranusoidea advena Beardsley.

Gyranusoidea advena Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 20:303.

Type locality: Kokee, Kauai.

Distribution: Hawaii (Kauai, Oahu); presumed to be an accidental immigrant of unknown origin; first collected in 1956 on Oahu.

Hosts: *Pseudococcus antriocolens* Ferris; *Pseudococcus pipturicolus* Beardsley.

Genus **HABROLEPIS** Foerster

Habrolepis Foerster, 1856, Hymenop. Stud. 2:34, 38.

Type: *Encyrtus nubilipennis* Walker (= *Encyrtus dalmani* Westwood).

Revision: Delucchi, 1965, Entomophaga 10:295-304.

Habrolepis rouxi Compere.

Habrolepis rouxi Compere, 1936, Bul. Entomol. Res. 27:493; Weber, 1957, Proc. Hawaii. Entomol. Soc. 16:183.

Type locality: South Africa.

Distribution: South Africa, California, Hawaii (Oahu); accidental introduction; first found here in Jan. 1956.

Host: *Chrysomphalus ficus* Ashmead.

Genus **HAMBELTONIA** Compere

Hambeltonia Compere, 1936, Proc. Hawaii. Entomol. Soc. 9:172.

Type: *Hambeltonia pseudococcina* Compere.

Hambeltonia pseudococcina Compere.

Hambeltonia pseudococcina Compere, 1936, Proc. Hawaii. Entomol. Soc. 9:173.

Type locality: Sao Paulo, Brazil.

Distribution: Brazil, Hawaii (Oahu, Maui); purposely introduced in 1935; first recovered in 1937.

Host: *Dysmicoccus brevipes* (Cockerell).

Genus **HELEGONATOPUS** Perkins

Helegonatopus Perkins, 1906, Expt. Sta. Hawaii. Sugar Planters Assoc., Entomol. Div. Bul. 1:257.

Type: *Helegonatopus pseudophanes* Perkins.

Helegonatopus pseudophanes Perkins.

Helegonatopus pseudophanes Perkins, 1906, Expt. Sta. Hawaii. Sugar Planters Assoc., Entomol. Div. 1:258.

Helegonatopus sp., Perkins, 1910, Fauna Hawaiiensis 2:655.

Type locality: Ohio.

Distribution: North America, Hawaii (Kauai, Oahu, Maui, Hawaii).

Accidentally introduced from North America, probably about 1905.
Hosts: *Haplogonatopus vitiensis* Perkins, and *Pseudogonatopus hospes* Perkins (Hymenoptera: dryinidae); parasites emerge from host pupal cocoons. Probably also attacks *Pseudogonatopus perkinsi* (Ashmead).

Genus HOMALOPODA Howard

Homalopoda Howard, 1894, Jour. Linn. Soc. London, Zool. 25:90.

Type: *Homalopoda cristata* Howard.

Homalopoda cristata Howard.

Homalopoda cristata Howard, 1894, Jour. Linn. Soc. London, Zool. 25:91; Beardsley, 1971, Proc. Hawaii. Entomol. Soc. 21:15.

Type locality: St. Vincent I., British West Indies.

Distribution: St. Vincent, Cuba, Trinidad, Ceylon, Hawaii (Oahu, Maui). Accidental immigrant; first collected on Oahu in February 1936.

Host: *Duplaspidiotus claviger* (Cockerell).

Genus HOMALOTYLUS Mayr

Homalotylus Mayr, 1876, Zool.-Bot. Gessell. Wien, Verh. 25:116, 137.

Type: *Encyrtus flaminus* Dalman, 1820 (desig. Timberlake, 1919).

Revision: Timberlake, 1919, Proc. U.S. Nat. Mus. 56:133-170.

Biology: Parasites of larvae of Coccinellidae.

It has not yet been possible to place either of the known Hawaiian representatives of *Homalotylus* to species.

KEY TO HAWAIIAN HOMALOTYLUS SPECIES

1. Antennae with club and last funicle segment white, remainder dark; face at $\frac{1}{2}$ distance between anterior ocellus and lower margin of eye about $\frac{3}{4}$ as wide as eye; parasite of *Coelophora* larvae sp. 2
2. Antennae with club and last 3 funicle segments white; face at half way between anterior ocellus and lower margin of eye about $\frac{1}{2}$ as wide as eye; parasite of *Telsimia* and *Lindorus* larvae sp. 1

Homalotylus sp. 1.

Homalotylus sp., Beardsley, 1969, Proc. Hawaii. Entomol. Soc. 20:279.

Distribution: Hawaii (Oahu). Accidental immigrant, first collected here in September 1968.

Hosts: *Lindorus lophanthae* Blaisdell and *Telsimia nitida* Chapin.

This species is similar to, but apparently distinct from *H. flaminus* (Dalman). The latter was recorded in our literature (Timberlake, 1919a) on the basis of a single specimen which is now believed to have been mislabeled or to have been reared in quarantine.

Homalotylus sp. 2.

Homalotylus sp., Beardsley, 1970, Proc. Hawaii. Entomol. Soc. 20:490.

Distribution: Hawaii (Oahu, Hawaii). An accidental immigrant first collected on Oahu in April, 1969.

Host: *Coelophora pupillata* (Swartz), erroneously reported as *C. inaequalis* by Beardsley (1970).

Genus **HUNTERELLUS** Howard

Hunterellus Howard, 1908, *Canad. Entomol.* 40:240.

Type: *Hunterellus hookeri* Howard.

Biology: Internal parasites of nymphal ixodid ticks.

Hunterellus hookeri Howard.

Hunterellus hookeri Howard, 1908, *Canad. Entomol.* 40:239; van Zwaluwenburg, 1934, *Proc. Hawaii. Entomol. Soc.* 8:360.

Type locality: Corpus Christi, Texas.

Distribution: Texas, California, Mexico, East Africa, India, Hawaii (Oahu). Accidental immigrant; first collected here in January, 1933.

Host: *Rhipicephalus sanguineus* Latrielle.

Genus **HYPERGONATOPUS** Timberlake

Hypergonatopus Timberlake, 1922, *Proc. Hawaii. Entomol. Soc.* 5:142.

Type: *Echthrogonatopus hawaiiensis* Perkins.

Key: Timberlake, 1922, *Proc. Hawaii. Entomol. Soc.* 5:145-47.

Biology: Parasites of dryinid cocoons.

Hypergonatopus brunneipes Timberlake.

Hypergonatopus brunneipes Timberlake, 1922, *Proc. Hawaii. Entomol. Soc.* 5:154.

Type locality: Kilauea, Hawaii.

Distribution: Hawaii (Hawaii); endemic.

Host: Reared from a dryinid cocoon, probably *Pseudogonatopus perkinsi* (Ashmead).

Hypergonatopus flavipes Timberlake.

Hypergonatopus flavipes Timberlake, 1922, *Proc. Hawaii. Entomol. Soc.* 5:155.

Type locality: Halawa, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: Reared from a dryinid cocoon, presumably *Pseudogonatopus perkinsi* (Ashmead).

Hypergonatopus hemipterus Timberlake.

Hypergonatopus hemipterus Timberlake, 1922, *Proc. Hawaii. Entomol. Soc.* 5:157.

Type locality: Kaumuohona, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: unknown.

Hypergonatopus hawaiiensis (Perkins).

Echthrogonatopus hawaiiensis Perkins, 1912, Expt. Station, Hawaii Sugar Planters Assoc., *Entomol. Div. Bul.* 11:17.

Hypergonatopus hawaiiensis: Timberlake, 1922, *Proc. Hawaii Entomol. Soc.* 5:147.

Type locality: Oahu.

Distribution: Hawaii (Oahu, Hawaii); endemic.

Hosts: Type lot reared from *Pseudogonatopus perkinsi* (Ashmead).

Timberlake (1922:150) states that specimens from Hawaii presumably

were from *Echthrodelphax fairchildii* Perkins, although some may have come from cocoons of *Haplogonatopus vitiensis* Perkins.

Hypergonatopus molokaiensis (Ashmead).

Microterys molokaiensis Ashmead, 1901, Fauna Hawaiiensis 1:322.

Echthrogonatopus molokaiensis: Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:183.

Hypergonatopus molokaiensis: Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:151.

Type locality: Molokai.

Distribution: Hawaii (Molokai), endemic.

Host: unknown.

Hypergonatopus oahuensis Timberlake.

Hypergonatopus oahuensis Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:153.

Type locality: Mt. Kaala, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: unknown.

Hypergonatopus vulcanus Timberlake.

Hypergonatopus vulcanus Timberlake, 1922, Proc. Hawaii. Entomol. Soc. 5:152.

Type locality: Hawaii, Kilauea, Hawaii.

Distribution: Hawaii (Hawaii); endemic.

Host: Reared from dryinid cocoon, presumably *Pseudogonatopus perkinsi* (Ashmead).

Genus **ISODROMUS** Howard

Isodromus Howard, 1887, Ann. Report U.S. Dept. Agric. for 1886, p. 488.

Type: *Isodromus iceryae* Howard.

Revision: Timberlake, 1919, Proc. U.S. Nat. Mus. 56:176-190.

Biology: Parasites of larval Chrysopidae.

Isodromus axillaris Timberlake.

Isodromus axillaris Timberlake, 1919, Proc. U.S. Nat. Mus. 56:183; Swezey, 1935, Proc. Hawaii. Entomol. Soc. 9:17.

Type locality: China.

Distribution: China, Japan, Hawaii (Oahu). Accidental immigrant; first collected here in 1934.

Host: *Chrysopa basalis* (Walker) (= *C. microphya* McLachlan).

Genus **LEPTOMASTIDEA** Mercet

Leptomastidea Mercet, 1916, Bol. Soc. Espan. Nat. Hist. 16:112.

Type: *Leptomastidea aurantiaca* Mercet.

Tanaomastix Timberlake, 1918, Univ. Calif. Pubs. Entomol. 1:362. (Type: *Paraleptomastix abnormis* Girault).

Leptomastidea abnormis (Girault).

Paraleptomastix abnormis Girault, 1915, Entomologist 48:154.

Tanaomastix abnormis: Timberlake, 1918, Univ. Calif. Pubs. Entomol. 1:366; 1919, Proc. Hawaii. Entomol. Soc. 4:186.

Leptomastidea abnormis: Smith and Compere, 1928, Jour. Econ. Entomol. 21:688; Beardsley 1969, Proc. Hawaii. Entomol. Soc. 10:307.
 Type locality: Sicily.
 Distribution: Widespread, Hawaii (Kauai, Oahu, Molokai, Hawaii).
 Purposely introduced during 1915-1916.
 Host: *Planococcus citri* (Risso).

Genus LEPTOMASTIX Foerster

Leptomastix Foerster, 1856, Hymenop. Stud. 2:34, 37 (no species).

Type: *Leptomastix histrio* Mayr, (included by Mayr 1876).

Leptomastix dactylopii Howard.

Leptomastix dactylopii Howard, 1885, U.S. Dept. Agr. Bur. Entomol. Bul. 5:23; Fullaway, 1946, Proc. Hawaii. Entomol. Soc. 12:464.

Type locality: Washington, D.C.

Distribution: Israel, Japan, North America, West Indies, South America, Hawaii (Oahu, Maui). Accidental introduction; first collected on Oahu in February, 1945.

Host: *Planococcus citri* (Risso).

Genus METAPHYCUS Mercet

Metaphycus Mercet, 1921, Fauna Iberica Hymenopteros, Fam. Encirtidos, Mus. Nac. de Cien. Nat. Madrid, p. 197 (as subgenus); 1925, Eos. 1:28; Compere, 1947, Univ. Calif. Pubs. Entomol. 18:1-4; Compere and Annecke, 1960, Jour. Entomol. Soc. So. Africa 23:383.

Type: *Aphycus (Metaphycus) zebratus* Mercet.

Biology: Internal parasites of Coccidae, Asterolecaniidae, and Eriococcidae.

KEY TO HAWAIIAN SPECIES OF METAPHYCUS

1. Scape linear or nearly so, maximum width about one-fifth length or less.....2
- Scape moderately to strongly expanded, maximum width equal to one-fourth length or more.....4
2. Legs marked with distinct dark transverse bands; parasite of *Asterolecanium pustulans*..... *portoricensis*
- Legs not so marked, parasites of Coccidae.....3
3. Dark streak on outer face of scape extending for distinctly more than ½ length of scape; ovipositor sheaths elongate, extending beyond end of abdomen a distance about equal to combined length of last 3 tarsal segments of hind leg; parasite of *Ceroplastes cirripediformis*.....
- *mexicanus*
- Dark streak on outer face of scape extending less than ½ length of scape; ovipositor sheaths short, extending beyond apex of abdomen a distance hardly more than length of last tarsal segment of hind leg; parasite of *Coccus* and *Pulvinaria* spp. *flavus*

4. Scape strongly expanded, maximum width about $\frac{1}{2}$ length, mostly black except for narrow dorsal pale border and narrowly at base and apex *stanleyi*
Scape less strongly expanded, maximum width equal to about one-third length or less 5
5. Maxillary palpi 4-segmented; club of antenna entirely dark; larger species about 1.5-2 mm. long; legs with faint darkish transverse bands; parasite of *Saissetia* *lounsburyi*
Maxillary palpi 2-segmented; antennal club with apex pale; smaller species, about 1 mm long or less; legs without transverse bands; parasites of *Coccus* spp 6
6. Scape relatively narrow, maximum width equal to about $\frac{1}{4}$ length, widest just before apex, black area on its outer face restricted to apical half *alberti*
Scape wider, maximum width equal to about one-third length, widest near middle, black area larger, extending onto basal half
..... *sp.* near *claviger*

Metaphycus alberti (Howard).

Aphycus alberti Howard, 1898, Proc. U.S. Nat. Mus. 21:242, 247; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:189.

Metaphycus alberti: Timberlake, 1926, Proc. Hawaii. Entomol. Soc. 6:310; Compere and Annecke, 1960, Jour. Entomol. Soc. So. Africa 23:384.

Type locality: Sydney, Australia.

Distribution: Australia, South Africa, California, Hawaii (Oahu, Hawaii?); Apparently an accidental immigrant; first collected on Oahu in 1914. It has not been recollected here in recent years, and may have been displaced by *M. flavus* and *M. stanleyi*, which are now common.

Host: *Coccus elongatus* (Signoret) (= *Coccus longulus* of authors).

Metaphycus flavus (Howard).

Aphycus flavus Howard, 1881, U.S. Dept. Agr. Ann. Rept. for 1880, p 365; Beardsley, 1957, Proc. Hawaii. Entomol. Soc. 16:192.

Metaphycus flavus: Compere, 1943, Pan-Pacific Entomol. 19:71.

Type locality: Florida.

Distribution: South Europe, N. Africa, India, North America, South America, Hawaii (Oahu, Molokai). Accidental immigrant; first collected here during June, 1956.

Hosts: *Coccus elongatus* (Signoret), *Pulvinaria urbicola* Cockerell.

Metaphycus lounsburyi (Howard).

Aphycus lounsburyi Howard, 1898, Proc. U.S. Nat. Mus. 21:244; Swezey, 1936, Proc. Hawaii. Entomol. Soc. 9:109.

Metaphycus lounsburyi: Smith and Compere, 1928, Univ. Calif. Pubs. Entomol. 4:240.

Type locality: Cape Town, South Africa.

Distribution: Africa, Australia, North America, South America, Hawaii (Oahu, Maui, Hawaii). Accidental immigrant; first collected here in December, 1934.

Hosts: *Saissetia oleae* (Oliver), *Saissetia miranda* (Cockerell and Parrott).

Metaphycus mexicanus (Howard), new combination.

Aphycus mexicanus Howard, 1898, Proc. U.S. Nat. Mus. 21:247;
Funasaki, 1972, Proc. Hawaii. Entomol. Soc. 21:142.

Type locality: Cotypes from Mexico City, Mexico, and Baton Rouge, Louisiana.

Distribution: Mexico, Southern U.S., Hawaii (Oahu, Hawaii). Accidental immigrant; first collected on Oahu during October, 1970.

Host: *Ceroplastes cirripediformis* Comstock.

Metaphycus portoricensis (Dozier).

Euaphycus portoricensis Dozier, 1926, Proc. Entomol. Soc. Wash. 28:100.

Metaphycus portoricensis: Beardsley, 1970, Proc. Hawaii. Entomol. Soc. 20:479.

Type locality: Puerto Rico.

Distribution: Puerto Rico, Hawaii (Oahu, Hawaii). Accidental immigrant; first collected here in April, 1965.

Host: *Asterolecanium pustulans* (Cockerell).

Metaphycus stanleyi Compere.

Metaphycus stanleyi Compere, 1940, Bul. Entomol. Res. 31:20; Compere, 1940, Hillgardia 13:417; Beardsley, 1966, Proc. Hawaii. Entomol. Soc. 19:143.

Type locality: Cape Town, South Africa.

Distribution: South Africa, California, Hawaii (Kauai, Oahu, Hawaii).

Purposely introduced from California in 1945; first recovered in 1951.

Hosts: *Coccus elongatus* (Signoret), *Coccus hesperidum* L., *Coccus viridis* (Green), *Saissetia coffeae* (Walker).

Metaphycus sp.

Distribution: Hawaii (Oahu, Lanai).

Host: *Coccus acuminatus* (Signoret).

This is an unidentified immigrant species of unknown origin which has not been recorded previously in our literature. It is similar to *Metaphycus claviger* (Timberlake), but is generally darker in color and with other minor differences. It has been compared with several other similar described species, i.e.: *M. alberti*, *M. luteolus* (Timberlake) and *M. helvolus* (Compere), but appears to be distinct from all of these. Timberlake (1926, Proc. Hawaii. Entomol. Soc. 6:310) recorded *M. claviger* from Oahu on the basis of a pair of specimens collected at Mt. Lanihuli, Oahu in September, 1916, and I believe that these may be the same as the present species.

Genus MICROTERYS Thomson

Microterys Thomson, 1875, Hymenop. Scand. 4:118, 155.

Type: *Encyrtus sylvius* Dalman.

Apentelicus Fullaway, 1913, Ann. Rept. Hawaii Agr. Expt. Sta. for 1912, p. 26. (Type: *Apentelicus kotinskyi* Fullaway).

Revision: Compere, 1926, Univ. Calif. Pubs. Entomol. 4:39-44 (California).

Microterys flavus (Howard).

Encyrtus flavus Howard, 1881, U.S. Dept. of Agr. Ann. Rept. for 1880, p. 367.

Microterys flavus: Ashmead, 1900, Proc. U.S. Nat. Mus. 22:391; Perkins, 1910, Fauna Hawaiiensis 2:365; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:184.

Apentelicus kotinskyi Fullaway, 1913, Ann. Rept. Hawaii. Agr. Expt. Sta. for 1912:26 (new synonymy).

Microterys kotinskyi: Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:184 (new synonymy).

Fullaway's *Apentelicus kotinskyi* was based on a single male specimen which I have been unable to locate. Timberlake (1919) stated that the type of *kotinskyi* was "the male of a species previously recorded under the name of *Microterys flavus*." He further stated that there were slight but constant differences between Howard's species and Hawaiian specimens determined as *flavus*, but did not enumerate these differences. He also indicated that true *flavus* may be established in Hawaii on the basis of two specimens, collected by Koebele, which he identified as that species.

I have examined the available Hawaiian *Microterys* specimens, including females determined by Timberlake as *kotinskyi*, and am unable to recognize more than a single species among them. This species appears to be identical with specimens in the U.S. National Museum collection determined as *flavus*, and it appears that this name should be applied to the Hawaiian *Microterys*.

Type locality: Los Angeles, California.

Distribution: Widespread. Hawaii (Kauai, Oahu, Molokai, Lanai, Maui, Hawaii). Accidental immigrant? First collected here sometime before 1910.

Hosts: *Coccus elongatus* Signoret, *Coccus hesperidum* L., *Coccus viridis* (Green), *Pulvinaria psidii* Maskell, *Saissetia coffeae* (Walker), *Saissetia nigra* (Nietner).

Genus NEODUSMETIA Kerrich

Neodusmetia Kerrich, 1964, Entomophaga 9:76.

Type: *Dusmetia sangwani* Subba Rao.

Neodusmetia sangwani (Subba Rao).

Dusmetia sangwani Subba Rao, 1957, Proc. Indian Acad. Sci. 46 (B): 385. Beardsley, 1961, Proc. Hawaii. Entomol. Soc. 17:322.

Dusmetia indica Burks, 1957, Bul. Brooklyn Entomol. Soc. 52:125.

Neodusmetia sangwani: Kerrich, 1964, Entomophaga 9:76.

Type locality: India.

Distribution: India, Wake I., North America (Texas, Arizona, California), Mexico, Hawaii (Pearl and Hermes Reef, Kauai, Oahu, Molokai, Hawaii). Accidental immigrant; first collected on Oahu during June, 1960.

Host: *Antonina graminis* Maskell.

Genus **OOENCYRTUS** Ashmead

Ooencyrtus Ashmead, 1900, Proc. U.S. Nat. Mus. 22:338, 345, 381.

Type: *Encyrtus clisocampae* Ashmead.

Biology: Mostly parasites in eggs of Lepidoptera and Hemiptera.

KEY TO OOENCYRTUS OF HAWAII

1. Scutellum, except along posterior margin, dull, reticulately sculptured; legs with coxae and femora brown; parasite of aphidophagous syrphid puparia *guamensis*
Scutellum, at least on apical one-third, smooth and shining; legs largely or entirely pale; parasites of insect eggs 2
2. Legs entirely pale yellow; basal portion of scutellum dull with strong reticulate sculpture; parasite in eggs of *Erionota thrax* *erionotae*
Legs with basal half of hind femora brownish; scutellum uniformly shining, faintly reticulate; parasite in eggs of *Murgantia histrionica* *johnsoni*

Ooencyrtus erionotae Ferriere.

Ooencyrtus erionotae Ferriere, 1931, Bul. Entomol. Res. 22:284.

Type locality: Malay Peninsula.

Distribution: Malaya, Guam, Hawaii (Oahu). Purposely introduced from Guam in 1973.

Host: *Erionota thrax* (L.).

Ooencyrtus guamensis Fullaway.

Ooencyrtus guamensis Fullaway, 1946, B.P. Bishop Mus. Bul. 189:205.

Beardsley, 1971, Proc. Hawaii. Entomol. Soc. 21:21.

Type locality: Guam.

Distribution: Micronesia (Guam, Saipan, Tinian, Yap), Hawaii (Oahu).

Accidental immigrant; first collected here in October, 1963.

Host: reared from puparia of *Allograpta exotica* (Wiedemann).

This species does not appear to be properly assigned to *Ooencyrtus* but does not fit satisfactorily into any other genus known to me. Aside from the anomalous host relationship, the presence of long verticillate setae on the antennae of the males appears to require its eventual removal from *Ooencyrtus* (see Hoffer, 1963, Acta Entomol. Musei Nat. Prague 35:562).

Ooencyrtus johnsoni (Howard).

Encyrtus johnsoni Howard, 1898, Canad. Entomol. 30:18.

Ooencyrtus johnsoni: Ashmead, 1900, Proc. U.S. Nat. Mus. 22:382;

Fullaway, 1947, Proc. Hawaii. Entomol. Soc. 13:13 (footnote).

Type locality: Maryland, U.S.A.

Distribution: North America, Hawaii (Oahu?). Purposely introduced in 1940. Fullaway (1947) reported it well established in July, 1946, but only a single Hawaiian specimen, reared in 1946, has been found in local collections. Apparently, neither the parasite nor its host have been collected in Hawaii during recent years, and their present status here is unknown.

Host: *Murgantia histrionica* (Hahn) (Pentatomidae) in eggs.

Genus PAURIDIA Timberlake

Pauridia Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:206.

Type: *Pauridia peregrina* Timberlake.

***Pauridia peregrina* Timberlake.**

Pauridia peregrina Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:208.

Type locality: Oahu.

Distribution: China, Philippine Is., Fiji, California, Hawaii (Oahu, Molokai, Maui). First collected in Honolulu in 1911; presumably an accidental immigrant.

Host: *Planococcus citri* (Risso); misidentified in our literature before 1948 as *Pseudococcus krauhniae* (Kuwana).

Genus PLAGIOMERUS Crawford

Plagiomerus Crawford, 1910, Proc. U.S. Nat. Mus. 38:89; Gahan, 1924, Proc. U.S. Nat. Mus. 65:1.

Type: *Plagiomerus diaspidis* Crawford.

KEY TO HAWAIIAN PLAGIOMERUS

- 1. Antennae with third funicle segment nearly as long as segments one plus two combined, about 3/4 as long as segment 4; either last two funicle segments distinctly paler than basal two, or segments without strongly contrasting coloration 2
- 2. Antennae with third funicle segment relatively short, about one-half as long as segments one plus two, and one half as long as segment 4; last funicle segment distinctly paler than three basal segments sp.
- 2. Long setae at apex of scutellum not conspicuously lamelliform; segments of antennal funicle with relatively strongly contrasting coloration, basal two dark, apical two pale *hospes*
- Long setae at apex of scutellum distinctly lamelliform; funicle segments not of strongly contrasting coloration, the outer segments only slightly or not noticeably lighter than basal two *diaspidis*

***Plagiomerus diaspidis* Crawford.**

Plagiomerus diaspidis Crawford, 1910, Proc. U.S. Nat. Mus. 38:90; Swezey, 1938, Proc. Hawaii. Entomol. Soc. 10:180.

Type locality: New Mexico.

Distribution: Southern United States, Mexico, Hawaii (Oahu). Accidental introduction; first reported here in 1938.

Host: *Diaspis echinocacti* (Bouche).

***Plagiomerus hospes* Timberlake.**

Plagiomerus hospes Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:428.

Type locality: Oahu.

Distribution: Hawaii (Kauai, Oahu, Molokai, Lanai, Hawaii). Apparently an accidental immigrant of unknown origin; first collected on Oahu in October, 1919.

Host: Unknown, presumably diaspidid scales.

Plagiomerus sp.

This is a previously unrecorded immigrant; first collected on Oahu in December, 1961.

Distribution: Hawaii (Oahu, Molokai, Lanai, Hawaii); presumably accidentally introduced.

Host: *Hemiberlesia lataniae* (Signoret).

Genus **PSEUDAPHYCUS** Clausen

Pseudaphycus Clausen, 1915, Calif. Agr. Expt. Sta. Bul. 258:41.

Type: *Aphycus angelicus* Howard.

Revision: Gahan, 1946, Proc. U.S. Nat. Mus. 96:311-327.

Biology: Primary parasites of Pseudocidae.

KEY TO HAWAIIAN PSEUDAPHYCUS

1. Antennae, except club; pale orange, parasite of *Nipaeococcus nipae* *utilis*
 Antennae except club, backish; parasite of *Chorizococcus rostellum*... sp.

Pseudaphycus utilis Timberlake.

Pseudaphycus utilis Timberlake, 1923, Proc. Hawaii. Entomol. Soc. 5:323.

Type locality: Vera Cruz, Mexico.

Distribution: Mexico, Puerto Rico, Hawaii (Oahu, Molokai, Maui).

Purposely introduced from Mexico in 1922.

Host: *Nipaeococcus nipae* (Maskell).

Compere and Annecke (1960, Jour. Entomol. Soc. S. Africa 23:379) state that they believe this species is not a typical *Pseudaphycus*.

Pseudaphycus sp.

Pseudaphycus sp., Beardsley, 1957, Proc. Hawaii. Entomol. Soc. 16:210.

Distribution: Hawaii (Oahu); accidental immigrant of unknown origin; first collected here in December, 1955.

Host: *Chorizococcus rostellum* (Lobdell).

Genus **PSEUDHOMALOPODA** Girault

Pseudhomalopoda Girault, 1915, Jour. New York Entomol. Soc. 23:171.

Type: *Pseudhomalopoda prima* Girault.

Pseudhomalopoda guamensis Fullaway.

Pseudhomalopoda guamensis Fullaway, 1946, B.P. Bishop Mus. Bul. 189:209; Fullaway, 1953, Proc. Hawaii. Entomol. Soc. 15:9; Beardsley, 1957, Proc. Hawaii. Entomol. Soc. 16:192.

Type locality: Guam.

Distribution: Guam, Hawaii (Oahu). Accidental immigrant; first collected here in April, 1952.

Host: *Odonaspis greeni* (Cockerell).

Rhopus laysanensis (Timberlake).

Ectroma sp.?, Fullaway, 1914, Proc. Hawaii. Entomol. Soc. 3:21.

Xanthoencyrtus laysanensis Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:203.

Rhopus laysanensis: Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:691.

Type locality: Laysan I.

Distribution: Laysan I; endemic.

Host: Unknown; presumably *Trionymus insularis*.

Rhopus sanguineus (Timberlake).

Xanthoencyrtus sanguineus Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:416.

Rhopus sanguineus Ghesquiere: 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:692.

Type locality: Iao Valley, Maui.

Distribution: Hawaii (Maui); endemic.

Host: Collected on *Eragrostis variabilis*; host presumably *Trionymus insularis*.

Rhopus semiflavus (Timberlake).

Xanthoencyrtus semiflavus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:204.

Rhopus semiflavus: Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:292.

Type locality: Diamond Head, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: Unknown.

Rhopus semiluteus (Timberlake).

Xanthoencyrtus semiluteus Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:219.

Rhopus semiluteus: Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:292.

Type locality: Palolo Valley, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: Collected in *Eragrostis variabilis*; host presumed to be *Trionymus insularis*.

Genus **TACHINAEPHAGUS** Ashmead

Tachinaephagus Ashmead, 1904, Mem. Carnegie Mus. 1:304.

Type: *Tachinaephagus zealandicus* Ashmead.

Tachinaephagus zealandicus Ashmead.

Tachinaephagus zealandicus Ashmead, 1904, Mem. Carnegie Mus.

1:304; Nakao, 1969, Proc. Hawaii. Entomol. Soc. 20:263; Beardsley,

1970, Proc. Hawaii. Entomol. Soc. 20:479.

Type locality: New Zealand.

Distribution: Australia, New Zealand, Java, Hawaii (Oahu, Hawaii).

Purposely introduced in 1968.

Hosts: *Musca sorbens* Wiedeman; presumably attacks larvae of other muscoid Diptera, but local rearing records are lacking.

Genus QUAYLEA Timberlake

Quaylea Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:214.

Type: *Cerchysius whittieri* Girault.

Quaylea whittieri (Girault).

Hemencyrtus crawi, Craw, 1902, Eighth Biennial Rept. of State Board Horticulture, California p. 197; Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:216 (*nomen nudum*).

Cerchysius whittieri Girault, 1918, Entomol. News. 29:66.

Quaylea whittieri Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:216; 1922, Proc. Hawaii. Entomol. Soc. 5:166.

Quaylea aliena Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:216. Type locality: San Francisco, California.

Distribution: Australia, California, Hawaii (Oahu, Maui, Hawaii); accidental immigrant; first collected here in 1905.

Host: Hyperparasite on other chalcids, particularly *Metaphycus lounsburyi*, *Scutellista cyanea* Motchulsky, and *Moranila californica* (Howard), in *Saissetia* spp.

Biology: Smith and Compere, 1928, Univ. Calif. Pubs. Entomol. 4:293; Flanders, 1943, Jour. Econ. Entomol. 46:392-395; 1944, Jour. Econ. Entomol. 37:409; Maple, 1947, Univ. Calif. Pubs. Entomol. 8:61, 113-114.

Genus RHOPUS Foerster

Rhopus Foerster, 1856, Hymenop. Stud. 2:34; Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:686.

Type: *Encyrtus piso* Walker.

Xanthoencyrtus, Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:413 (in part).

Biology: Primary parasites of mealybugs; our species apparently confined to grass-inhabiting species of *Trionymus*.

Key: Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:415-416.

Rhopus apterus (Timberlake).

Xanthoencyrtus apterus Timberlake, 1919, Proc. Hawaii. Entomol. Soc. 4:201.

Rhopus apterus: Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:690.

Type locality: Nuuanu Pali, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: *Trionymus insularis* Ehrhorn.

Rhopus bridwelli (Timberlake).

Xanthoencyrtus bridwelli Timberlake, 1920, Proc. Hawaii. Entomol. Soc. 4:418.

Rhopus bridwelli: Ghesquiere, 1956, Bol. Lab. Zool. Gen. Agr. Portici 33:690.

Type locality: Palolo Valley, Oahu.

Distribution: Hawaii (Oahu); endemic.

Host: Collected in association with *Trionymus insularis* on *Eragrostis variabilis*.

Genus **XANTHOENCYRTUS** Ashmead

Xanthoencyrtus Ashmead, 1902, *Canad. Entomol.* 34:302; Ghesquiere, 1956 *Bol. Lab. Zool. Gen. Agr. Portici* 33:692.

Type: *Xanthoencyrtus nigroclavatus* Ashmead.

Xanthoencyrtus fullawayi Timberlake.

Xanthoencyrtus fullawayi Timberlake, 1919, *Proc. Hawaii. Entomol. Soc.* 4:204; Ghesquiere, 1956, *Bol. Lab. Zool. Gen. Agr. Portici*, 33:694.

Aphycus terryi, Fullaway, 1913 (♂ only), *Proc. Hawaii. Entomol. Soc.* 2:281 (misidentification).

Type locality: Pahala, Hawaii.

Distribution: Hawaii (Oahu, Hawaii); accidental immigrant of unknown origin.

Host: *Dysmicoccus boninsis* (Kuwana); misidentified in literature as *Pseudococcus saccharifolia* (Green).

Males of this species are unknown. Fullaway's "male" of *Aphycus terryi* is a female of this species.

Genus **XESMATIA** Timberlake

Xesmatia Timberlake, 1920, *Proc. Hawaii. Entomol. Soc.* 4:242.

Type: *Xesmatia flavipes* Timberlake.

Xesmatia flavipes Timberlake.

Xesmatia flavipes Timberlake, 1920, *Proc. Hawaii. Entomol. Soc.* 4:425.

Type locality: Palolo Crater, Oahu.

Distribution: Hawaii (Kauai, Oahu, Hawaii); possibly endemic, or may be an accidental introduction of unknown origin.

Host: Unknown. The close similarity to species of *Ooencyrtus* suggests that it may be an egg parasite.

Genus **ZETETICONTUS** Silvestri

Zeteticontus Silvestri, 1915, *Bol. Lab. Zool. Gen. Agr. Portici* 9:343.

Type: *Zeteticontus abilis* Silvestri.

Revision: Subba Rao, 1972, *Entomophaga* 17:179-195.

Biology: Species have been reared from larvae of Nitidulidae.

Zeteticontus perkinsi Timberlake.

Zeteticontus perkinsi Timberlake, 1923, *Proc. Hawaii. Entomol. Soc.* 5:402; Subba Rao, 1972, *Entomophaga* 17:190.

Type locality: Honolulu, Oahu.

Distribution: Hawaii (Oahu); presumably an accidental immigrant of unknown origin.

Host: Unknown.

The unique type was collected by Perkins in Honolulu in 1906. The type appears to have been lost; the specimen pin and labels are in the Bishop Museum. Two additional specimens, which fit Timberlake's description closely, were collected by me at Ewa, Oahu, during February, 1962 and January, 1965. Both were taken sweeping roadside weeds.

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