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REVISION OF THE HAWAIIAN EUCOILINAE

(Hym.: Cynipoidea)

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Abstract: The Hawaiian cynipoid fauna is solely represented by the subfamily Eucoilinae (Cynipidae, *s. s.*). Eleven genera and 50 species are enumerated in this article and the following are described as new: *Kleidotoma* (*Kleidotoma*) *bryani*, *K.* (*Pentakleidota*) *swezeyi*, *Nesodiranchis aurantiaca*, *N. fuscorubra*, *N. nigra*, *Weldia* (n. gen.) *agromyzae*, *W. flavida*, *W. spatulata*, *Hypodiranchis globicornis*, *H. oblonga*, *Pseudodiranchis* (n. gen.) *grandis*, *P. longicornis*, *P. tereticornis*, *P. obovata*, *P. monilis*, *Pseudeucoila* (*Pseudeucoila*) *ovata*, *P. elevata*, *P. depressa*, *P. angusta*, *P. grandissima*, *P. perkinsi*, *P.* (*Hexamercera*) *magnificus*, *Aspidogyrus* (n. gen.) *strigosus*, *Eucoilidea rufula*, and *Lispothyreus* (n. gen.). In addition to keys and descriptions, a summary of the host records, generic comparisons of the ♂ genitalia and a few new synonymies are given.

INTRODUCTION

The cynipoid fauna of the Hawaiian Is. is quite disharmonic and is represented only by the subfamily Eucoilinae, family Cynipidae. Owing to their small size, inconspicuous color pattern and secluded life, these parasitic wasps attract few general collectors and are therefore rare in collections. Since there exists a large number of higher Diptera in the Islands and the Eucoilinae are known as larval parasites of such flies, many more forms are expected to be collected and described.

The only papers dealing exclusively with the Hawaiian cynipids are by Ashmead (1901) and Perkins (1910) which include altogether 10 genera and 14 species. Most of these species have been reassigned to other genera by Weld (1952). In the present revision, 11 genera and 50 species are enumerated and incorporated with redescription of known species and keys to taxa. Four genera and 24 species are described as new, and 2 species and 3 varieties of Perkins' are here suppressed as synonyms.

Six of the 11 genera are at present known to be endemic to Hawaii, but further study of the cynipid fauna of the neighboring areas will probably decrease the endemism percentage.

Prior to this investigation, the biology of the Hawaiian Eucoilinae was unknown. Fragmentary host records taken from collectors' data herewithin are briefly summarized in the following page (tab. 1).

The specimens were collected by O. H. Swezey, J. W. Beardsley, N. L. H. Krauss, E. C. Zimmerman, W. M. Giffard, R. C. L. Perkins, D. E. Hardy, E. H. Bryan, Jr., P. H. Timberlake, J. F. Illingworth, C. E. Pemberton, C. J. Davis, F. W. Terry, F. A. Bianchi, H. T. Osborn, C. A. Isenberg, G. D. Butler, G. E. Paxton, P. Hoyt, D. Habeck, T. C. Maa,

Table 1. Summary of biological data of Hawaiian Eucoilinae

Name	Collector	Months	Locality	Host
Nesodiranchis ashmeadi	Swezey	July, Sept.	Oahu	Agromyzid in spider eggs dipterous pupae
Weldia agromyzae	Swezey	Mar., May, June, July	Oahu	Agromyzid in *Cocculus*
W. spatulata	Swezey	Jan., Mar.	Oahu	Agromyzid in fern, koa.
Pseudeucoila rugipunctata	Swezey	Jan., Nov.	Oahu Molokai	Drosophilid pupae
P. vulgaris	Swezey, Pemberton	Jan., June, Oct.	Oahu, Maui, Hawaii	Drosophilid pupae, reared from *Drosophila* sp., *Drosophila melanogaster* Meigen
Eucoila impatiens	Illingworth, Terry, Swezey	Mar., May, June	Oahu	Sarcophagid, Muscid *Sarcophaga pallinervis* Thomson
Eucoilidea micromorpha	Beardsley	July	Oahu	Reared *Erigeron canadensis* L.
E. rufula	Swezey	Feb., Mar., Apr., Sept., Nov.	Oahu	*Agromyza* in radish
			Hawaii	*Agromyza* in *Solanum nigrum* L.
Cothonaspis pacifica	Beardsley, Swezey, Habeck	June, Jan., June	Oahu	*Phytobia humeralis* (von Roser), *Agromyza pusilla* Meigen in potato., *Liriomyza* sp.

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I am deeply grateful to Prof. T. C. Maa and Mr. Lewis H. Weld for their advice and criticism of the manuscript. Acknowledgement of gratitude is also due the Hawaiian Sugar Planters Association and the United States National Museum for loan of their specimens.

The illustrations of the genitalia were made from prepared slide-mounts with the aid of the compound microscope and camera lucida. Other illustrations were drawn to magnification (120 ×) with binocular microscope and ocular grid.

THE MALE GENITALIA

The importance of the ♂ genitalia as a diagnostic character in the Cynipoidea has been generally neglected by systematists of this superfamily because of the rarity of ♂ specimens and difficulty in dissecting out the minute organ without damaging the entire specimen. Snodgrass (1941) studied this organ of the genera *Ibalia* (Ibaliidae), *Diploplepis* (Cynipidae) and *Figites* (Figitidae), and his terminology is here adapted. Due to the limitation of material, only representatives of several genera are studied and the interspecific differences are left unconsidered.

As in related forms, the ♂ genitalia of the Eucoilinae is composed of 5 parts viz., basiparamere, paramere, digitus, cuspis and aedeagus. Differences in the basiparamere, paramere and aedeagus are generally slight. The basiparamere is elongate-truncate with smooth outer surface, the paramere slender and the aedeagus, elongate. All 3 parts are simple and vary only proportionally in length, width and curvature. In *Cothonaspis pacifica* Yshm. (fig. 1D), *Pseudodiranchis dichroma* (Perk.) (fig. 1G) and *Lispothyreus abnormis* (Perk.) (fig. 1B), no definable digitus *tooth* can be found in the prepared slides and the cuspis is

deformed and not clearly shown in the slides. The genitalia of *C. pacifica* are extremely small and elongate whereas those of *P. dichroma* and *L. abnormis* are broad and stouter in

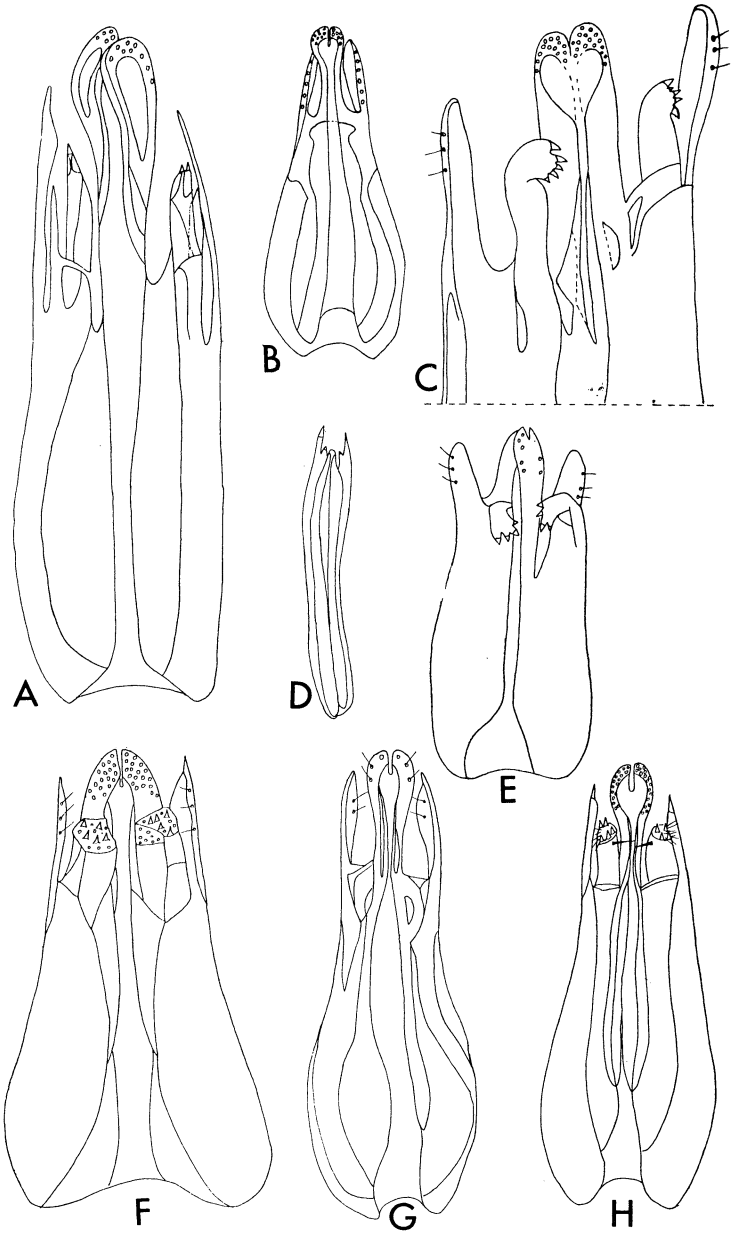

Fig. 1. ♂ genitalia: A, *Eucoila impatiens* (Say); B, *Lispothyreus abnormis* (Perk.); C, *Nesodiranchis ashmeadi* Perk.; D, *Cothonaspis pacificus* Yshm.; E, *Pseudeucoila ovata*, Yshm.; F, *Hypodiranchis intermedia* (Perk.); G, *Pseudodiranchis dichroma* (Perk.); H, *Weldia flavida* Yshm.

appearance. The basal structure of the digitus in *Nesodiranchis ashmeadi* Perk. (fig. 1C) and *Weldi flavida* n. sp. (fig. 1H) is of oval shape and elongate rather than being stout and many sided with distinct teeth as in the closely related species, *Hypodiranchis intermedia* (Perk.) (fig. 1F). *N. ashmeadi* differs from *W. flavida* by the absence of the tuft hairs, no spine on the digitus and 3 separate hairs near the terminus of the paramere. In *Eucoila impatiens* (Say) (fig. 1A), the digitus is rather small with 2 visible teeth at the apex and the cuspis distinct. On the other hand, the digitus of *Pseudeucoila ovata* n. sp. (fig. 1E) is flattened and turned inward toward the base of aedeagus and has 5 visible teeth.

SYSTEMATICS

Family CYNIPIDAE

Subfamily EUCOILINAE

KEY TO GENERA AND SUBGENERA OF HAWAIIAN EUCOILINAE

1. Abdomen without hairy ring 2
   Abdomen with hairy ring on tergite 2 3
2 (1). Parapsidal grooves distinct ..... **Eucoilidea**
   Parapsidal grooves entirely absent ..... **Cothonaspis**
3 (1). Wing surface hairless ..... **Eucoila**
   Wing surface covered with hairs 4
4 (3). Radial cell entirely closed 5
   Radial cell widely or partially open 7
5 (4). Pleura completely striate and scutellar cup ovate-circular ..... **Aspidogyrus**
   Pleura partially striate or entirely smooth and scutellar cup not ovate-circular... 6
6 (5). Antennal segment 3 longer than 4; segment 13 nearly equal to 12..... **Pseudeucoila**
   ♀ antenna with 6-segmented club ..... (*Hexamerocera*)
   ♀ antenna with 8 or 9-segmented club..... (*Pseudeucoila*) s. s.
   Antennal segment 3 shorter than 4; segment 13, 1.3× as long as 12 ..... **Weldia**
7 (4). Forewing emarginate at distal end (fig. 2E), rarely rounded or truncate in ♂♂, with characteristic venation..... **Kleidotoma**
   ♀ antenna with 3-segmented club..... (*Kleidotoma* s.s.)
   ♀ antenna with 5-segmented club..... (*Pentakleidota*)
   Forewing rounded at distal end (fig. 4E)..... 8
8 (7). Scutellar cup rather flattened; margin of scutellar disc with carina (fig. 11B, D); thorax flat in profile..... **Lispothyreus**
   Scutellar cup raised; margin of scutellar disc without carina (figs. 3G, 6F, 9E); thorax arched in profile..... 9
9 (8). Radial cell anteriorly widely open (fig. 4E); ♀ antennal club of 10 segments, gradually attenuate toward apex, apical segment sometimes longer than 2 or 3 preceding ones ..... **Nesodiranchis**
   Radial cell partially open (fig. 8G); ♀ antennal club of 8 or 9 segments, gradually thickened toward apex, apical segment always longer than preceding ones, or antennae filiform 10
10 (9). Posterior end of scutellar disc abruptly tapering to a blunt point or cone shaped in profile; scutellar disc striate..... **Hypodiranchis**

Posterior end of scutellar disc broadly rounded; scutellar disc not striate..... ..... **Pseudodiranchis**

Genus **Kleidotoma** Westwood

Kleidotoma Westwood, 1833, Mag. Nat. Hist. **6**: 494.—Weld, 1952, Cynipoidea 1905–1950, 204–5. Type: *Kleidotoma psilöides* Westwood (monob.).

Antenna of ♀ 13-segmented; segment 3 longer than 4; club 3 to 7-segmented or not well defined; antenna of ♂ 15-segmented. Pronotal plate rectangular and not emarginate on dorsal margin. Scutellar disc striate; scutellar cup narrow and ovate; lateral bar smooth. Wings hyaline, ciliate on margin, radial cell open; forewing of ♀ emarginate at distal end (fig. 2E); ♂♂ often with rounded distal end. Tergite 2 with hairy ring.

Subgenus **Kleidotoma** Westwood, sen. str.

Kleidotoma (Kleidotoma) bryani Yoshimoto, n. sp. Fig. 2A, C, F.

Female: Body length 1.2–1.4 mm; forewing 12–13 mm. Blackish to ferrugineus; antennal segments 1–10 brownish, apical 3 segments fuscous, legs brownish yellow.

Front view of head as in fig. 2A; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.5× as long as broad, shorter than 1; 3 longer than 4; 4–8 subequal in length and subcylindrical; 9 and 10 slightly longer than 8, elliptic; 11 and 12 equal in length; 13 longer than 12, apex sharply acuminate (fig. 2F); club striate and 3-segmented. Pronotal plate semicircular, 1.5× as wide as deep. Mesonotum with a column of evenly spaced hairs on dorsocentral region. Prothorax with a column of evenly spaced hairs longitudinally behind pronotal plate. Scutellar disc narrow, strongly angulate with inconspicuous longitudinal striation (fig. 2C). Scutellar cup ovate, anterior portion prolonged into a narrow point, surface longitudinally convex with 2 distinct hairs at anterior portion and a rounded pit at posterior end. Abdomen 2× as long as broad. Dense whitish hairs on anterodorsal portion of pronotum and propodeum; woolly hairy ring on base of tergite 2 and all of sternites. Tergites 3 and 4 not concealed under ter-

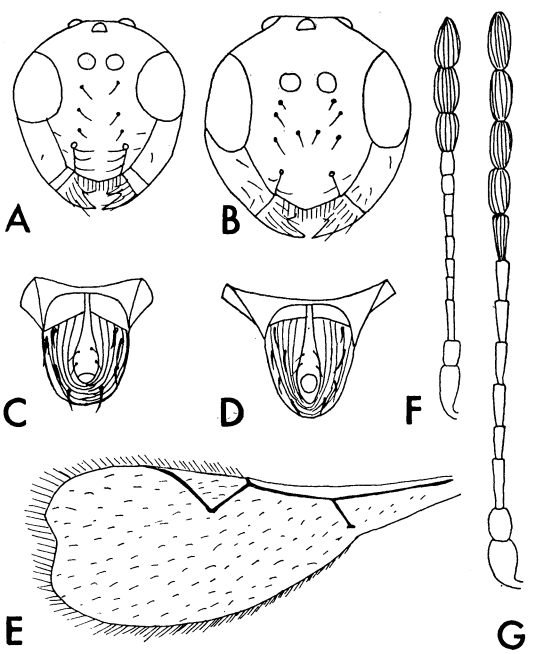

Fig. 2. *Kleidotoma* spp. Head: A, *bryani* Yshm.; B, *swezeyi* Yshm. Scutellum: C, *bryani*; D, *swezeyi*. E, *swezeyi*, forewing. ♀ antennae: F, *bryani*; G, *swezeyi*.

gite 2, slightly visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3174), Maunalua, Oahu, 19. IV. 1937, Bryan. Paratype ♀, Koko Head, Oahu, 22. II. 1927, Swezey.

Subgenus **Pentakleidota** Weld

Weld, 1951, Ent. Soc. Wash., Proc. **53** (4): 224. Type: *Kleidotoma elegans* Cameron. orig. design by Weld 1951.

Kleidotoma (Pentakleidota) swezeyi Yoshimoto, n. sp. Fig. 2B, D, E, G.

Female: Body length 1.5 mm; forewing 1.6 mm. Ferrugineus; antennae brown, legs brownish yellow.

Front view of head as in fig. 2B; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.5× as long as broad, shorter than 1; 3 slender, 1.5× as long as 4, 4–8 equal in length, shorter than 9; 9–12 subequal in length, elliptic; 13 broader and longer than 12, apex sharply acuminate (fig. 2G); club 5-segmented, segments striate. Pronotal plate semicircular spheric, 2× as wide as deep. Mesonotum with a column of evenly spaced hairs on dorsocentral region. Prothorax with a column of evenly spaced hairs longitudinally behind pronotal plate. Scutellar disc wider than width of cup, surface longitudinally convex and striate (fig. 2D). Scutellar cup ovate, anterior portion narrowly tapering to a point, surface longitudinally convex, anterolateral margin with 2 hairs and a rounded pit at posterior end. Abdomen 1.3× as long as broad. Dense woolly hairs on anterodorsal portion of pronotum, propodeum, base of tergite 2 and all of sternite. Abdominal tergite 3 visible at apex and not concealed under tergite 2.

Male: Unknown.

Holotype ♀ (BISHOP 3175), Koko Head, Oahu, 22. II. 1927, O. H. Swezey.

Genus **Nesodiranchis** Perkins

Nesodiranchis Perkins, 1910, Fauna Haw. **2** (6): 668.—Weld, 1952, Cynipoidea, (Hym.) 1905–1950, 215–16. Type: *Cothonaspis* (*Nesodiranchis*) *ashmeadi* Perkins (Monob.).

Antenna of ♀ 13-segmented, segment 3 shorter or slightly longer than 4, antennal club of 10 segments; gradually attenuate toward apical segment. Antenna of ♂ 15-segmented and moniliform. Pronotal plate with emargination of dorsal margin. Patch of fine hairs on anterolateral margin of pronotum. Scutellar disc smooth, rugose of punctate-rugose; scutellar cup ovate to oblong with a large, rounded to ovate pit occupying 1/3 of cup at posterior end; lateral bar smooth. Wings hyaline, sparsely pubescent, ciliate on margin; radial cell open on entire frontal margin, 2.3× as wide as deep (fig. 4E). Tergite 2 with hairy ring.

This genus is distinguished from other Hawaiian genera by the large, ovate antennal segments gradually attenuate toward apical segments, surface covered with sparse fine short hairs and radial cell wide open.

KEY TO SPECIES OF HAWAIIAN NESODIRANCHIS

1. Anterior part of scutellar disc punctate-rugose 2
   Anterior part of scutellar disc smooth or rugose 3
2. Entire mesopleuron rugulose ..... **ashmeadi**
   Mesopleuron predominately smooth ..... **fuscorubra**
3. Frons flattened, without fovea or carina ..... **aurantiaca**
   Frons with elongate-triangular fovea ..... **nigra**

Nesodiranchis ashmeadi (Perkins) Figs. 3A, G & 4A, E.

Cothonaspis (*Nesodiranchis*) *ashmeadi* Perk., 1910, Fauna Haw. **2** (4): 669, ♀.
Nesodiranchis ashmeadi: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 215–16.

Female: Body length 2.0–2.3 mm; forewing 2.0–2.3 (fig. 4E). Ferrugineus; antenna pale brown, base of abdomen light brown, legs brownish yellow. Front view of head as in fig. 3A; malar space equal to 1/2 height of eye. Slightly elevated area below antennal fossae. Antennal club finely striate, elliptic moniliform; segment 1 is 1.5× as long as broad; segment 2 subcylindrical, as long as broad, shorter than 1; segment 3 slightly longer than 4; segments 4–8 subequal in length, longer than 9; segments 9–12 subequal in length; segment 13 longer than 12, apex sharply acuminate (fig. 4A). Pronotal plate rectangulate, 3–4× as wide as deep, rounded at corners, dorsal margin deeply, concavely emarginate. Mesonotum with minute row of hairs evenly spaced on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with longitudinal depression and striation near anterodorsal margin; entire mesopleuron rugulose. Anterior part of scutellar disc narrower than width of cup, heavily punctate-rugose (fig. 3G). Scutellar cup large, ovate, nearly as long as broad, anterolateral margin with 3 hairs, inner posterior margin with 2 pairs of hairs and posterior end with an ovate depression-like pit. Abdomen 1.5× as long as broad. Dense fine whitish hairs on lateral part of propodeum and base of tergite 2. Tergites 3 and 4 concealed under tergite 2.

Male: Body length 2.0 mm; forewing 2.0. Similiar to ♀ except as follows: Antennae 15-segmented; segment 3 bent, apex wider than base; segments gradually attenuate toward apical segment.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2575), Tantalus, Oahu, Perkins. ♂ associated with ♀, Manoa, Oahu, 6. VII. 1924, O. H. Swezey, ex Agromyzid in sac of spider eggs. OAHU: 5 ♀♀, Manoa, 6. VII. 1924, Swezey, ex Agromyzid in (sac of) spider eggs; ♀, Palolo, 18. IX. 1915, Swezey, ex dipterous pupae from (sac of) spider eggs; 2 ♀♀, Honolulu, 600 m, 1906, Perkins; ♀, Kaumuohona, 5. XII. 1907, Swezey. MOLOKAI: ♀, Kainalu, 454 m, 21. VII. 1927, Bryan. Not in series: ♀, Kainalu, 27. VII. 1927, 454 m, *Metrosideros*, Bryan.

This species is related to *N. aurantiaca* but differs in having the face highly polished and no hairs below the antennal fossae.

Nesodiranchis aurantiaca Yoshimoto, n. sp. Figs. 3B, F & 4D.

Male: Body length 2.0 mm; forewing 2.2. Fuscous; abdomen and legs orange.

Front view of head as in fig. 3B; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.6× as long as broad; 2 subcylindrical, as long as broad, shorter

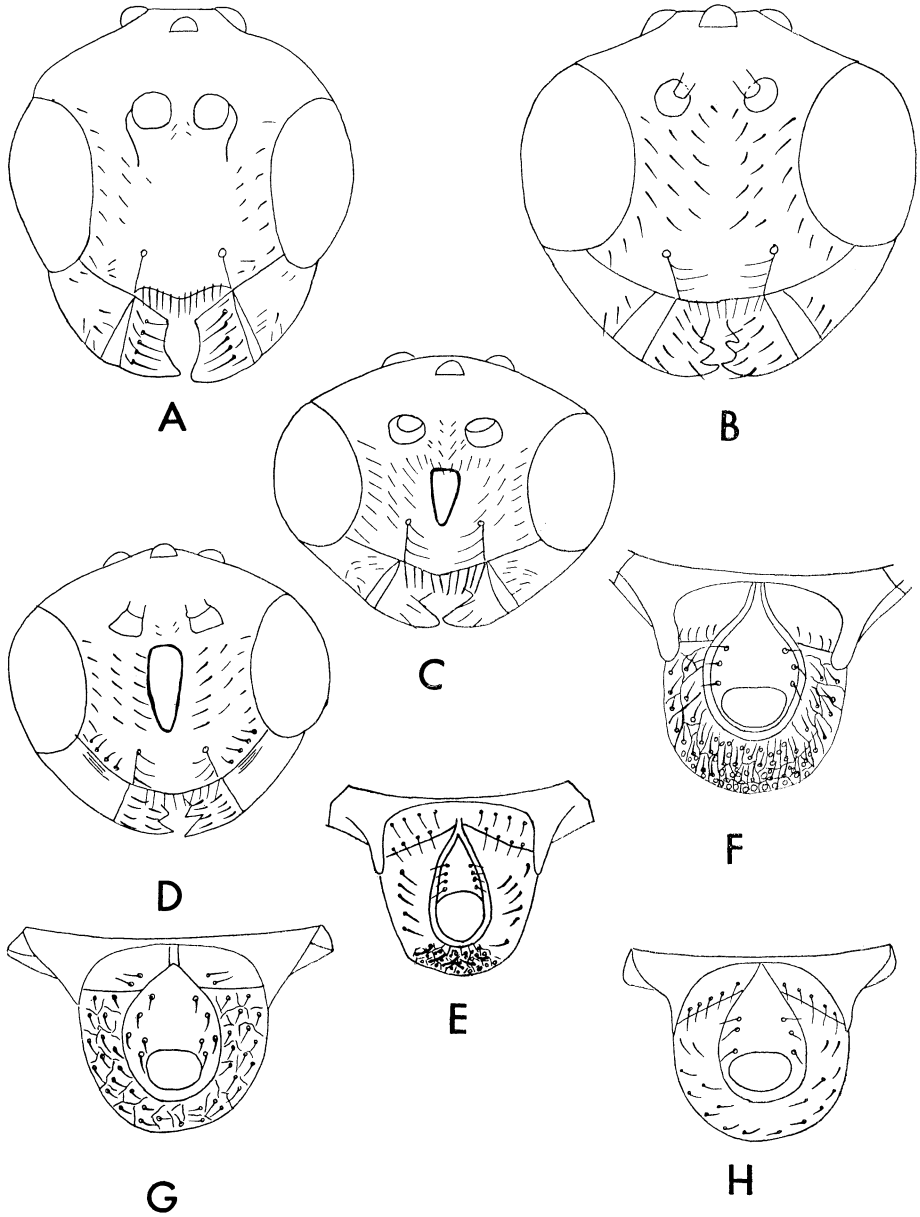

Fig. 3. *Nesodiranchis* spp. Head: A, *ashmeadi* Perk.; B, *aurantiaca* Yshm.; C, *nigra* Yshm.; D, *fuscorubra* Yshm. Scutellum: E, *nigra*; F, *aurantiaca*; G, *ashmeadi*; H, *fuscorubra*.

than 1; 3 shorter than 4 and emarginate at inner margin; 4–12 subequal in length; 13 slightly longer than 12, apically acuminate (fig. 4D); club 15-segmented, segments minutely striate, ellipsoidal, and moniliform. Pronotal plate rectangulate, 4× as broad as deep, rounded at corners, dorsal margin deeply, concavely emarginate. Mesonotum with a row

of hairs evenly spaced on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with longitudinal depression at anterodorsal margin smooth. Anterior 1/2 of scutellar disc narrower than width of cup, rugose, posterior end punctate-rugose (fig. 3F). Scutellar cup ovate, 1.3× as long as broad, anterior portion of lateral margin with a row of 3 distinct hairs, posterior end with a shallow, semi-circular pit occupying 1/4 of cup. Abdomen 1.5× as long as broad. Dense whitish hairs on posterior margin of metapleuron, lateral part of propodeum and base of tergite 2. Tergites 3 and 4 concealed under tergite 2.

Female: Unknown.

Holotype ♂ (BISHOP 3176), Kokee, Kauai, 11. VI. 1919, H. T. Osborn.

This species is separated from others of this genus by the orange color of the abdomen.

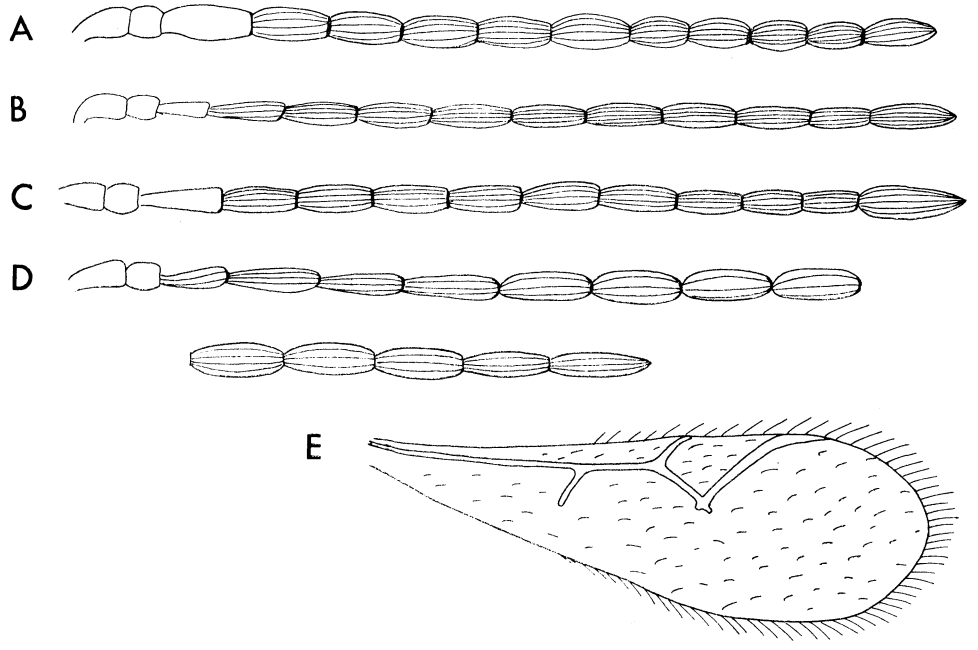

Fig. 4. *Nesodiranchis* spp. ♀ antennae: A, *ashmeadi*; B, *nigra*; C, *fuscorubra*. D, *auranti-aca*, ♂ antenna; E, *ashmeadi*, forewing.

Nesodiranchis fuscorubra Yoshimoto, n. sp. Figs. 3D, H & 4C.

Female: Body length 1.9 mm; forewing 2.1. Fuscous; antenna brown, abdomen ferrugineus except apical and ventral portions fuscous, legs brownish yellow.

Front view of head as in fig. 3D; malar space equal to 1/3 height of eye. Middle of frons with elongate-triangular fovea, periphery with thin carinae; several hairs between antennal fossae. Base of malar with scattered hairs. Antennal club segments striate, long-elliptic, and thickened throughout; segment 1 obconical, 1.5× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 shorter than 4; 4–8 equal in length, longer

than 9; 9 and 10 equal in length, longer than 11; 11 and 12 equal in length; 13 is 1.3× as long as 12, apex sharply acuminate (fig. 4C). Pronotal plate rectangulate, 3× as wide as deep, rounded at corners, dorsal margin deeply, concavely emarginate. Mesonotum with row of hairs evenly spaced on dorsocentral region, and along anterior and anterolateral margins. Mesopleuron with longitudinal depression and striation near anterodorsal margin; other area smooth and polished. Anterior part of scutellar disc narrower than width of cup, not heavily punctate-rugose; posterior 1/2 heavily punctate-rugose (fig. 3H). Scutellar cup highly elevated, ovate, as long as broad, anterior portion of lateral margin with a row of 3 hairs, posterior end with a large, rounded pit. Abdomen 1.5× as long as broad. Sparse whitish hairs on posterior margin of abdomen, on posterior margin of metapleuron, lateral part of propodeum and base of tergite 2. Tergites 3 and 4 concealed under tergite 2, not visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3177), Kilauea, Hawaii, 27. VI. 1917, O. H. Swezey, ex *Straussia*. Paratype ♀, same data but ex *Dodonaea*.

N. fuscorubra is closely related to *N. nigra* of Maui but differs by the rugose surface of the scutellar disc. Both can be easily distinguished from other members of this genus by the elongate-triangular fovea in the middle of the frons below the antennal fossae.

Nesodiranchis nigra Yoshimoto, n. sp. Figs. 3C, E & 4B.

Female: Body length 1.8 mm; forewing 2.0. Blackish; basal 1/2 of abdomen ferrugineus, legs fuscous except tibiae and tarsi brownish yellow.

Front view of head as in fig. 3C; malar space equal to 1/3 height of eye; hairs and fovea on face similar to *fuscorubra*. Antennae club segments (fig. 4B), pronotal plate, mesopleuron and hairs on mesonotum similar to *fuscorubra*. Anterior part of scutellar disc smooth, narrower than width of cup; posterior portion punctate-rugose (fig. 3E). Scutellar cup strongly elevated, ovate, nearly as long as broad, anterolateral margin with a row of 3 distinct hairs, posterior end with a large, shallow, rounded pit. Abdomen 1.5× as long as broad. Sparse whitish hairs on posterior margin of metapleuron, lateral part of propodeum and base of tergite 2. Tergites 3 and 4 concealed under tergite 2.

Male: Unknown.

Holotype ♀ (BISHOP 3178), Ridge above Haelaau, Maui, 1,000–1,100 m, 21. XII. 1928, Bryan, ex *Sideroxylon*.

This species is represented by a single specimen and differs from *N. fuscorubra* by the smooth surface of the scutellar disc.

Genus **Weldia**, n. gen.

Type: *Weldia agromyzae* n. sp.; by present designation.

Antenna of ♀ 13-segmented; segments 4–13 covered with long dense hairs; 3 slender, shorter than 4; 13 elongate, 1.3× as long as 12; club of 10 segments. Antenna of ♂ 15-segmented and moniliform. Pronotal plate with emargination on dorsomedian margin. Patch of fine hairs on anterolateral margin of pronotum. Scutellar disc smooth or punctate-rugose; scutellar cup ovate with rounded pit at posterior end; lateral bar smooth.

Wings hyaline, sparsely pubescent with ciliate margin; radial cell closed, 2.0× as long as wide. Tergite 2 with hairy ring.

The genus *Weldia* is named in honor of Lewis H. Weld who devoted his efforts to the Cynipoidea. This genus differs from the closely related genus *Nesodiranchis* by the closed radial cell, antennal segment 3 generally shorter than 4, the antennal segments covered by long dense hairs and the antennal club more or less moniliform.

KEY TO SPECIES OF HAWAIIAN WELDIA

1. Scutellar cup of spatulate form or narrow and elongate by ovate.....**spatulata**
   Scutellar cup ovate.....2
2. Anterior part of scutellar disc punctate-rugose or carinae radiating from base of cup to periphery of disc.....**flavida**
   Anterior part of scutellar disc predominantly smooth, few scattered minute punctures..... **agromyzae**

Weldia agromyzae Yoshimoto, n. sp. Fig. 5B, F, G.

Female: Body length 1.3 mm; forewing 1.5. Ferrugineus; antennae brownish, apical and ventral portions of abdomen black, legs and rim of scutellar cup yellowish brown.

Front view of head as in fig. 5B; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 1.7× as long as broad; 2 subcylindrical nearly as long as broad, shorter than 1; 3 slender, shorter than 4; 4–12 subequal in length, ellipsoidal; 13 longer than 12, apically acuminate (5G); antennal segments striate and filiform. Pronotal plate rectangulate, 3× as wide as deep, dorsal margin deeply, concavely emarginate. Anterior 3/4 of mesonotum pilose. Mesopleuron with a deep, wide, longitudinal depression near dorsal margin. Anterior part of scutellar disc generally smooth with few scattered minute punctures, surface convex, narrower than width of cup (fig. 5G). Scutellar cup ovate, 2× as long as wide, surface longitudinally convex, anterolateral margin with 2 punctures, each with a hair, posterior end occupied by a rounded shallow pit. Few whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen as long as broad. Tergite 3 concealed under tergite 2, not visible at abdominal apex.

Male: Body length 1.2 mm; forewing 1.3. Similar to ♀ except as follows: Antennae 15-segmented and filiform; antennal segment 3 as broad as 2 and ellipsoidal.

Holotype ♀ (BISHOP 3179), Mt. Kaala, Oahu, 4. VII. 1916, O. H. Swezey, ex *Agromyza* in *Cocculus*. Allotype ♂ same as holotype. Paratypes 4♀♀, Mt. Kaala, 4. VII. 1916, Swezey, ex *Agromyza* in *Cocculus*; 2♀♀, Kuliouou, Oahu, 25. I. 1916, Swezey, ex *Agromyza* in *Cocculus*; ♀, Pacific Hts., Oahu, 17. III. 1912, Swezey, ex *Agromyza* in leaf of *Cocculus*. Not included in type series: OAHU: ♀, Mt. Kaala, 7. IX. 1913, Swezey; ♀, Waiahole, VIII. 1916, Swezey; ♂, Kuliouou, 4. V. 1924, Swezey, ex *Agromyza* in *Cocculus*; ♀, Honolulu, 7. I. 1913, Swezey. HAWAII: ♀, Kilauea, 1,273 m, 2. VII. 1920, Giffard.

This species resembles *W. flavida* but can be distinguished by the pilosity of the anterior 3/4 of the mesonotum and the ferrugineus to fuscous abdomen.

Weldia flavida Yoshimoto, n. sp. Fig. 5A, E.

Female: Body length 1.7 mm; forewing 1.9. Ferrugineus; head fuscous, abdomen orange color; antennae brown, legs and rim of scutellar cup yellowish brown.

Front view of head as in fig. 5A; malar space equal to 1/3 height of eye. Antennal segment 1 obconical 1.5× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 slender, shorter than 4; 4–12 subequal in length, fluted except 4 and 5; 13 longer than 12, 3× as long as broad, apically acuminate; club segments striate and elliptic. Pronotal plate rectangulate, 2.5× as broad as deep, dorsal margin deeply sinuate. Mesonotum with a column of evenly spaced long hairs on dorsocentral region and along anterior and anterolateral margins. Anterior 1/2 of scutellar disc slanted, punctate-rugose (fig. 5E) or carinae radiating from base of cups to periphery of disc. Scutellar cup elevated, large, ovate, 1.7× as long as broad, anterior part of lateral margin with 3 hairs and posterior end with a large, shallow, rounded pit. Few whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen 1.7× as long as broad. Tergite 3 concealed un-

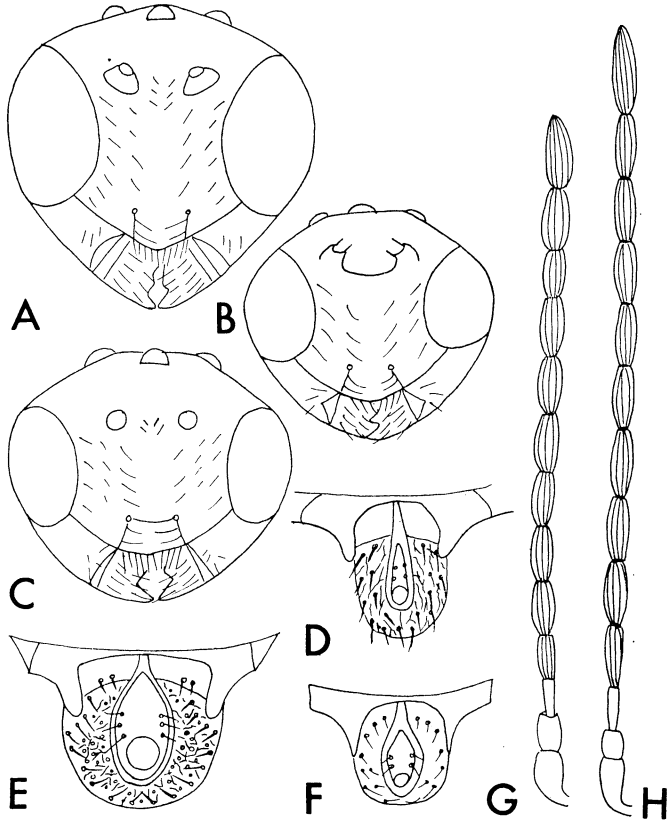

Fig. 5. *Weldia* spp. Head: A, *flavida* Yshm.; B, *agromyzae* Yshm.; C, *spatulata* Yshm. Scutellum: D, *spatulata*; E, *flavida*; F, *agromyzae*. ♀ antennae: G, *agromyzae*; H, *spatulata*.

der tergite 2 and not visible at abdominal apex.

Male: Body length 2.0 mm; forewing 2.4. Similar to ♀ except as follows: Antenna 15-segmented, filiform; segment 3 emarginate. Abdomen 1.5× as long as broad.

Holotype ♀ (BISHOP 3180), Mt. Kaala, Oahu, 18. V. 1920, O. H. Swezey. Allotype ♂, Mt. Kaala, Oahu, 9. VII. 1916, Swezey. Paratypes ♀, Mt. Kaala, Oahu, 22. I. 1929, Swezey; 2♀♀, Palolo, Oahu, 3. I. 1915, Swezey; 2♂♂, above Palolo Val., Oahu, V. 1912, ♀, Mt. Kaala, Oahu, 4. VII. 1916, Bridwell. Not included in type series: OAHU: ♀, Wailupe, 23. I. 1915, ex *Maile* miner?, ♀, Haleauau, IX. 1938, Swezey, ex *Elaeocarpus*; ♀, Palolo, 17. I. 1915, Swezey. KAUAI: ♂, Kokee, Kauai, 19. VII. 1921, Swezey.

W. flavida can be easily distinguished from other members of this genus by the orange color of the abdomen.

Weldia spatulata Yoshimoto, n. sp. Fig. 5C, D, H.

Female: Body length 1.5 mm; forewing 1.9. Fuscous; head, ventral and apical portions of abdomen black, antennae dark brown, legs brownish yellow.

Front view of head as in fig. 5C; malar space equal to 1/3 height of eye. Antennal club segments ellipsoidal (fig. 5H), other than that similar to *agromyza*. Pronotal plate rectangulate, 2× as broad as deep, rounded at corners, dorsal margin sinuate. Mesopleuron smooth and bare. Anterior scutellar disc convex, wider than width of cup, punctate-rugose (fig. 5D). Scutellar cup narrow, with long or spatulate form, 3× as long as broad, surface longitudinally convex, anterior part of lateral margin with 2 minute punctures, posterior end with a small rounded pit. Dense whitish long hairs on posterior margin of metapleuron, lateral portion of propodeum and base of tergite 2. Abdomen nearly as long as broad. Tergites 3 and 4 not visible at apex.

Male: Body length 1.4–1.5 mm; forewing 1.6. Similar to ♀ except as follows: Antenna filiform, 15-segmented. Abdomen 1.5× as long as broad.

Holotype ♀ (BISHOP 3181), Waiahole, Oahu, VIII. 1916, O. H. Swezey. Allotype ♂, same as holotype. Paratypes ♀, ♂, Waiahole, Oahu, VIII. 1916, Swezey; 2 ♀♀, Wailupe, Oahu, 23. I. 1915, ex *Agromyza* in fern. Not included in type series: OAHU: ♀, Pacific Hts., 15. III. 1914, ♂, Waiahole, 28. III. 1915, Swezey, ex *Agromyza* in koa.

This species differs from other representatives of this genus in the spatulate-like or elongate-ovate scutellar cup and the punctate-rugose scutellar disc.

Genus **Hypodiranchis** Ashmead

Hypodiranchis Ashm., 1901, Fauna Haw. **1** (3): 303. Type: *Hypodiranchis hawaiiensis* Ashmead, by original designation.

Antenna of ♀ 13-segmented; segment 3 longer than 4, antennal club of 8–9 segments. Antenna of ♂ 15-segmented, filiform. Pronotal plate rectangulate, dorsal margin in profile sinuate at middle. Patch of fine hairs on anterolateral margin of pronotum. Scutellar disc angulate, with longitudinal striation, posterior end tapering to a blunt point or cone shape in profile; scutellar cup ellipsoidal, ovate, or oblong; lateral bar smooth. Wing hyaline, pubescent with ciliate margin; radial cell open along at least 1/3 to 1/2 of its frontal margin, similar to fig. 8G. Tergite 2 with hairy ring.

This endemic genus, erected by Ashmead in 1910, is distinguished from other genera by having the scutellar disc highly angulate and longitudinally striate and the posterior end tapering to a conical shape in profile.

KEY TO SPECIES OF HAWAIIAN HYPODIRANCHIS

1. Scutellar cup 2.0–2.5× as long as broad 2
   Scutellar cup 3.0–3.7× as long as broad 6
2 (1). Scutellar cup ellipsoidal (fig. 6I) 3
   Scutellar cup ovate or oblong (fig. 6G, K, L) 4
3 (2). Mesopleuron longitudinally striate ..... **strigosa**
   Mesopleuron smooth ..... **tantali**
4 (2). Scutellar disc narrower than width of cup ..... **monticola**
   Scutellar disc wider than or nearly as wide as width of cup 5
5 (4). Frons with a column of hairs evenly spaced from antennal fossa to posterior margin of clypeus ..... **declivis**
   Frons without visible hairs ..... **intermedia**
6 (1). Base of tergite 2 without woolly hairy ring; ♀ antenna ovate (fig. 7F) ... **globicornis**
   Base of tergite 2 with sparse hairy ring; ♀ antenna ellipsoidal 7
7 (6). Surface of scutellar disc angulate ..... **oblonga**
   Surface of scutellar disc narrow and not conspicuously angulate 8
8 (7). Abdomen ferrugineous ..... **bicolor**
   Abdomen black ..... **hawaiiensis**

Hypodiranchis hawaiiensis Ashmead

Hypodiranchis hawaiiensis Ashm., 1901, Fauna Haw. **1** (3): 303.

The following description is taken from the text: "♀ length 1.5 mm. Polished black; mandibles, first four joints of the antennae and the tegulae testaceous; legs, including coxae, brownish-yellow; wings hyaline, the veins brown. The antennae are almost the length of the body, 13-jointed, sparsely pilose, joints 5 to 12 ellipsoidal, subequal, all a little longer than the third, about 2½ times longer than thick, the last joint ovate, longer than the penultimate and also fluted. The scutellum is longitudinally striate along the sides, the cup being very narrow, ellipsoidal in outline and with a small fovea at apex. The metathorax, ... pubescent. The marginal cell ..... base; while the abdomen is normal, hardly longer than the head and the thorax united, blunt at apex with a narrow pubescent gridle at base."

Male: Unknown.

Holotype ♀, British Museum (Nat. Hist.), Kona, Hawaii, 1,212 m, Ashmead.

With the inadequate description, this species is provisionally placed near *H. globicornis* until such time as the type can be studied.

Hypodiranchis globicornis Yoshimoto, n. sp. Figs. 6E, G & 7F.

Female: Body length 1.9 mm; forewing 2.2. Black; antennae dark brown, fore leg brownish yellow, middle and hind legs fuscous.

Front view of head as in fig. 6E; malar space eqnal to 1/3 height of eye. Antennal

segment 1 obconical, 1.5× as long as broad; 2 subcylindrical, 1.3× as long as broad, shorter than 1; 3 longer than 4 or 5; 4 and 5 equal in length, slender, shorter than 6; 6–12 subequal in length; 13 longer than 12, apex sharply acuminate (fig. 7F); club 8-segmented, segments striate, ovate. Pronotal plate rectangulate, 2× as broad as deep, dorsal

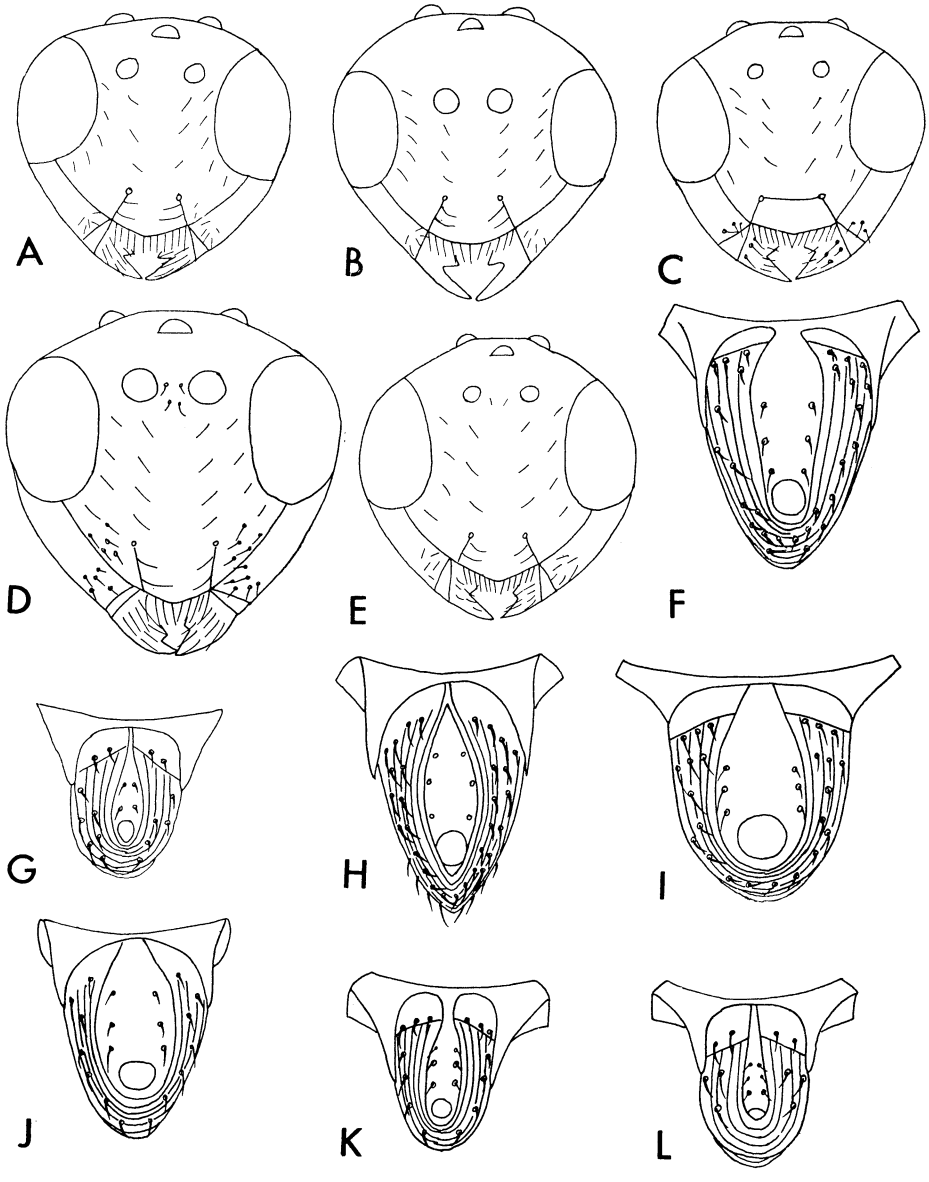

Fig. 6. *Hypodiranchis* spp. Head: A, *intermedia* (Perk.); B, *monticola* Ashm.; C, *oblonga* Yshm.; D, *declivis* (Perk.); E, *globicornis* Yshm. Scutellum: F, *intermedia*; G, *globicornis*; H, *strigosa* (Perk.); I, *declivis*; J, *monticola*; K–L, *oblonga*.

corners rounded, dorsal margin shallowly emarginate in middle, surface with 4 distinct punctures. A column of long hairs evenly spaced longitudinally behind the pronotal truncation. Mesonotum with a column of hairs on dorsocentral region and along anterior and anterolaterel margins. Scutellar disc strongly angulate. Scutellar cup ovate, anterior portion narrowly tapering to a point, 2.6× as long as broad, surface highly convex and polished, anterolateral margin with 2 punctures, each with a hair, and posterior end with a large, shallow, rounded pit facing backward in profile (fig. 6G). Abdomen 1.3× as long as broad. Dense long whitish hairs on lateral part of propodeum; base of tergite 2 with woolly hairy ring. Tergites 3 and 4 not concealed under tergite 2 and slightly visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3187), Upper Hamakua Ditch Trail, Hawaii, 2. X. 1929, O. H. Swezey, ex *Delissea*. Paratype ♀, same data.

The ovate antennal club of the ♀ and the narrow and long, convex and polished surface of the scutellar cup distinguish this species from *H. hawaiiensis*.

Hypodiranchis intermedia (Perkins)

Cothonaspis (*Hypodiranchis*) *intermedia* Perk., 1910, Fauna Haw. **2** (4) : 670.
Hypodiranchis intermedia: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 209.

Female: Body length 2.5 mm; forewing 2.7. Blackish; abdomen fuscous, antennae and legs brownish yellow. Front view of head as in fig. 6A; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, nearly as long as broad, shorter than 1; 3 slightly longer than 4; 5–9 slightly longer than 10–12 or subequal in length to 4; 13 slightly longer than 9, apex acuminate (fig. 7A); club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 3× as broad as deep, dorsal margin shallowly sinuate in middle. Mesonotum with a column of hairs on dorsocentral region and along anterior and anterolateral margins. Scutellar disc highly angulate, exposing greater portion of longitudinal striae (fig. 6G). Scutellar cup oblong, 3× as long as broad, highly convex, surface polished, anterolateral margin with 3 hairs and posterior end with a large, shallow, rounded pit facing backward in profile. Abdomen 1.5× as long as broad. Sparse whitish hairs on pronotum, propodeum, and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2 and visible at abdominal apex.

Male: Body length 2.0 mm; forewing 2.4. Similar to ♀ except as follows: Antennae 15-segmented and filiform; segment 3 emarginate on inner side.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2577), "Oahu", Perkins. OAHU: ♂, 2 ♀♀, Perkins' collections; ♀, Konahuanui, 4. II. 1906; ♀, Palolo, 13. XII. 1908, Swezey; ♀, Manoa, 29. VII. 1913, Swezey; ♀, Waianae, 27. I. 1924, Swezey.

This species is easily distinguished from the allied species, *H. declivis* by the distinct shape of the scutellar cup (fig. 6F) and the broad, angulate scutellar disc.

Hypodiranchis declivis (Perkins) Figs. 6D, I & 7M.

Cothonaspis (*Hypodiranchis*) *declivis* Perk., 1910, Fauna Haw. **2** (4) : 671.
Cothonaspis (*Hypodiranchis*) *dubiosa* Perk., 1910, *ibid.*: 673, **New Synonymy.**
Hypodiranchis dubiosa: Weld, 1952, Cynipoidea, (Hym.) 1905–1950, 209.

Trybliographa declivis: Weld, 1952, *ibid.*: 220.

Female: Body length 2.0–2.5 mm; forewing 2.4–2.5. Blackish; abdomen fuscous to

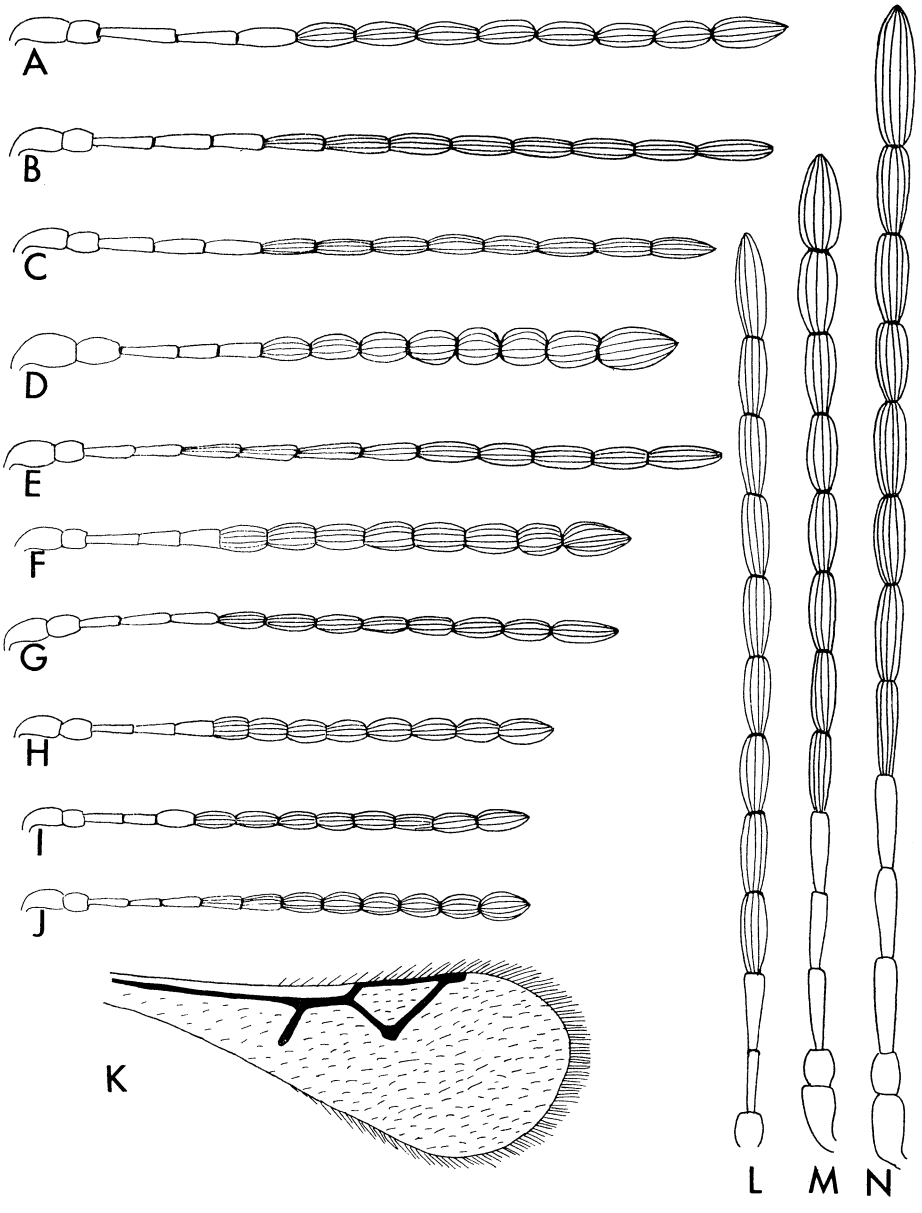

Fig. 7. *Hypodiranchis* spp. ♀ antennae: A, *intermedia* Perk.; C, *oblonga* Yshm.; D, *monticola* (Ashm.); F, *globicornis* Yshm.; M, *declivis* (Perk.); N, *tantali* (Perk.). *Pseudeucoila* spp. ♀ antennae: E, *oreias* (Perk.); G, *perkinsi* Yshm.; H, *rugipunctata* Yshm.; I, *ovata* Yshm.-*angusta* Yshm.; J, *hygrophila*; L, *grandissima* Yshm.; K, *ovata*, forewing. B, *Pseudodiranchis tereticornis*, ♀ antennae.

light brown, antennae dark brown except segments 1 and 2, legs brownish yellow. Front view of head as in fig. 6D; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.5× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 longer than 4 or 5; 6–12 slightly longer than 5 or subequal to 3; 13 slightly longer than 12, apex acutely acuminate (fig. 7M); club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 2.5–3.0× as wide as deep, rounded at dorsal corners, dorsal margin shallowly sinuate in middle. Prothorax with a row of evenly spaced hairs extending longitudinally above pronotal plate. Hairs on mesonotum similar to *intermedia*. Scutellar disc angulate. Scutellar cup oblong, 2.0–2.5× as long as broad, highly convex, surface polished, anterior portion of lateral margin with row of 3 hairs, posterior end with a large, shallow, rounded pit facing backward in profile (fig 6I). Abdomen as long as broad. Sparse whitish hairs on pronotum, propodeum, and base of tergite 2.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2585), "Oahu", Perkins. MAUI: ♀, Haelaau, 19. XII. 1928, Swezey, ex *Ohia lehua*. OAHU: ♀, Blackburn coll. (no date); ♀, Mt. Kaala, 14. VIII. 1927, Swezey, ex *Cibotium menziesii*. KAUAI: ♀, Kalalau, 20. III. 1921, Swezey, ex *Elaeocarpus*.

After examining the type specimens of *H. dubiosa* and *H. declivis* and other specimens before me, I believe these 2 species fall within the limits of interspecific variation and therefore constitute a single species. The name *declivis* is used because it has page priority. This species is closely allied to *H. intermedia* but differs in the less well-defined longitudinal striation on the scutellar disc and the shape of the scutellar cup.

Hypodiranchis tantali (Perkins) Fig. 7N.

Cothonaspis tantali Perk., 1910, Fauna Haw. **2** (4): 670.
Hypodiranchis tantali: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 209.

Female: Body length 2.3–2.4 mm; forewing 2.5. Blackish, antennae ferrugineus except segment 2 orange color, legs brownish yellow. Front view of head similar to fig. 6B; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, nearly as long as broad; 3 nearly as long as 4 but shorter; 4–6 subequal in length, long and subcylindrical, similar in appearance; 7–12 subequal in length, gradually thickened toward apex; 13 longer than others, 3.4× as long as broad, subacute apically (fig. 7N); club 8-segmented, segments striate, elliptic. Pronotal plate 2× as broad as deep, dorsal margin shallowly sinuate in middle. Mesonotum with a column of hairs on dorsocentral region and along anterior and lateral margins. Prothorax with many scattered hairs. Mesopleuron smooth and polished; metapleuron with few longitudinal striations on upper dorsal portion. Scutellar cup ellipsoidal, anterolateral margin with 3 punctures, each with a hair, and posterior portion with a large, rounded, shallow pit similar to fig. 6I. Abdomen 1.3× as long as broad. Base of tergite 2 with woolly hairy ring. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2578), Tantalus, Oahu, Perkins.

This species belongs to a species-group that includes 2 other species, *H. strigosa* and *H. monticola*. It is separable from the latter 2 species by the dense woolly hairs on the

base of tergite 2 and the smooth, shiny mesopleura.

Hypodiranchis strigosa (Perkins) Fig. 6H.

Cothonaspis strigosa Perk., 1910, Faunna Haw. **2** (4): 671.
Hypodiranchis strigosa: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 209.

Female: Body length 2.2 mm; forewing 2.5. Black; antenna ferrugineus except segment 2 orange, legs brownish yellow. Front view of head similar to fig. 6B; malar space equal to 1/2 height of eye; hairs on mesonotum; antennal segments similar to fig. 7N; pronotal plate similar to *tantali*. Prothorax with many scattered hairs. Mesopleuron and metapleuron with definite longitudinal striation, latter covering entire section. Scutellar cup long and elliptic, anterolateral margin with 3 punctures, each with a hair, posterior portion with a large rounded pit (fig. 6I). Abdomen and hairy ring similar to *tantali*. Tergite 2 over 1/2 as long as the entire abdomen, tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2579), Tantalus, Oahu, Perkins.

H. strigosa is extremely similar in body structure to *H. tantali* but can be distinguished by the longitudinal striae on the metapleura.

Hypodiranchis monticola (Ashmead), NEW COMBINATION Figs. 6B, J & 7D.

Diranchis monticola Ashm., 1901, Fauna Haw. **1** (3): 302.

Female: Body length 2.4–2.6 mm; forewing 2.4. Black; legs ferrugineus to fuscous. Front view of head as in fig. 6B; malar space equal to 1/2 height of eye; hairs on mesopleuron, and pronotal plate similar to *tantali*. Antennal club 8-segmented, segments striate, ovate, gradually enlarging in diameter toward apical segment (fig. 7D). Mesopleuron bare and smooth. Anterior part of scutellar disc narrower than width of cup, sides subconvex. Scutellar cup long and ovate, anterolateral margin with 3 hairs, posterior end with large, rounded pit similar to fig. 6I. Abdomen 1.3× as long as broad. Dense whitish hairs on anterodorsal margin of pronotum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Paratype ♀ (USNM 6469), Mt. Waimea, Kauai, VI. 1899, Perkins; ♀, Alakai Swamp, Kauai, 8. VIII. 1925, Swezey.

The paratype was examined and found to be closely related to *H. tantali* and *H. strigosa*, but to differ in the ovate antennal segments of the ♀.

Hypodiranchis oblonga Yoshimoto, n. sp. Figs. 6C, K, L & 7C.

Female: Body length 1.5–1.9 mm; forewing 2.0–2.8. Fuscous; thorax ferrugineus, antennae brownish, legs brownish yellow.

Front view of head as in fig. 6C; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.5× as long as broad, shorter than 1; 3 longer than 4; 4 and 5 subequal in length, more slender than 6; 6–12 subequal in length; 13 longer than 12, apex sharply acuminate (fig. 7C); club 8-segmented,

segments striate, elliptic, gradually thickened toward apical segment. Pronotal plate rectangulate, 2× as wide as deep, dorsal margin shallowly sinuate in middle. Mesonotum with a column of hairs along dorsocentral region and along anterior and anterolateral margins. Scutellar disc strongly angulate, exposing greater part of anterolateral portion. Scutellar cup oblong, 3–4× as long as broad, surface longitudinally convex, anterolateral margin with 3 minute hairs, posterior end with a medium-sized, shallow, rounded pit (fig. 6K, L). Abdomen 1.3× as long as broad. Sparse whitish hairs on lateral part of propodeum, median dorsal portion of metapleuron and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Body length 1.5 mm; forewing 2.0. Similar to ♀ except as follows: Antenna 15-segmented; antennal segments gradually attenuate toward apical segment, or filiform. Abdomen 1.6× as long as broad.

Holotype ♀ (BISHOP 3188), Alakai Swamp, Kauai, 9. VIII. 1925, O. H. Swezey. Allotype ♀ (BISHOP), same as holotype. Paratypes ♀, Alakai Swamp, Kauai, 9. VIII. 1925, Swezey; ♀, Perkins (no date); ♀, Kokee, Kauai, 1,000–1,212 m, 4–6. VIII. 1961, Maa, Miyatake, Yoshimoto; ♀, Waikamoi, Maui, 14. I. 1926, Swezey; ♀, Olinda, Maui, 27. II. 1926, Swezey, ex *Cheirodendron*; ♀, Kula Pipe Line, Maui, 25. VIII. 1929, Swezey, ex ferns. Not included in type series: MAUI: ♂, Kula Pipe Line, 25. VII. 1929; ♀, Waikamoi, 14. I. 1926, Swezey; ♀, Haelaau, 1,060 m, 19. XII. 1928, Ewart. OAHU: ♀, Punaluu, 11. I. 1911, Swezey; ♀, Kalihi, 22. IV. 1923, Swezey; ♀, Mt. Kaala, 7. IX. 1913, Swezey; 2♀♀, Tantalus, 16. III. 1915, Swezey. KAUAI: 2♀♀, Alakai Swamp, VIII. 1953, Hardy; 2♀♀, Alakai Swamp, 14.VII.1942, Swezey, ex *Cibotium*.

This species is absent from the island of Hawaii but widely distributed on Maui, Oahu and Kauai. The scutellar cup is of primary importance in separating to species and genera, but among this species, I found that the shape of the scutellar cup is variable and the various forms are found here in Hawaii in a complete series of intergradation; hence, I recognize a single species from the material before me. This species differs from other species by the small, narrow and long or oblong cup of the scutellum.

Hypodiranchis bicolor (Ashmead), NEW COMBINATION

Pilinothrix bicolor Ashm., 1901, Fauna Haw. **1** (3): 299.

Female: Body length 2.5 mm; forewing 2.5. Head and thorax black; mesonotum, scutellum and abdomen reddish brown, legs brownish yellow. Malar space equal to 1/3 height of eye; hairs on mesonotum, antennal segments and mesopleuron similar to *oblonga*. Prothorax with a row of evenly spaced hairs in longitudinal column behind pronotal plate. Anterior part of scutellar disc narrower than cup, surface subconvex. Scutellar cup ellipsoidal with a small pit at posterior end. Abdomen approximately 1.3× as long as broad. Sparse whitish hairs on anterodorsal part of pronotum, propodeum, and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Body length 2 mm. Similar to ♀ except entirely black. Abdomen shorter than ♀ but not longer than head and thorax.

Holotype ♀, British Mus. (Nat. Hist.), Kilauea, Hawaii, Perkins, not seen.

MATERIAL EXAMINED: Paratype ♀ (USNM 6468), Kilauea, Hawaii, Perkins. In examining the paratype at the U. S. National Museum I found that this species differs from the

related species, *H. oblonga*, by the narrow, elongate scutellar cup and the ♀ elliptic antennal segments.

Genus **Pseudodiranchis**, n. gen.

Type: *Cothonaspis* (*Hypodiranchis*) *dichroma* Perkins, 1910, Fauna Haw. **2** (4): 674; by present designation.

Antenna of ♀ 13-segmented; antennal club of 8 or 9 segments. Antenna of ♂ 15-segmented, moniliform. Patch of fine hairs on anterolateral margin of pronotum; scutellar cup ovate or oblong and elevated; scutellar disc usually wider than cup, surface smooth, rugulose, rugose, or punctate-rugose; lateral bar smooth. Wings hyaline, pubescent, ciliate at margin, radial cell partially open, at least 1/3 to 1/2 of its frontal margin (fig. 8G). Base of tergite 2 with a hairy ring.

A new name is proposed for this complex and difficult group which is allied to the genus *Hypodiranchis* Perk. and close to the genus *Trybliographa* Foerster. The species differs primarily from those of *Hypodiranchis* in the morphological characters of the scutellar disc and, secondarily, the combination of other body characters which are used in the key. *Pseudodiranchis* is differentiated from *Trybliographa* by not having the scutellar cup nearly as circular with its surface depressed in the center and the lateral bar striate. *Pseudodiranchis* ♂ gender (= false + double stem) referring to the second antennal segment either longer or shorter than the 4th. In 1869 Foerster (Zool. Bot. Gesellsch. Wien, Verh. **19**: 360) (type=*D. corpulata*; based on a single specimen) probably named the genus, *Diranchis* on the first antennal segment (funiculus) being 1.5× as long as the second.

Key to species of Hawaiian Pseudodiranchis

1. Anterior part of scutellar disc smooth 2
   Anterior part of scutellar disc punctate, rugulose or punctate-rugose 3
2 (1). Scutellar cup ovate, more or less flattened (fig. 9D) ..... **obovata**
   Scutellar cup ellipsoidal, surface convex, posterior 1/3 facing backward in profile (fig. 9B) ..... **naias**
3 (1). Scutellar cup ovate to ellipsoidal (fig. 9G, H, N) 4
   Scutellar cup oblong (fig. 9A, C, E, F) 7
4 (3). Hairy ring on tergite 2 narrowly pubescent 5
   Hairy ring on tergite 2 wide, densely pubescent 6
5 (4). Pronotal plate shallowly sinuate on dorsal margin ..... **pele**
   Pronotal plate deeply sinuate on dorsal margin ..... **rufipes**
6 (4). Pronotal plate shallowly sinuate on dorsal margin; scutellar disc angulate ..... **tereticornis**
   Pronotal plate deeply sinuate on dorsal margin; scutellar disc not angulate... **debilis**
7 (3). Pronotal plate shallowly sinuate on dorsal margin 8
   Pronotal plate deeply sinuate on dorsal margin 9
8 (7). Malar space equal to 1/2 height of eye; ♀ antenna 8-segmented and elliptic... **longicornis**
   Malar space equal to 1/3 height of eye; ♀ antenna 9-segmented and ovate..... **dichroma**

9 (7). ♀ antennal segment 13 is 4× as long as broad, ellipsoidal; hairy ring on tergite 2 narrowly, sparsely pubescent..... **monilis**
♀ antennal segment 13 is 2× as long as broad, ovate; hairy ring on tergite 2 widely, densely pubescent..... **grandis**

Pseudodiranchis dichroma (Perkins), NEW COMBINATION Figs. 8A & 9E, K.

Cothonaspis (*Hypodiranchis*) *dichroma* Perk., 1910, Fauna Haw. **2** (4): 674.
Trybliographa dichroma: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 220.

Female: Body length 2.2 mm; forewing 2.2. Black; abdomen orange, legs brownish yellow, antennae dark brown. Frontal view of head as in fig. 8A; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, as long as broad; 3 longer than 4; segments 4–12 subequal in length; 13 longer than 12, apex acuminate (fig. 9K); club segments elliptic, 9 in number. Prononal plate rectangulate, 1.5× as broad as deep, rounded at corners, dorsal margin shallowly sinuate. Mesonotum with column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Mesopleuron bare and smooth, longitudinal depression near dorsal margin. Prothorax with a row of evenly spaced hairs extending longitudinally above pronotal plate. Anterior part of scutellar disc rugose, posterior end punctate rugose. Scutellar cup oblong, 3× as long as broad, surface longitudinally convex (fig. 9E). Abdomen 1.5× as long as broad. Sparse whitish hairs on pronotum, propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2 and visible at abdominal apex.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2586), Tantalus, Oahu, Perkins. OAHU: 2 ♀♀, Mt. Tantalus, 11. IV. 1957, Beardsley; ♀, Tantalus, 16. III. 1915, Swezey; ♀, Mt. Kaala, 454 m, 29. X. 1944, Zimmerman. Not included in type series: OAHU: ♀, Kuliouou, 7. II. 1953, Hoyt; ♀, Halawa, 25. IV. 1906.

This species differs from other members of this genus by the orange colored abdomen.

Pseudodiranchis pele (Perkins), NEW COMBINATION Figs. 8B & 9H.

Cothonaspis (*Hypodiranchis*) *pele* Perkins, 1910, Fauna Haw. **2** (4): 669.
Hypodiranchis pele: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 209.

Female: Body length 2.3 mm; forewing 2.5. Blackish; base of abdomen ferrugineus, antennae dark brown except segments 1 and 2; legs brownish yellow. Front view of head as in fig. 8B; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.5× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 longer than 4; 4–12 subequal in length; 13 longer than 12, apex acuminate, similar to fig. 9I; club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 1.5× as wide as deep, rounded at corners, dorsal margin shallowly sinuate in middle. Prothorax with a row of evenly spaced hairs extending longitudinally above pronotal plate. Anterior part of scutellar disc wider than width of cup, surface punctate-rugose. Scutellar cup ovate, anterior portion tapering narrowly to a point, lateral margin with 3 hairs and posterior portion with a large, rounded pit (fig. 9H). Abdomen 1.5× as long as broad. Sparse whitish hairs on dorsoanterior portion of pronotum, propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Unknown.

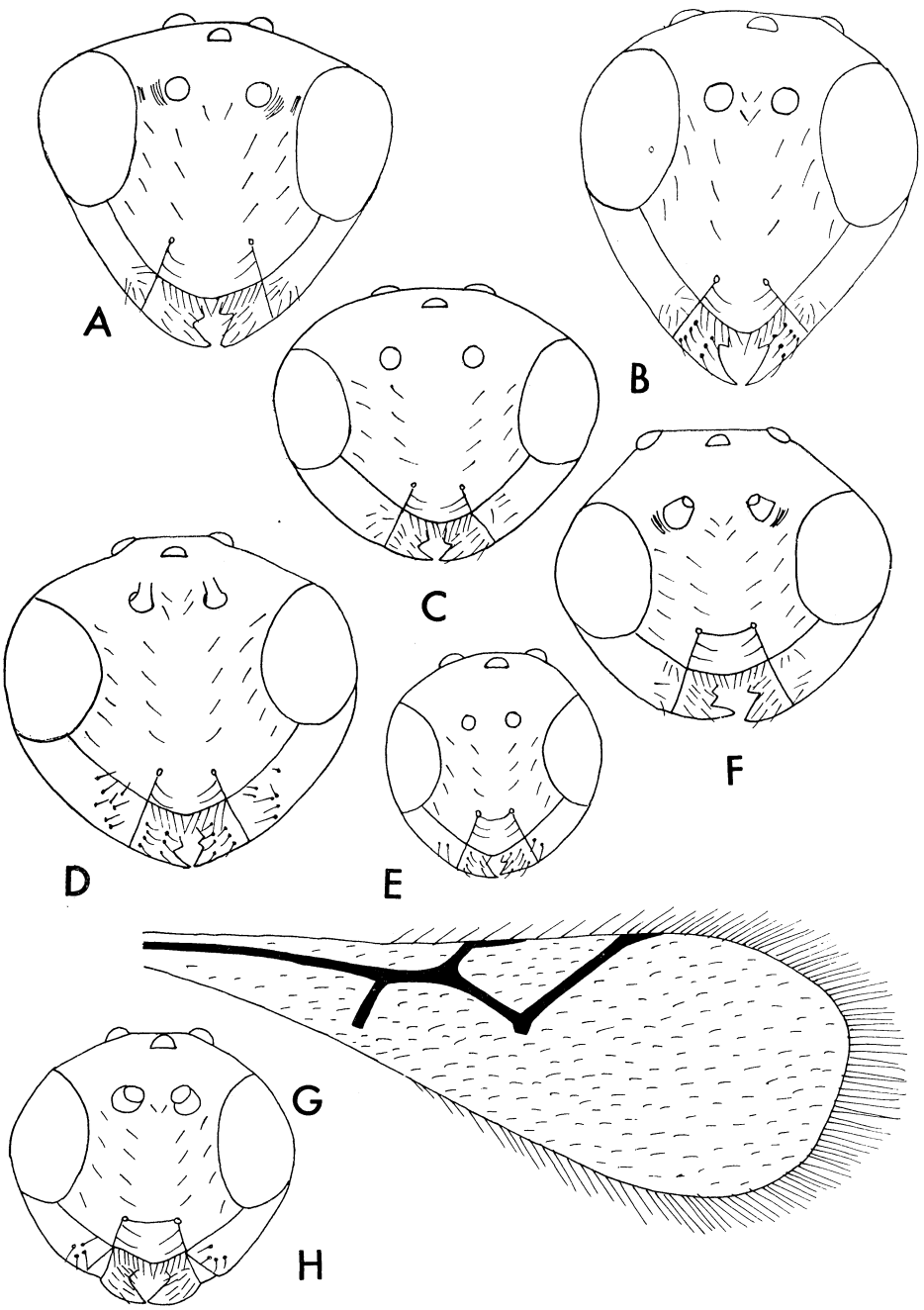

Fig. 8. *Pseudodiranchis* spp. Head: A, *dichroma* (Perk.); B, *pele* (Perk.); C, *debilis* (Perk.); D, *longicornis* Yshm.; E, *naias* (Perk.); F, *monilis* Yshm.; H, *tereticornis.* G, *dichroma,* forewing.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2576), Kilauea, Hawaii, Perkins; ♀, (no locality), Perkins.

This species is related to *P. dichroma* but can be distinguished from the latter by the ovate scutellar cup (fig. 9H) and the broad, convex surface of the disc.

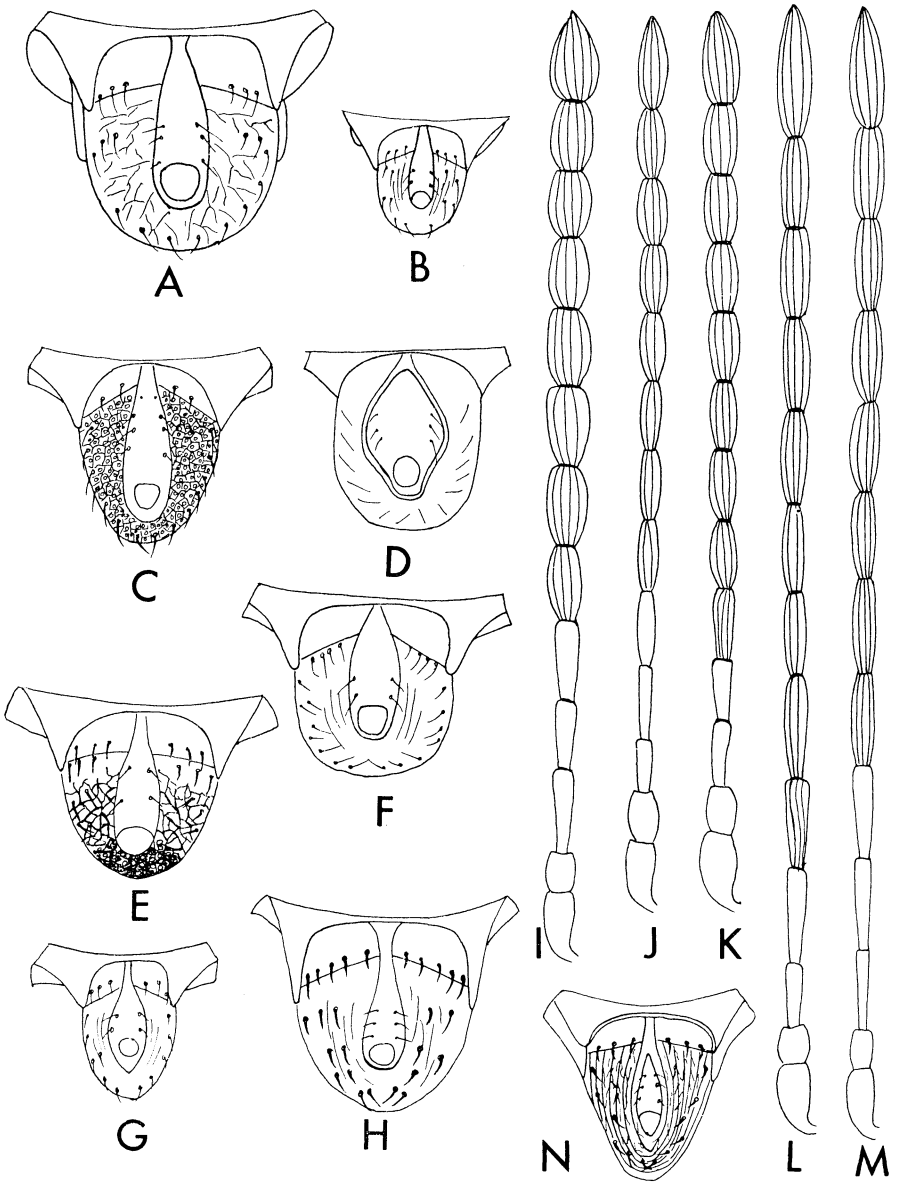

Fig. 9. *Pseudodiranchis* spp. Scutellum: A, *grandis* Yshm.; B, *naias* (Perk.); C, *longicornis* Yshm.; D, *obovata* Yshm.; E, *dichroma* (Perk.); F, *monilis* Yshm.; G, *debilis* (Perk.); H, *pele* (Perk.); N, *tereticornis* Yshm. ♀ antennae: I, *grandis*; J, *debilis*; K, *dichroma*; L, *monilis*; M, *longicornis*.

Pseudodiranchis grandis Yoshimoto, n. sp. Fig. 9A.

Female: Body length 2.5 mm; forewing 2.6. Black; abdomen fuscous, antennal segments 1–3 brownish, legs brownish yellow.

Front view of head similar to fig. 8B; malar space equal to 1/3 height of eye; hairs on mesonotum and antennal club segments similar to *dichroma*. Pronotal plate rectangulate, 3× as broad as deep, dorsal median margin deeply sinuate. Anterior part of scutellar disc greatly slanted and heavily rugose. Scutellar cup oblong, 3× as long as broad, strongly convex longitudinally, anterolateral margin with 2 hairs, and posterior end with a large, shallow, rounded pit facing backward in profile (fig. 9A). Abdomen 1.3× as long as broad. Dense whitish hairs on lateral part of propodeum and base of tergite 2. Tergites 3 and 4 visible at apex.

Male: Body length 1.8–2.2 mm; forewing 2.5–2.7. Similar to ♀ except as follows: Antennae 15-segmented, filiform; segment 3 emarginate beneath. Abdomen 1.6× as long as broad.

Holotype ♀ (BISHOP 3182), Mt. Tantalus, Oahu, 11. VI. 1957, J. W. Beardsley. Allotype ♂, Mt. Tantalus, Oahu, 11. VI. 1957, Beardsley. Paratypes, OAHU: ♂, Waialae Iki, 3. IV. 1921, Swezey; ♂, Kahana, 4. VII. 1920, Swezey; 2 ♀♀, Kuliouou, 454 m, 7. II. 1953, Hoyt.

This species is closely related to *P. dichroma* but differs from that species by the blackish abdomen and broad pronotal plate.

Pseudodiranchis longicornis Yoshimoto, n. sp. Figs. 8D & 9C, M.

Female: Body length 2.3 mm; forewing 2.6. Black; abdomen fuscous except apical portion black, antennae dark brown, legs brownish yellow except hind leg fuscous.

Front view of head as in fig. 8D; malar space equal to 1/2 height of eye; hairs on mesonotum similar to *grandis*. Antennal segment 1 obconical, 2× as long as broad, segment 2 cylindrical, 1.7× as long as broad, shorter than 1; segment 3 slender, slightly longer than 4; segments 5–10 subequal in length, shorter than 10; segment 13 longer than 12, apex sharply acuminate (fig. 9M); club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 4× as broad as deep, corners rounded, dorsal margin shallowly emarginate in middle and surface with row of hairs near dorsal margin. Anterior part of scutellar disc convex, narrower than width of cup, rugose. Scutellar cup oblong, 3× as long as broad, highly convex longitudinally, anterolateral margin with 3 hairs, posterior end with a large, shallow, rounded pit facing backward in profile (fig. 9C). Abdomen 1.5× as long as broad. Sparse whitish hairs on lateral part of propodeum, posteroventral margin of metapleuron and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3183), Ridge above Haelaau, Maui, 21. XII. 1928, O. H. Swezey.

P. longicornis is a near relative to *P. grandis* but differs by the ♀ filiform antennal segments and the ferrugineus abdomen.

Pseudodiranchis naias (Perkins), NEW COMBINATION Figs. 8E & 9B.

Cothonaspis naias Perk., 1910, Fauna Haw. 2 (4): 672.

Trybliographa naias: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 220.

Female: Body length 1.5–1.8 mm; forewing 2.0–2.2. Ferrugineus to fuscous; antennae dark brown, except segments 1–4 light brown; legs brownish yellow. Front view of head as in fig. 8E; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.5–2.0× as long as broad; 2 subcylindrical, 1.7–2.0× as long as broad, shorter than 1; 3 slender, slightly longer than 4; 5–12 subequal in length, longer than 4; 13 slightly longer than 12, apex bluntly acuminate, similar to fig. 9J; club 8-segmented, segments striate, ovate. Pronotal plate rectangular, rounded at corners, 2× as wide as deep, dorsal margin shallowly sinuate. Mesonotum with column of evenly spaced hairs on dorsocentral region and along anterolateral margin. Mesopleuron bare and smooth. Anterior part of scutellar disc narrower than width of cup, surface smooth and partially rugulose. Scutellar cup ellipsoidal, surface longitudinally convex, posterior 1/3 facing backward in profile, anterolateral margin with 2 hairs and posterior end with a shallow rounded pit (fig. 9B). Abdomen 1.5× as long as broad. Sparse whitish hairs on pronotum, propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2 and slightly visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2582), Oahu, Perkins. OAHU: 2♀♀, Mt. Kaala, 1. II. 1925, 9. II. 1930, Swezey, ex *Perrottetia*; ♀, Konahuanui, 22. II. 1914, Swezey.

This species is separated from *P. pele* by the rugulose scutellar disc and weak antennal club segments of the female.

Pseudodiranchis debilis (Perkins), NEW COMBINATION Figs. 8C & 9G, J.

Cothonaspis (*Hypodiranchis*) *debilis* Perk., 1910, Fauna Haw. **2** (4): 672.
Cothonaspis (*Hypodiranchis*) *debilis* var. *similis* Perk., 1910, *ibid.*: 672. **New Synonymy.**
Cothonaspis debilis var. *subdebilis* Perk., 1910, *ibid.*: 673.—Weld, 1952, Cynipoidea (Hym.) 1905–1950, 219, 220.

Female: Body length 1.3–1.4 mm; forewing 1.7–1.8. Ferrugineus to fuscous; ventral and apical portions of abdomen darker, antennae brownish to darker brown, lighter toward scape, legs and margin of scutellar cup brownish yellow. Front view of head as in fig. 8C; malar space equal to 1/3 height of eye; antennal club similar to *naias* (fig. 9J). Pronotal plate rectangulate, 2.5× as broad as deep, rounded at corners, dorsal median margin deeply sinuate. Prothorax with row of evenly spaced hairs extending longitudinally above pronotal plate. Anterior part of scutellar disc narrower than width of cup, rugulose. Scutellar cup ovate, anterolateral margin with 2 punctures, each with a hair, posterior end with a large rounded pit (fig. 9G). Abdomen 1.5× as long as broad. Dense fine hairs on anterior margin of prothorax, base of tergite 2, posterior margin of metapleuron and lateral part of propodeum. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.3 mm; forewing 1.6. Similar to ♀ except as follows: Antennae 15-segmented and filiform; segment 3 slightly bent.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2581), Kilauea, Hawaii, Perkins. ♂, Kilauea, Hawaii, 12. X. 1929, O. H. Swezey, ex *Pipturus*. HAWAII: ♀, Kilauea, 4. VIII. 1949, Zimmerman; 3♀♀, Kilauea, 9. X. 1929, 28. VI. 1934, Swezey, ex *Pelea*, *Railliardia*, *Xylosma*. Paratypes ♂, Kilauea, 12. X. 1929, Swezey, ex *Pelea*; ♀, ♂, Upper Hamakua Ditch Trail,

30. VII. 1931, Swezey, ex *Coprosma.*

The types of *P. debilis*, *P. debilis* var. *similis* and *P. debilis* var. *subdebilis* were studied and compared, and it was found that these names represent variations of less extremity and do not constitute subspecies. The latter 2 varieties are placed as synonyms of *P. debilis*. This species can be distinguished from the closely allied species, *P. naias*, by the ovate scutellar cup, ♀ antennal segments ovate and the narrow anterior part of the scutellar disc.

Pseudodiranchis tereticornis Yoshimoto, n. sp. Figs. 7B, 8H & 9N.

Female: Body length 1.7–2.1 mm; forewing 2.3–2.5. Blackish to ferrugineus; antennae dark brown, legs brownish yellow.

Front view of head as in fig. 8H; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.3× as long as broad, shorter than 1; 3 slender, longer than 4 or 5; 6–12 subequal in length, shorter than 3; 13 longer than 12, apex acuminate (fig. 7B); club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 2–3× as broad as deep, dorsal median margin shallowly sinuate. Anterior part of scutellar disc angulate, rugose, narrower than width of scutellar cup. Scutellar cup small, ovate, anterior 1/4 gradually pointed toward anterior end, anterolateral margin with 3 minute punctures, each with a fine hair, posterior end with a rounded pit (fig. 9N). Abdomen 1.3× as long as broad. Dense whitish hairs on posterior margin of metapleuron, lateral part of pronotum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Body length 1.3–1.5 mm; forewing 1.8. Similar to ♀ except as follows: Antenna 15-segmented, filiform; segment 3 slightly bent; segments gradually attenuated toward apical segment. Abdomen as long as broad.

Holotype ♀ (BISHOP 3184), Wailupe, Oahu, 23. I. 1915, (no collector). Allotype ♂, same as holotype. Paratypes. OAHU: ♂, ♀, Wailupe, 23. I. 1915; 3♀♀, ♂, Konahuanui, 12. VII. 1905, 26. IX. 1909, 22. II. 1914, Swezey; ♀, Mt. Kaala, 1. IX. 1913, Swezey; ♀, Konahuanui, 9. V. 1943, Zimmerman; KAUAI: Alakai Swamp, 11. VII. 1932, Swezey, ex *Metrosideros* sp.; ♀, Alakai Swamp, VIII. 1953, Hardy. Not included in type series: OAHU: 8♀♀, Mt. Kaala, 4. VII. 1916, Bridwell (USNM); KAUAI: ♀, Alakai, VII. 1953, Hardy; Alakai Swamp, 11. VII. 1932, Swezey, ex *Cibotium chamissoi.*

This species is closely related to *P. debilis* but differs by the rugose and few scattered minute punctations on scutellar disc and elliptic ♀ antenna.

Pseudodiranchis rubripes (D. T. & Kieff.), NEW COMBINATION

Diranchis rufipes Ashm., 1901, Fauna Haw. **1** (3): 302.

Cothonaspis (*Anectoclis*) *rubripes*: Dalla Torre & Kieff., 1910, Das Tierreich **24**: 110, a new name for *D. rufipes* Ashm.

The following description is taken from Ashmead's paper: "♀. Length 2 mm. Polished black, the legs red with hind tarsi fuscous; wings hyaline, the veins rufo-testaceous, the marginal cell open along the front margin for more than its apical half."

"The antennae are 13-jointed, sparsely pilose and extend to the middle of the abdo-

men, being somewhat longer than in the preceding species; the first joint of the flagellum is the longest joint, cylindrical, and about one-third longer than the second; the second and the following joints are elliptic oval, fluted and not quite thrice as long as thick."

"The scutellum is rugose at the sides, the cup being elongate oval and with a fovea posteriorly and some microscopic punctures along the lateral margins. The metathorax is ..... bicarinate. The abdomen is not quite as long as the head and thorax united and has a thinly pubescent girdle at base."

"♂. Agrees well with the ♀, except that the abdomen is smaller, the antennae and legs being more of a brownish yellow, not distinctly red, the hind coxae being blackish at base, while the antennae are slightly dusky toward apex, have 15 distinct joints, and are longer than the whole insect, the joints of the flagellum being long, cylindrical, subequal in length, and nearly four times as long as thick."

Holotype ♀, Allotype ♂, British Museum (Nat. Hist.) Halepaa Kai, Lanai, 900 m, Perkins. Not seen.

P. rubripes superficially resembles *P. pele* but differs by the rugose scutellar disc.

Pseudodiranchis obovata Yoshimoto, n. sp. Fig. 9D.

Female: Body length 1.5 mm; forewing 1.7. Ferrugineus to fuscous; antennae brownish, apical and ventral portions of abdomen blackish, legs brownish yellow.

Front view of head similar to fig. 8C; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.7× as long as broad; 2 subcylindrical, nearly as long as broad; 3 shorter than 4; 4–12 elliptic, subequal in length; 13 longer than 12, apex sharply acuminate, similar to fig. 9J; club 9-segmented, segments striate. Pronotal plate rectangulate, 3× as broad as deep, dorsal margin deep, concavely emarginate in middle. Mesonotum with a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. A wide, deep, longitudinal depression near dorsal margin of mesopleuron, entire surface rugulose. Anterior part of scutellar disc convex, smooth with a few punctures. Scutellar cup ovate, posterior outline of cup abruptly narrowed toward pit, 2× as long as broad, anterolateral margin with 3 punctures, each with a hair, posterior end with a shallow, rounded pit (fig. 9D). Few whitish hairs on lateral part of propodeum and at base of tergite 2. Abdomen 1.4× as long as broad. Tergite 3 concealed under tergite 2, not visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3185), Mt. Kaala, Oahu, 18. V. 1920, O. H. Swezey. Paratype ♀, Mt. Kaala, Oahu, 1. IX. 1913, Swezey; ♀, Kamiloloa, Molokai, 1,000 m, 20. XII. 1925, Swezey, ex *Coprosma*. Not included in type series: ♀, Upper Hamakua Ditch Trail, 4. X. 1929, Swezey, ex *Cheirodendron*.

This species may be recognized by the shape and size of the scutellar cup, rugulose mesopleuron and filiform antenna of the female.

Pseudodiranchis monilis Yoshimoto, n. sp. Figs. 8F & 9F, L.

Female: Body length 2.0–2.1 mm; forewing 2.5. Blackish; antennae dark brown, legs brownish yellow to fuscous.

Front view of head as in fig. 8F, head narrower than thorax including tegulae; malar space equal to 1/2 length of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.7× as long as broad; 3 slender, shorter than 4 or 5; 6–12 slightly longer than 5; 13 longer than 12, apex sharply acuminate (fig. 9L); club 9-segmented, striate, very hairy. Pronotal plate rectangulate, 3× as wide as deep, dorsal margin deeply, concavely emarginate in middle. Mesonotum with a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with deep, longitudinal depression near dorsal margin, with striation. Surface of anterior scutellar disc wide, at least 2× width of scutellar cup, longitudinal depression with striation near dorsal margin. Surface of anterior scutellar disc wide, convex, slightly rugulose to rugose. Scutellar cup oblong, 3× as long as broad, surface longitudinally convex, anterior portion of lateral margin with a puncture, posterior end with a rounded pit (fig. 9F). Sparse whitish hairs on anterodorsal area of pronotum, lateral part of propodeum and base of tergite 2.

Male: Body length 1.8–1.9 mm. Similar to ♀ except as follows: antennae 15-segmented. Abdomen 1.3× as long as broad.

Holotype ♀ (BISHOP 3186), Puukukui, Maui, 20. XII. 1928, O. H. Swezey. Allotype ♂, same data as holotype. Paratypes 5♂♂, Puukukui, Maui, 20. XII. 1928, Swezey, ex *Lobelia gloria-montis*. Not in type series: ♂, Kula Pipe Line, Maui, 13. VI. 1927, Swezey; ♀, Haelaau, Maui, 19. XII. 1928, Swezey, ex *Alyxia olivaeformis* (Maile).

This species is separated without difficulty from other members by the smooth, wide and convex surface of the scutellar disc and the filiform antenna of the ♀.

Genus **Pseudeucoila** Ashmead

Pseudeucoila Ashm., 1903, Ent. Soc. Wash., Proc. **5**: 222.—Weld, 1952, Cynipoidea (Hym.) 1905–1950, 234.—Yoshimoto, 1962, Ins. Micronesia **19** (3). Type: *Eucoela* (*Cothonaspis*) *trichopsila* Hartig. (*monob.*).

Antenna of ♀ 13-segmented; antennal club of 4–9 segments; antenna of ♂ 15-segmented, moniliform. Pronotal plate with emargination on dorsal margin. Patch of hairs on anterolateral margin of pronotum. Scutellar disc (in part) smooth, rugulose, rugose or punctate; scutellar cup elevated and longitudinally concave; lateral bar smooth. Wings hyaline, pubescent, with ciliate margin; radial cell closed (fig. 7K). Tergite 2 with hairy ring.

Subgenus **Hexamerocera** Kieffer

Pseudeucoila (**Hexamerocera**) **magnificus** Yoshimoto, n. sp. Fig. 11C, E.

Female: Body length 1.8 mm; forewing 1.8. Ferrugineus to fuscous; head blackish, antennae brown except segment 1 fuscous, legs brownish yellow except coxae darker brown.

Malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.4× as long as broad; 2 cylindrical, longitudinally rugulose; 4–6 subequal in length, shorter than 7; 7–12 subequal in length, gradually becoming thicker toward apical segment (fig. 11E); club 6-segmented, segments striate and ovate. Pronotal plate rectangulate, 2.4× as wide as deep, rounded at corners, dorsal median margin slightly sinuate. Mesonotum with a col-

umn of evenly spaced minute hairs on dorsocentral region and 2 columns of hairs along anterior margins. Prothorax with a column of evenly spaced hairs longitudinally behind pronotal plate and a few scattered hairs posteriorly. Scutellar disc with large punctation and large, deep anterior pits. Scutellar cup small, ovate, anterior margin with minute punctures, posterior end with a small rounded pit (fig. 11C). Abdomen large, 8×12 mm. Dense long whitish woolly hairs on lateral part of propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2.

Male: Unknown.

Holotype ♀ (BISHOP 3189), Mt. Tantalus, Oahu, 14. I. 1956, J. Beardsley.

Subgenus **Pseudeucoila** Ashmead

The members of the Hawaii subgenus *Pseudeucoila* fall into 4 natural groups. It is premature to conclude whether such groups deserve to have their own generic or subgeneric names.

The first species-group is distinguished from other groups by the ovate scutellar cup, punctate scutellar disc, somewhat flattened abdomen and the apex more or less rectangulate in profile. This group closely resembles *P. bouchei* Weld and includes *P. vulgaris*, *P. ovata*, *P. konensis* and *P. rugipunctata*.

The second species-group is separated by the predominantly smooth surface of the scutellar disc, the abdomen rounded at its lateral sides, looking at the dorsal view, and its apical end subrectangulate. This group includes *P. oreias*, *P. angusta* and *P. elevata*.

This third species-group is closely related to the second species-group but differs by the rugulose scutellar disc and the somewhat flattened abdomen, its apical end subangulate exposing both tergites 3 and 4 which are not concealed under tergite 2. This group involves 5 species, *hawaiiensis*, *hygrophila*, *depressa*, *molokaiensis* and *rufiventris*.

The fourth species-group consists of 2 species, *grandissima* and *perkinsi*. *P. grandissima* differs from the others by the large body, elliptic antennal segments and punctate-rugose scutellar disc. *P. perkinsi* is separated from the others by the somewhat flattened dorsal surface of the mesonotum.

KEY TO SPECIES OF HAWAIIAN PSEUDEUCOILA (PSEUDEUCOILA)

1. Anterior part of scutellar disc distinctly punctate, or punctate-rugose 2
   Anterior part of scutellar disc smooth, rugose, or rugulose 5
2 (1). Scutellar cup oblong (fig. 10K) ..... **grandissima**
   Scutellar cup ovate (fig. 10H, P) 3
3 (2). Posterior 1/2 of scutellar cup facing backward or undulating in profile; antennal club segments ellipsoidal ..... **rugipunctata**
   Posterior 1/2 of scutellar cup somewhat flattened, not facing backward in profile 4
4 (3). Anterior part of scutellar disc narrower than width of cup; ♀ antennal club ovate ..... **vulgaris**
   Anterior part of scutellar disc nearly as wide as cup; ♀ antennal club elliptic ..... **ovata**

5 (1). Scutellar cup oblong (fig. 10J, Q, R) 6
Scutellar cup ovate (fig. 10L, M) 10
6 (5). Superior margin of mesonotum in profile straight..... **perkinsi**
Superior margin of mesonotum in profile convexly curved 7
7 (6). Scutellar disc aciculate or rugose..... **molokaiensis**
Scutellar disc smooth or rugulose..... 8
8 (7). Scutellar disc entirely rugulose; dense girdle of pubescence at base of tergite 2..... **hygrophila**
Scutellar disc predominately smooth; thin girdle of pubescence at base of tergite 2..... 9
9 (8). Pronotal plate deeply sinuate on dorsal margin; scutellar cup 2.0–2.5× as long as broad..... **oreias**
Pronotal plate shallowly sinuate on dorsal margin; scutellar cup 2.7–3.0× as long as broad..... **angusta**
10 (5). Posterior 1/3 of scutellar cup facing backward in profile ..... **elevata**
Posterior 1/3 of scutellar cup not facing backward in profile 11
11 (10). Scutellar disc striate or rugose..... **hawaiiensis**
Scutellar disc smooth or rugulose 12
12 (11). ♀ antennal club segments ovate ..... **konensis**
♀ antennal club segments ellipsoidal or filiform 13
13 (12). Scutellar disc rugulose; ♀ antennal club segment filiform..... **rufiventris**
Scutellar disc predominately smooth; ♀ antennal club segments elliptic... **depressa**

Pseudeucoila (Pseudeucoila) vulgaris Yoshimoto

Pseudeucoila (Pseudeucoila) vulgaris Yshm., 1962, Ins. Micronesia **19** (3).

Female: Body length 1.2 mm; forewing 1.2. Ferrugineus to fuscous; legs brownish yellow to testaceous. Front view of head (see Ins. Micronesia **19** (3) : 10c); malar space equal to 1/3 height of eye. Antennal segments ovate; segment 1 obconical, 1.5× as long as broad; 2 subcylindrical, 2× as long as broad, shorter than 1; 3 slender, longer than 4; 4–7 subequal in length, shorter than 8; 8–12 equal in length; 13 longer than 12, apex sharply acuminate; club 8-segmented, segments striate, ovate. Pronotal plate rectangulate, 2.2× as broad as deep, dorsal margin shallowly emarginate in middle. Mesonotum with a column of evenly spaced hairs on dorsocentral region and anterior and anterolateral margins. Mesopleuron without longitudinal depression near dorsal margin. Anterior part of scutellar disc narrower than width of cup and surface punctate-rugose. Scutellar cup ovate, 1.5× as long as broad, surface polished and slightly convex longitudinally, anterolateral margin with 2 punctures, each with a hair, posterior end with a large pit. Abdomen 1.3× as long as broad. Sparse whitish hairs on anterodorsal part of pronotum, lateral part of propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.0–1.3 mm. Similar to ♀ except as follows: antenna 15-segmented, filiform. Abdomen 1.5× as long as broad.

MATERIAL EXAMINED: Holotype ♀ (US 66367), Ine Is., Arno Atoll, Marshall Is., 5. VII. 1950, La Rivers. HAWAII: ♀, Kilauea, XII. 1950, Krauss; Hawaii National Park, 25. XI. 1945, Davis "at banana bait"; Upper Hamakua Ditch Trail, 31. VII. 1921, Swezey;

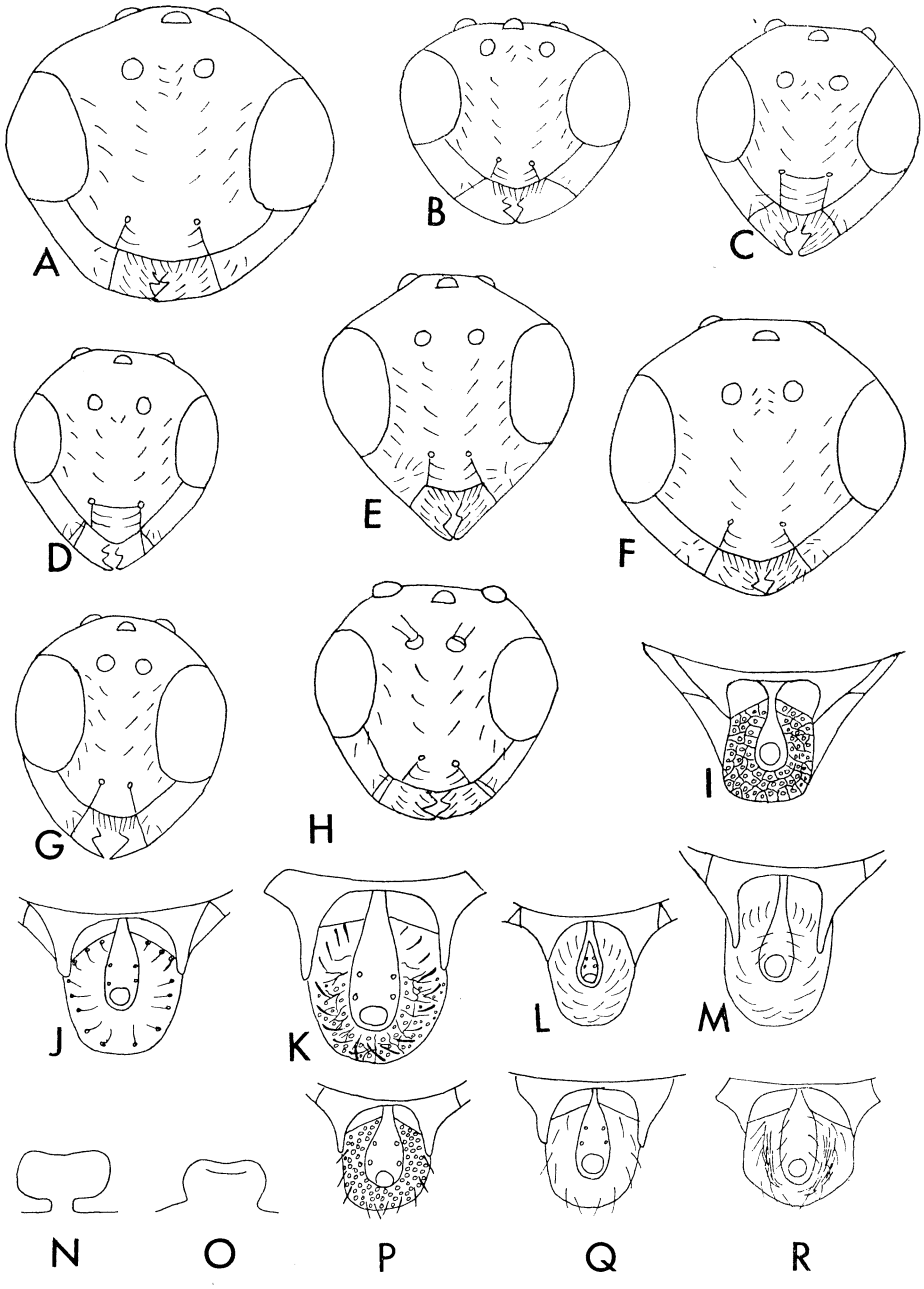

Fig. 10. *Pseudeucoila* spp. Head: A, *grandissima* Yshm.; B, *perkinsi* Yshm.; C, *angusta* Yshm.; D, *depressa* Yshm.; E, *oreias* (Perk.); F, *elevata* Yshm.; G, *hygrophila* (Perk.); H, *rugipunctata* Yshm. Scutellum: I, *rugipunctata*; J, *oreias*; K, *grandissima*; L, *angusta*; M, *elevata*; P, *ovata*; Q, *perkinsi*; R, *hygrophila*. Pronotal plate: N, *rugipunctata*; O, *ovata*.

♀, ♂, Nauhi Gulch, 1,400–1,800 m, 30. IX. 1930, Swezey; ♂, Hillebrans Glen, 17. XI. 1942; ♂, Waiakea, 21. VII. 1913, ex cane; ♂, 37 km, Olaa, 13. VII. 1920, 700 m, Giffard; ♀, Mt. View, 31. VII. 1919, Swezey; ♂, Humuula, 7. VIII. 1946, Zimmerman. MAUI: ♀, Iao Valley, 11. VIII. 1908. OAHU: 20 ♀♀, 21 ♂♂, Honolulu, 18. I. 1916, Pemberton, ex *Drosophila* sp. pupa; ♀, Honolulu, 20. IV. 1929, Illingworth; ♀, Honolulu, 27. VI. 1925, Swezey; 26 ♂♂, 2 ♀♀, Honolulu, 24. XI. 1941, Zimmerman, bred from *Drosophila* pupae; 2 ♀♀, Honolulu, 15. VI. 1907, ex *Drosophilid*; 3 ♀♀, Honolulu, 10. XII. 1933, Swezey, ex *Drosophilid*; ♀, Honolulu, XI. 1940, Zimmerman; 4 ♀♀, Manoa, 10. I. 1929, 11. I. 1934, 21. XI. 1932, 19. IX. 1933, Swezey, on rotten papaya, breadfruit, mango; ♀, Manoa Valley, 11. I. 1934, Swezey, ex *Drosophila melanogaster* Meign; 4♀♀, Kaimuki, 13. II. 1910, 6. X. 1920, Swezey; 2♀♀, Kulioulu, 7. II. 1953, 454 m, Hoyt; Aina Haina, 6. XI. 1957, Beardsley; ♀, Tantalus, 11. IV. 1957; Palolo, 11. XII. 1921, Swezey; 2♂♂, Palolo Val., 21. III. 1953, Hoyt; ♂, Waipio, 14. II. 1953, Hoyt; ♀, Mokuleia, 2. I. 1953, Hoyt.

P. vulgaris may be differentiated from other members of the genus by the distinct large, ovate and polished surface of the scutellar cup.

Pseudeucoila (Pseudeucoila) ovata Yoshimoto, n. sp. Figs. 7I & 10P, O.

Female: Body length 1.3 mm; forewing 2.0. Ferrugineus to blackish; posterior and ventral portions of abdomen fuscous or entirely black, antennae and legs brownish yellow.

Front view of head similar to *P. vulgaris* (see Ins. Micronesia **19**(3): 10c); malar space equal to 1/2 height of eye; hairs on face and mesonotum, antennal segments (fig. 7I) and pronotal plate (fig. 10O) similar to *vulgaris*. Anterior part of scutellar disc nearly as wide as cup, surface with dense micro-punctation. Scutellar cup ovate, elevated, 2× as long as broad, surface smooth, anterolateral margin with 2 punctures, posterior end with a small pit (fig 10P). Abdomen nearly as long as broad. Sparse whitish hairs on lateral part of propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.0–1.2 mm; forewing 1.5. Similar to ♀ except as follows: Antennae 15-segmented, filiform; segment 3 slightly longer than 4, bent, with innerside longitudinally emarginate. Abdomen 1.5× as long as broad.

Holotype ♀ (BISHOP 3190), near Humuula, Hawaii, 3. VIII. 1946, E. C. Zimmerman. ♂ associated with ♀, Kokee, Kauai, 4–6. VIII. 1961, Maa, Miyatake & Yoshimoto, paratypes ♀, Humuula, Hawaii, 7. VIII. 1946, Zimmerman; 91 ♂♂, 50 ♀♀, Kokee, Kauai, 4–6. VIII. 1961, Maa, Miyatake & Yoshimoto.

This species closely resembles *P. bochei* and *P. vulgaris* but differs by the narrow, ovate scutellar cup and the dense minute punctations and rugulosity of the scutellar disc.

Pseudeucoila (Pseudeucoila) rugipunctata Yoshimoto Figs. 7H & 10H, I, N.

Pseudeucoila (Pseudeucoila) rugipunctata Yshm., 1962, Ins. Micronesia **19** (3).

Female: Body length 1.2–1.5 mm; forewing 1.5. Ferrugineus to fuscous; antennal segments 1–8 brownish, segments 9–13 fuscous, legs brownish yellow, apical 1/8 to 1/4 portion of abdomen blackish. Front view of head as in fig. 10H; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.6× as long as broad; 2 subcylindrical, 2× as long as broad, shorter than 1; 3 slender, longer than 4; 4–7 equal in length, shorter

than 8; 8–12 ovate, equal in length to 3; 13 slightly longer than 12, apex bluntly acuminate (fig. 7H); club 8-segmented, segments striate. Pronotal plate rectangulate, 2× as wide as deep, dorsal margin shallowly sinuate in middle (fig. 10N). Mesonotum with a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with slight longitudinal depression at anterodorsal margin. Anterior part of scutellar disc wider than width of cup, punctate, with radiating ridges. Scutellar cup narrow, ovate in profile, anterior portion of cup convex, posterior end concave or slightly undulate in outline form, anterolateral margin with 2 punctures and posterior end with a large, rounded pit (fig. 10I). Abdomen 1.3× as long as broad. Sparse whitish hairs on anterodorsal part of pronotum, lateral part of propodeum and base of tergite 2. Tergite 3 not concealed under tergite 2, only visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (US 66364), Utagal I., Woleai Atoll, XI. 1952, Krauss. HAWAII: ♀, Hilo, 25. VII. 1921, Swezey; ♀, Upper Hamakua Ditch Trail, 6. X. 1929, Swezey. MAUI: ♀, Kauaula Stream, 23. XII. 1928 (no collector). MOLOKAI: 8 ♀♀, Mapulehu, 22. III. 1931, Swezey, ex papaya; ♀, Kamiloloa, 1,000 m, 19. XII. 1925, Swezey, ex *Coprosma*. OAHU: 5 ♀♀, Manoa, 10. I. 1929, Swezey, ex rotten papaya; ♀, Manoa, 21. XI. 1932, Swezey; 4♀♀, Honolulu, 25. VI. 1907, 7. I. 1913, Swezey; ♀, Mt. Kaala, 21. XI. 1937, Zimmerman; ♀, Hauula, 22. XI. 1925, Swezey. KAUAI: 2 ♀♀, 24 ♂♂, Kokee, 1,000–1,212 m, 4–6. VIII. 1961, Maa, Miyatake & Yoshimoto.

This species belongs to the species-group which consists of the closely related species *P. vulgaris* and *P. ovata* but can be distinguished from the latter 2 species by having the anterior part of the scutellar disc nearly 2× as wide as the width of the cup, and its surface rugose or aciculate. This species occurs in Micronesia and Hawaii.

Pseudeucoila (Pseudeucoila) molokaiensis (Ashmead), NEW COMBINATION

Aglaotoma molokaiensis Ashm., 1901, Fauna Haw. **1** (3): 301.
Eucoila (Psichacra) molokaiensis: D. T. & Kieff., 1910, Das Tierreich **24**: 146.

The following description is taken from Ashmead's paper: "♀. Length 1.3 mm. Polished black; antennae brown, the two basal joints yellowish; legs brownish piceous, the trochanters, apices of the femora, anterior tibiae and tarsi and basis of the hind tibiae and tarsi, honey-yellow; wings hyaline, the veins pale yellowish, the marginal cell closed."

"The antennae are 13-jointed, gradually thickened toward apex, the first two joints of the flagellum subequal, the first slightly shorter, the joints beyond delicately fluted, stouter, ellipsoidal and a little longer than thick. The scutellum is indistinctly aciculated at the sides, the cup being oblong-oval, with a small fovea at apex, and two microscopic, scarcely perceptible punctures on each side before the fovea. Metathorax..... than the thorax."

Holotype ♀, British Museum (Nat. Hist.), Molokai Mts., Molokai, "1212 m", Perkins, not seen.

There are no specimens resembling this species in the Bishop Museum and HSPA Hawaiian Eucoilinae collections. From the description in Ashmead's paper, I believe this species is close to *P. rugipunctata* but differs by the blackish body, ellipsoidal antennal segments of ♀ and the ovate scutellar cup.

Pseudeucoila (Pseudeucoila) konensis (Ashmead), NEW COMBINATION

Hexaplasta konensis Ashm., 1901, Fauna Haw. **1** (3): 304.

The following description is taken from Ashmead's paper: "♀. Length 1.5 mm. Polished black; first six joints of the antennae and the mandibles brownish-yellow, the apical joints of the antennae blackish; legs, including coxae, yellow; wings hyaline, ciliate, the veins in front wings brownish-yellow, in the hind wings very pale yellowish; tegulae brownish-piceous."

"The antennae are 13-jointed and extend a little beyond the middle of the abdomen, the 6 terminal joints, constituting the club, being elliptic-oval, striate, and stouter than the preceding; the first joint of the funicle is the slenderest and the longest, being a little longer than the third. The scutellum is rugulose at sides, the cup being smooth, its disc subconcave, with a depression or fovea at apex. The metathorax ..... woolly girdle at base. The wings ..... marginal cell was closed along its front margin."

Holotype ♀, British Museum (Nat. Hist.), Kona, Hawaii, Perkins. Not seen.

The description of species conforms to this genus. I believe this species is relatively close to *P. rugipunctata* and *P. vulgaris* but can be separated from them by the hairy ring at the base of tergite 2 being woolly.

Pseudeucoila (Pseudeucoila) elevata Yoshimoto, n. sp. Fig. 10F, M.

Female: Body length 1.4 mm; forewing 1.7. Ferrugineus; antennae brownish, apical and ventral portions of abdomen black, legs brownish yellow to ferrugineus.

Front view of head as in fig. 10F; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, 1.5× as long as broad, shorter than 1; 3 slender, shorter than 4; 5–12 subequal in length, elliptic, except 5 and 6 slender; 13 longer than 12, apically acuminate, similar to fig. 7H; club 8-segmented, segments striate. Pronotal plate rectangulate, 2.5× as broad as deep, dorsal margin deep, concavely emarginate in middle. Mesonotum with a column of evenly spaced hairs on dorsocentral region and near anterior and anterolateral margins. Mesopleuron with deep, wide, longitudinal depression near dorsal margin. Anterior part of scutellar disc slanted, narrower than width of cup and smooth except partly rugulose. Scutellar cup elevated, ovate, anterior part acuminate, 1.5× as long as broad, surface longitudinally convex, posterior 1/2 facing backward at lateral profile and posterior end with rounded pit (fig. 10M). Few fine whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen 1.4× as long as broad. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3191), Waikamoi, Maui, 1,363 m, 19. I. 1926, O. H. Swezey. Paratype ♀, Waikamoi, Maui, 1,363 m, 19. I. 1926, Swezey; ♀, Ukulele, Maui, 9. VII. 1919, Timberlake, ex *Gouldia*.

This species is distinguished from other representatives of this genus by the elevated and ovate scutellar cup and the narrow and smooth, except, few places finely rugulose, surface of the scutellar disc.

Pseudeucoila (Pseudeucoila) oreias (Perkins), NEW COMBINATION Figs. 7E & 10E, J.

Eucoila (Psichacra) oreias Perk., 1910, Fauna Haw. **2** (4): 674.
Eucoila (Psichacra) orobates Perk., 1910, *ibid.*: 675, **New Synonymy.**
Psichacra oreias: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 224.
Psichacra orobates: Weld, 1952, *ibid.*, 224.

Female: Body length 1.3–1.7 mm; forewing 1.7–2.0. Blackish to ferrugineus; apical and ventral portions of abdomen black, or entirely fuscous or ferrugineus, antennae and legs brownish to ferrugineus. Front view of head as in fig. 10E; malar space 1/3 height of eye. Antennal segment 1 obconical, 1.3–1.7× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 shorter than 4; 5–12 elliptic and subequal in length; 13 longer than 12, apex bluntly acuminate (fig. 7E); club 8-segmented, segments striate. Pronotal plate rectangulate, 2.5–3× as wide as deep, dorsal margin deep, concavely emarginate in middle. Mesonotum with a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with wide, deep, longitudinal depression near dorsal margin. Anterior scutellar disc as wide as cup, deeply convex and predominately smooth, except sometimes a few places finely rugulose. Scutellar cup oblong, 2.0–2.5× as long as broad, surface longitudinally convex, anterolateral margin with 2 minute hairs, posterior end with a shallow, rounded pit (fig. 10J). Sparse whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen as long as broad. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2590), Kilauea, Hawaii, Perkins. HAWAII: 2 ♀♀, Kilauea (no dates), Perkins' collection; ♀, near Humuula, 7. VIII. 1942, Zimmerman, ex *Sophora*; ♀, Naalehu, 12. XII. 1905, ex in fern forest. MAUI: ♀, Haelaau, 17. XII. 1928, Swezey, ex *Broussaisia*. MOLOKAI: 5 ♀♀, Kainalu, 513 m, 18–21. VII. 1927, Swezey, ex *Wikstroemia*; ♀, Kainalu, 22. VII. 1927, Bryan, ex *Wikstroemia*. LANAI: 3♀♀, Lanai Mts., 29. X. 1947, Krauss; ♀, Lanaihale, 970 m, VI. 1953, Hardy. OAHU: ♀, Mt. Kaala, V. 1928, 600 m. KAUAI: ♀, Kalalau Trail, 23. VI. 1932, Swezey, ex *Wikstroemia*; ♀, Kalalau, 5. VII. 1925, Swezey; ♀, Kokee, 9. VII. 1932, Swezey, ex *Wikstroemia*; 2♂♂, ♀, Kokee, 4–6. VIII. 1961, Maa, Miyatake & Yoshimoto; ♀, Halemanu, 30. VIII. 1921, Swezey; ♀, Kauaikinana, 2. VIII. 1925, Swezey, ex *Wikstroemia*; ♀, Kamuwela, 28. VIII. 1921, Swezey; ♀, Kawaikoi Stream, 1,120 m, VIII.1953, Hardy.

The type specimens of *P. oreias*, *P. orobates* and many other specimens were studied and I believe that these fall within one species. Therefore, *orobates* constitutes a synomyn of *oreias*. This species can be separated from other members of this genus by the wide, angulate surface of the scutellar disc and the deeply sinuate upper middle margin of the pronotum.

Pseudeucoila hygrophila (Perkins), NEW COMBINATION Figs. 7J & 10G, R.

Eucoila (Psichacra) hygrophila Perk., 1910, Fauna Haw. **2** (4): 675.
Eucoila (Psichacra) hygrophila var. *philygra* Perk., 1910, *ibid.*, 675. **New Synonymy.**
Psichacra hygrophila: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 224.
Psichacra hygrophila var. *philygra*: Weld, 1952, *ibid.*, 224.

Female: Body length 1.2–2 mm; forewing 1.5–2. Blackish; legs brownish to fuscous,

antennal segments brownish. Front view of head as in fig. 10G; malar space equal to 1/3 height of eye. Antennal segment 1 obconical, 1.3× as long as broad, 2 cylindrical, 1.5× as long as broad, shorter than 1; 3 slightly longer than 4; 4 and 5 equal in length, shorter than segments 7–12; 13 slightly longer than 12, apex sharply acuminate (fig. 7J); club 8-segmented, segments striate, ovate. Pronotal plate rectangulate, 2.5–3× as wide as deep, rounded at corners, dorsal margin shallowly emarginate at middle. Mesonotum with a column of evenly spaced haris on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with deep longitudinal depression near anterodorsal margin. Anterior portion of scutellar disc narrower than width of scutellar cup, highly convex, surface rugulose. Scutellar cup oblong, surface longitudinally convex, smooth, with 3 or sometimes 2 hairs on anterolateral margin, and posterior end with a rounded pit (fig. 10R). Abdomen 1.5–2.0× as long as broad. Dense whitish hairs on lateral part of propodeum and at base of tergite 2.

Male: Unknown.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2588), "Oahu", Perkins. HAWAII: 3♀♀, Kilauea, 1,272 m, 27. VII. 1920, W. M. Giffard; ♀, Kilauea, 9. VII. 1934, Swezey, ex *Cibotium chamoissoi*; 2♀♀, Kilauea, 13. X. 1929, Swezey; ♀, Kaumana, 29. IV. 1920; 2♀♀, Naalehu, 12. XII. 1905, ex fern forest; 2 ♀♀, Perkins (no dates). OAHU: ♀, Kukuiala Val., 16. IX. 1933, Swezey, ex *Pisonia*; 2♀♀, Mt. Kaala, 7. IX. 1913, 22. I. 1922, Swezey; 2♀♀, Haleauau, 9. II. 1938, Swezey, ex *Gouldia*; ♀, Tantalus, 11. VI. 1957, Beardsley.

P. hygrophila may be separated from *P. oreias* by the pronotal plate shallowly sinuate on the dorsal margin and the ♀ antennal segments ovate.

Pseudeucoila (Pseudeucoila) depressa Yoshimoto, n. sp. Fig. 10D.

Female: Body length 1.3 mm; forewing 1.7. Ferrugineus to fuscous; antennae brownish, apical and ventral portions of abdomen black, legs brownish yellow.

Front view of head as in fig. 10D; malar space equal to 1/2 height of eye; hairs on face and mesonotum and antennal segments (see fig. 7H) similar to *hygrophila*. Pronotal plate rectangulate, 2.8× as broad as deep, dorsal margin shallowly sinuate in middle. Mesopleuron with a wide, deep, longitudinal depression near dorsal margin. Anterior part of scutellar disc not angulate, surface smooth, only a few places rugulose. Scutellar cup ovate, 2.6× as long as broad, surface highly convex longitudinally, anterolateral margin with 3 hairs and posterior end with a shallow, rounded pit. Few whitish hairs on lateral part of propodeum and base tergite 2. Abdomen nearly as long as broad. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.2–1.3 mm; forewing 1.9. Similar to ♀ except as follows: Antennae 15-segmented, moniliform; segment 3 slightly bent.

Holotype ♀ (BISHOP 3192), Kilauea, Hawaii, 28. VI. 1934, O. H. Swezey, ex *Railliardia*. Allotype ♂, same as holotype. Paratypes 5♀♀, 4♂♂, Kilauea, Hawaii, 8. VII. 1934, Swezey, ex *Vaccinium*; ♂, Kilauea, Hawaii, 27. VI. 1917, Swezey; ♀, nr. Puuluau, E. Maui, 27. IV. 1945, Zimmerman, ex *Coprosma*.

This species is closely related to *P. hygrophila* but differs by the predominately smooth and not too angulate surface of the scutellar disc and the elliptic antennal segments of the ♀.

Pseudeucoila (Pseudeucoila) angusta Yoshimoto, n. sp. Fig. 10C, L.

Female: Body length 1.2 mm; forewing 1.5. Ferrugineus; head and apical and ventral portions of abdomen black, antennae brownish, legs brownish yellow.

Front view of head as in fig. 10C; malar space equal to 1/2 height of eye; hairs on face and mesonotum similar to *P. depressa*. Antennal segment similar to *depressa* (fig. 7I). Mesopleuron with deep longitudinal depression near anterodorsal margin. Anterior part of scutellar disc not angulate at lateral sides, predominately smooth and less conspicuously rugulose in a few places. Scutellar cup narrow, ovate, 2.7–3.0× as long as broad, surface slightly convex longitudinally, anterolateral margin with 2 minute punctures and posterior end with shallow, rounded pit (fig. 10L). Few whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen 1.5× as long as broad. Tergite 3 concealed under tergite 2, not visible at abdominal apex.

Male: Body length 1.1 mm; forewing 1.3. Similar to ♀ except as follows: Antennae 15-segmented and filiform. Abdomen smaller than ♀.

Holotype ♀ (BISHOP 3193), Palolo, Oahu, 3. I. 1915, O. H. Swezey. Allotype ♂, Mt. Kaala, Oahu, 14. VIII. 1927, Swezey. Paratypes ♀, Palolo, Oahu, 3. I. 1915, 18. I. 1915, Swezey; ♀, Olympus, Oahu, 19. III. 1918, 8. IX. 1912, Swezey; ♀, Haleauau, Oahu, 15. X. 1935, Swezey, ex *Antidesma*; ♀, Tantalus, Oahu, 20. IX. 1906, Swezey. Not in type series: ♂, Waikamoi, Maui, 1,395 m, 14. I. 1926, Swezey; ♀, Keanae, Maui, VII. 1920; ♂, Opaeula, Oahu, 30. III. 1913.

This species is close to *P. depressa* of Kilauea, Hawaii but differs in the general structure of the abdomen and the shorter antennal segment.

Pseudeucoila hawaiiensis (Ashmead), NEW COMBINATION

Trybliographa hawaiiensis Ashmead, 1901, Fauna Haw. **1** (3): 300.
Eucoila (Psichacra) hawaiiensis: D. T. & Kieff., 1910, Das Tierreich **24**: 146.

The following description is taken from Ashmead's paper: "♀. Length 2.2 mm. Polished black; first two joints of antennae rufo-piceous; legs brownish-yellow; wing hyaline, the vein brown, the marginal cell completely closed, the cubitus distinct to near the apex of the wing but becoming pale colored just beyond its origin."

"The antennae are 13-jointed and extend to the base of the abdomen; the scape is obconical, nearly as long as the the first joint of the flagellum but much thicker, the pedicel joint being ovate, nearly as long as the first joint but fully twice as thick; the first joint slenderest joint, it is yet the longest; the following joints are all fluted, oval or submoniliform, not much longer than thick, the second joint being shorter and not so stout as the third. The scutellum is longitudinally striate at the sides, the cup being narrow, ellipsoidal. The metathorax ..... middle. The abdomen is ..... densely pubescent girdle at base, and seen from the side has its apex obliquely truncate."

Male: Unknown.

Holotype ♀, British Museum (Nat. Hist.), Hilo, Hawaii, 636 m, Ashmead, not seen.

Because of the closed radial cell, the general appearance of the ♀ antenna and scutellar cup, this species is temporarily assigned to this genus.

Pseudeucoila (Pseudeucoila) subrufa (D. T. & Kieff.), NEW COMBINATION.

Aglaotoma rufiventris Ashm., 1901, Fauna Haw. **1** (3): 301.

Eucoila (*Psichacra*) *subrufa* D. T. & Kieff., 1910, Das Tierreich **24**: 146, a new name for *A. rufiventris* Ashm.

The following description is taken from Ashmead's paper: "♀. Length 2.5 mm. Polished black, the abdomen, except along the dorsum and at apex, dark rufous; legs reddish-yellow. The antennae are 13-jointed, filiform, a little longer than the body, pilose; the scape is obconical, about as long as the first joint of the flagellum but stouter; the pedicel is subglobose, a little longer than thick; the first joint of the flagellum is the shortest joint, being only about two-thirds the length of the second joint; the following joints are all a little longer than the second, subequal, except the last, which is slightly longer than the penultimate joint. The scutellum as the sides is rugulose, the cup being rather large oval with a large fovea at apex and two or three minute punctures along the lateral margins. The metathorax is finely wrinkled and bicarinate. The abdomen is hardly so long as the head and thorax united, blunt at apex, with tufts of pubescence on each side at base."

Holotype ♀, British Museum (Nat. Hist.), Kilauea, Hawaii, Perkins, not seen.

With the short description and no illustration, of *subrufa*, it is difficult to place it in the correct group. I am tentatively placing this species under *Pseudeucoila* because of the closed marginal cell, antennal segment 3 shorter than segment 4 and the rugulose scutellar disc.

Pseudeucoila (**Pseudeucoila**) **grandissima** Yoshimoto, n. sp. Figs. 7L & 10A, K.

Female: Body length 1.9–2.0 mm; forewing 2.4. Black; antennal segments 1 and 2 dark brown, legs reddish brown to orange.

Front view of head as in fig. 10A; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 1.7× as long as broad; 2 subcylindrical, 1.7× as long as broad: 3 longer than 4; 4–12 subequal in length, 4 and 5 slender and others elliptic; 13 longer than 12, apex bluntly acuminate (fig. 7L); club striate, 9-segmented. Pronotal plate rectangulate, 2× as broad as deep, dorsal margin shallowly sinuate in middle. Mesonotum with a column of evenly spaced minute hairs on dorsocentral region and along anterior and anterolateral margins. Mesopleuron with deep, wide, longitudinal depression near dorsal margin. Anterior part of scutellar disc as wide as cup, surface rugose-punctate. Scutellar cup large, oblong, anterior part tapering to a point, nearly 2× as long as broad, surface longitudinally convex, anterolateral margin with 2 minute punctures, posterior end with a shallow, rounded pit (fig. 10K). Abdomen 1.4× as long as broad. Few hairs on lateral part of propodeum and base of tergite 2. Tergite 3 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.8 mm; forewing 2.2. Similar to ♀ except as follows: Antennae 15-segmented; antennal segment 3 concave on inner margin, narrow at base and broader at its apex.

Holotype ♀ (BISHOP 3194), Kilauea, Hawaii, 1,273 m, 20. VII. 1920, W. M. Giffard. Allotype ♂, Upper Waiakea Forest Res., Hawaii, XII. 1950, N. L. H. Krauss. Paratypes ♀, Kilauea, Hawaii, 27. VI. 1917, Swezey, ex koa; ♀, Nauhi Gulch, Hawaii, 1,575–1,818 m, 29. IX. 1931, Swezey, ex *Cheirodendron*; 2♂♂, Upper Waiakea Forest Res., Hawaii, XII. 1950, Krauss; ♀, Kumuwela, Kauai, 26. VIII. 1921, Swezey, ex *Campylotheca*.

This species superficially resembles the members of the genus *Pseudodiranchis* but be-

cause of the presence of the closed radial cell I am provisionally placing this species in this group.

Pseudeucoila (Pseudeucoila) perkinsi Yoshimoto, n. sp. Figs. 7G & 10B, Q.

Female: Body length 1.8 mm; forewing 2.1. Fuscous to blackish; antennae dark brown, legs brownish yellow. Front view of head as in fig. 10B; malar space equal to 1/3 height of eye. Antennal segment 1 obconical 1.3× as long as broad; 2 subcylindrical, nearly as long as broad; 3 slender, shorter than 4; 5–12 subequal in length, ellipsoidal, slightly longer than 4; 13 longer than 12, apex bluntly pointed (fig. 7G); club 8-segmented, segments striate. Pronotal plate subrectangulate, 3.3× as broad as deep, dorsal margin shallowly sinuate in middle. Mesonotum not arched but more or less straight or flattened in profile; a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Anterior part of scutellar disc not slanted, narrower than width of cup, surface smooth and not very rugulose. Scutellar cup narrow, oblong, anterior part 2× as long as broad, surface convex, anterolateral margin with 2 minute punctures, and posterior 1/2 of cup occupied by rounded and concave pit (fig. 10Q). Sparse whitish long hairs on anterodorsal margin of prothorax, posterior margin of metapleuron, lateral portion of propodeum and base of tergite 2. Abdomen 1.7× as long as broad. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Unknown.

Holotype ♀ (BISHOP 3195), Kilauea, Hawaii, 8. VII. 1934, O. H. Swezey, ex *Vaccinium*. Paratype ♀, Kilauea, Hawaii, 13. X. 1929, Swezey. Not included in type series: ♀, Kilauea, Hawaii, 13. X. 1929, Swezey; ♀, Kilauea, Hawaii, 9. VII. 1934, Swezey, ex *Cibotium chamissoi*.

This species differs from the other members of the Hawaiian *Pseudeucoila* by the flattened surface of the mesonotum and nearly the posterior 1/2 of scutellar cup occupied by a rounded pit.

Genus **Lispothyreus**, n. gen.

Type: *Cothonaspis* (*Hypodiranchis*) *abnormis* Perkins; by present designation.

Antenna of ♀ 13-segmented; segment 3 slightly shorter than 4, club composed of 8 segments. Antenna of ♂ 15-segmented. Forewing hyaline, pubescent, ciliate along margin; radial cell open. Mesonotum more or less flattened as seen in profile. Scutellar disc narrow, surface generally smooth with few scattered punctures and strong carinae bordering marginal disc; scutellar cup not elevated, oblong or ellipsoidal, surface smooth, anterior flattened, without hairs or punctation; extreme posterior end extending into a narrow neck joining the posterior carina on which a minute pit present at tip. Tergite 2 with hairy ring.

Differs from *Hypodiranchis* principally by the characters of the flattened mesonotum, and the scutellar cup is without punctations except for a minute pit at posterior end of the neck adjoining the posterior marginal carina. *Lispothyreus* ♂ gender (=smooth+large oblong door shape shield; or smooth oblong scutellar disc).

KEY TO SPECIES OF HAWAIIAN LISPOTHYREUS

Malar space 1/3 height of eye; species 2.0–2.7 mm long.....**lanaiensis**

Malar space 1/2 height of eye; species 1.5 mm long..... **abnormis**

Lispothyreus abnormis (Perkins), NEW COMBINATION Fig. 11A, B, F.

Cothonaspis abnormis Perk., 1910, Fauna Haw. **2** (4): 673.
Trybliographa (*Trybliographa*) *abnormis*: Weld, 1952, Cynipoidea (Hym.) 1905–1950, 222.

Female: Body length 1.5–1.6 mm; forewing 1.5. Fuscous to blackish; antennae dark brown except segments 1 and 2 and legs brownish yellow. Front view of head as in fig. 11A; malar space slightly over 1/2 height of eye. Antennal segment 1 obconical, 2× as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 slender, slightly shorter than 4 or 5 but subequal in length to 8–12; 12 slightly longer than 8 or equal in length to 4 or 5, apex acutely acuminate (fig. 11F); club 8-segmented, segments striate, elliptic. Pronotal plate rectangulate, 2× as broad as deep, rounded at corners, median dorsal margin sinuate; a column of evenly spaced hairs on dorsocentral region and along edge of anterior and anterolateral margins. Mesopleuron bare and smooth. Anterior portion of scutellar disc narrow, shiny and with few large punctures; posterior end truncate, strongly carinate on marginal disc. Scutellar cup oblong, anterior portion flattened without punctation or hairs on lateral margins, posterior portion slightly curved backward at lateral profile and with an inconspicuous pit at posterior end (fig. 11B). Abdomen 1.3× as long as broad. Dense whitish hairs on pronotum, lateral portions of propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2 and slightly visible at abdominal apex.

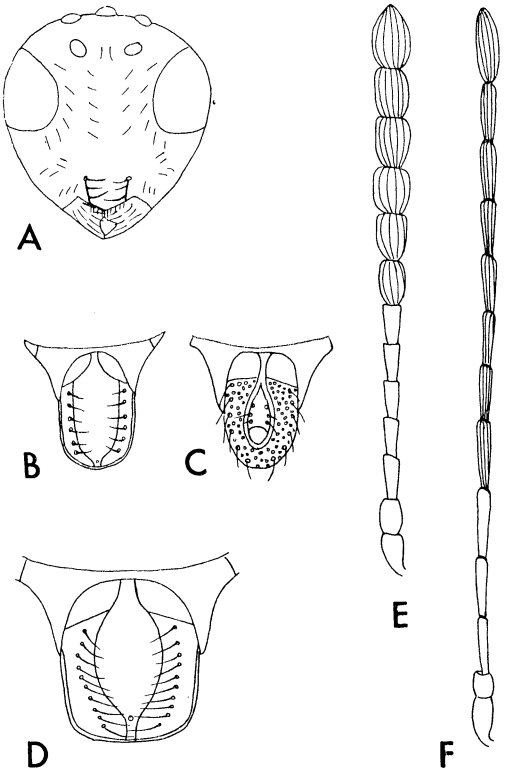

Fig. 11. *Lispothyreus* spp. A, *abnormis* (Perk.), head. Scutellum: B, *abnormis*; D, *lanaiensis* (Ashm.). F, *abnormis*, ♀ antenna. *Pseudeucoila* (*Hexamercera*) *magnificus* Yshm.: C, scutellum; E, ♀ antenna.

Male: Body length 1.2–1.4 mm; forewing 1.4–1.6. Similar to ♀ except as follows: Antennae 15-segmented, filiform; segments gradually decreasing in thickness and in length toward apical segment; segment 3 bent and longitudinally emarginate at inner side. Abdomen as long as broad.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2584), Perkins. ♂ associated with det. ♀, Tantalus, Oahu, 21. VI. 1925, O. H. Swezey. ♂, Tantalus, 23. II. 1925, Swezey. OAHU: ♀, Mt. Tantalus, IV. 1960, Beardsley. KAUAI: ♀, Kumuwela, 25. VI. 1932, Swezey; ♀, Halemanu, 29. VI. 1932, Swezey, ex *Pterotropia*.

This species is allied to *L. lanaiensis* but differs in the oblong shape of the scutellar

cup.

Lispothyreus lanaiensis (Ashmead), NEW COMBINATION Fig. 11D.

Hypodiranchis laniensis Ashm., 1901, Fauna Haw. **1** (3) : 304.

Female: Body length 2.0–2.7 mm; forewing 2.5. Black; antennae dark brown except segments 1–5 and legs brownish yellow. Front view of head similar to fig. 11A; malar space equal to 1/3 height of eye; hairs on mesonotum and antennal segments similar to *abnormis*. Pronotal plate rectangulate, 3× as wide as deep, rounded at corners, dorsomedian margin sinuate. Mesopleuron with deep, longitudinal depression near dorsal margin. Scutellar disc narrower than width of cup, surface smooth with little rugosity at anterior part, posterior end truncate, rugose and strongly carinate at margin of disc. Scutellar cup somewhat flattened, smooth and ellipsoidal (fig. 11D). Abdomen 1.4× as long as broad. Sparse whitish hairs on pronotum, lateral part of propodeum and base of tergite 2. Tergites 3 and 4 not concealed under tergite 2, slightly visible at abdominal apex.

Male: Unknown.

Holotype ♀, British Museum (Nat. Hist.). "Lanai" Perkins.

MATERIAL EXAMINED: ♀, Lanai Mts., Lanai, 29. XII. 1947, Krauss; ♀, Kula Pipe Line, Maui, 25. VIII. 1929, Swezey, ex *Broussaisia*.

This species can be distinguished from *L. abnormis* by the large elliptic cup of the scutellum.

Genus **Aspidogyrus**, n. gen.

Type: *Aspidogyrus strigosus* n. sp., by present designation.

Female antenna 13-segmented; antennal segment 3 slightly longer than 4 or 5; club composed of 8 segments. Male antenna 15-segmented; segment 3 emarginate on inner side. Forewing pubescent, ciliate along margin, radial cell closed. Anterior pits of scutellum striate; anterior 1/2 of scutellar disc narrow and entire disc punctate-rugose; scutellar cup more or less circular-shaped and surface slightly convex; lateral bar smooth. Tergite 2 with hairy ring. Prothorax, mesopleuron and metapleuron with longitudinal striations.

This genus keys out to *Ganapis* in Weld's key (1952) of the subfamily Eucoilinae but can be separated from it by having the scutellar cup not flattened in profile. *Aspidogyrus* differs from *Ganapis* by the punctate-rugose scutellar disc and striations on prothorax and meso- and metapleuron, but in the latter, the scutellar disc is punctate, and the prothorax and meso- and metapleuron are smooth. *Aspidogyrus* ♂ gender (=shield+circle) referring to the scutellar disc being ovate-circular shape.

Aspidogyrus strigosus Yoshimoto, n. sp. Fig. 12A, D, H.

Female: Body length 1.3 mm; forewing 1.5. Fuscous to blackish; antennae and legs dark brown.

Front view of head as in fig. 12A; malar space equal to 1/2 height of eye. Antennal segment 1 obconical, 1.5× as long as broad; 2 cylindrical, 1.5× as long as broad, shorter than 1; 3 slender, slightly longer than 4 or 5; 6 and 7 subequal in length, slightly longer than 5; 8–10 subequal in length and ellipsoidal; 11 and 12 subequal in length, shorter

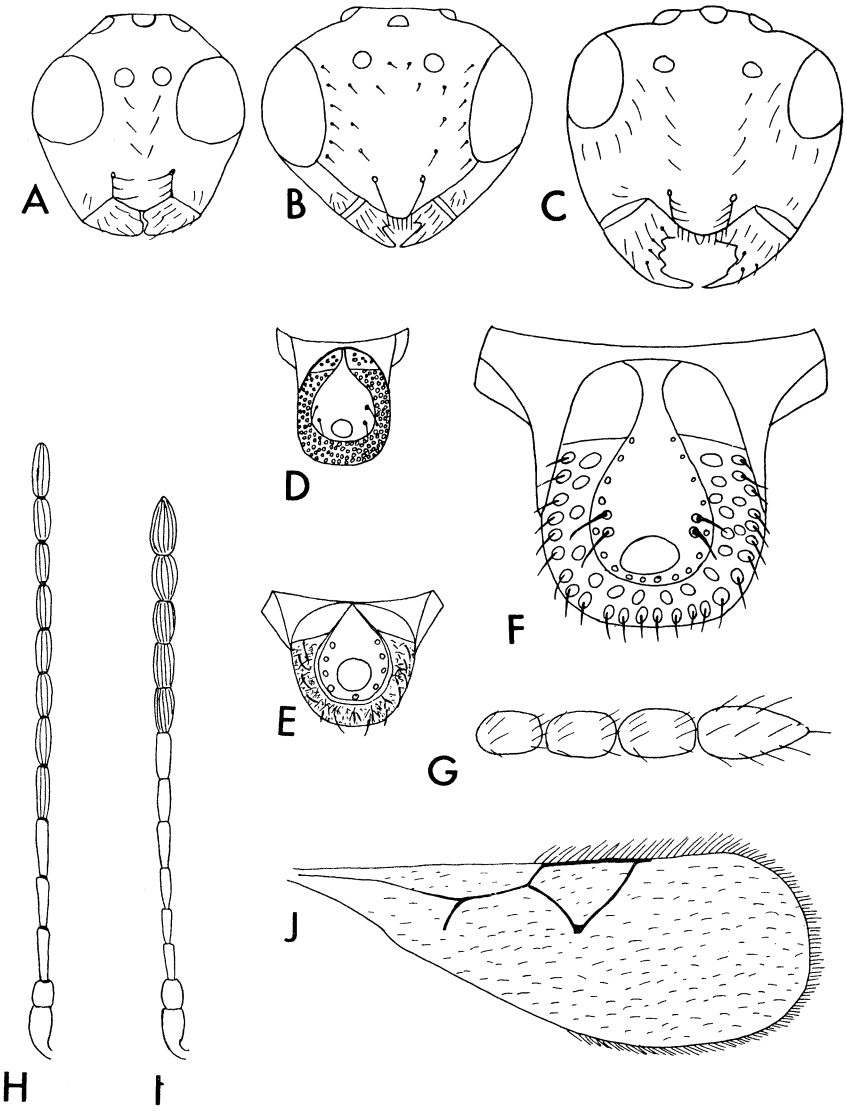

Fig. 12. *Aspidogyrus strigosa* Yshm.: A, head; D, scutellum; H, ♀ antenna. *Eucoila impatiens* (Say): C, head; F, scutellum; G, ♀ antennal segs. 10-13. *Cothonaspis pacifica* Yshm.: B, head; E, scutellum; I, ♀ antenna. J, *Pseudeucoila magnificus*, forewing.

than 10; 13 longer than 12; apex acuminate (fig. 12H); club 8-segmented, segments striate. Pronotal plate rectangulate, 3× as broad as deep, dorsal median margin sinuate. Mesonotum with a column of evenly spaced hairs on dorsocentral region. Scutellar disc punctate-rugose, truncate as seen from posterior profile. Scutellar cup ovate circular, anterior portion acuminate, surface smooth and polished, convex, anterior margin with 2 punctures, each with a hair, and posterior end with a deep, rounded, small-sized pit (fig. 12D). Ab-

domen as long as broad. Sparse whitish hairs on anterodorsal portions of pronotum and propodeum and base of tergite 2. A row of evenly spaced hairs posterior to hairy ring of tergite 2. Tergite 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 1.2 mm. Similar to ♀ except as follows: Antenna filiform; segment 3 bent and deeply emarginate on inner side, slightly longer than 4. Abdomen 1.2× as long as broad.

Holotype ♀ (BISHOP 3196), Nahiku, Maui, 3. VIII. 1952, N. L. H. Krauss. Allotype ♂ (BISHOP), same as holotype.

Genus **Eucoila** Westwood

Eucoila Westwood, 1833, Mag. Nat. Hist. **6**: 494.—Weld, 1952, Cynipoidea (Hym.) 1905–1950, 211. Type: *Eucoila crassinerva* Westwood; Monob. Subsequent designation by Weld, 1931.

Antenna of ♀ 13-segmented; antennal segment 3 shorter or longer than 4; club with 7 or 8 segments. Pronotal plate rectangular. Scutellar disc punctate or areolate. Scutellar cup large, ovate and well-elevated. Lateral bar striate. Wing hyaline, whitish, bare, non-ciliate at margin except a few short hairs near posterior angle; radial cell closed. Tergite 2 with hairy ring.

Eucoila impatiens (Say) Fig. 12C, F, G.

Diplolepis impatiens Say, 1836, Boston Jour. Nat. Hist. **1**: 267, ♂.
Kleidotoma cupulifera Provancher, 1881, Nat. Canad. **12**: 238, ♂, ♀.
Eucoila impatiens: Weld, IN Muesebeck *et al.*, 1950, Hym. Amer. North Mexico Synop. Cat., 602.

Female: Body length 3–4 mm; forewing 2.5–4.5. Black; antennae ferrugineus, legs brownish yellow. Front view of head as in fig. 12C; malar space equal to 1/2 height of eye. Antennal segments gradually thickened toward apical segment; segment 1 obconical, nearly as long as broad; 2 subcylindrical, as long as broad, shorter than 1; 3 longer than 4; 5–9 subequal in length; 10–12 equal in length, longer than 9; 13 is 1.3× longer than 12, apex sharply acuminate (fig. 12G); club 8-segmented, segments striate, ovate. Pronotal plate rectangulate, 2× as broad as deep, dorsal median margin sinuate. Mesonotum with a column of evenly spaced hairs on dorsocentral region and along anterior and anterolateral margins. Surface of anterior scutellar disc narrower than width of cup, not elevated, heavily punctate-rugose. Scutellar cup ovate, 2× as long as broad, surface smooth, shiny and longitudinally convex; anterolateral margin with 2 punctures, each with a hair, periphery of cup with minute punctations and posterior end with a large shallow, rounded pit (fig. 12F). Dense whitish hairs on dorsoanterior pronotum, lateral part of propodeum and base of tergite 2. Abdomen 1.7× as long as broad. Tergites 3 and 4 not concealed under tergite 2, visible at abdominal apex.

Male: Body length 2.0–3.0 mm. Similar to ♀ except as follows: Antennae filiform, 15-segmented, ferrugineus to brownish, segment 3 narrow at base and broader at apex. Abdomen 1.5× as long as broad. Genitalia (fig. 1A).

MATERIAL EXAMINED: HAWAII: ♀, Kilauea, 13. X. 1929, Swezey; 5♀♀, Kilauea, 22–27. VII. 1920, 4. VIII. 1920, Giffard; 2♀♀, Nauhi Gulch, 1,515–1,818 m, 29. IX. 1931, Swe-

zey & Williams; ♀, Hilo, 1. VIII. 1946, Zimmerman; ♀, Waiakea, 21. VII. 1912; ♀, Parker Ranch, 29. VII. 1935, Usinger, X. 1929, Swezey, ex cow dung; 8 ♀♀, Waimea, 20. VI. 1932, Illingworth; 2 ♂♂, Kilauea, 27. VII. 1920, 2. VIII. 1920, Giffard; ♀, Kilauea, 27. VI. 1917, 12. VII. 1934, Swezey; Pahala, 26. VI. 1918, Swezey; ♀, Hilo, 25. VII. 1921, Swezey; ♀, Honaunau, 13. VIII. 1909, Swezey. MAUI: 3 ♀♀, Olinda, VIII. 1926, Mui; 2 ♂♂, Keanae, 26. VI. 1920, Bryan; ♂, Keanae, 22. VII. 1918, Swezey; ♂, Kapahulu, 6. VII. 1920, Bryan; Waiopai, 3. III. 1926, Swezey, ex *Sarcophaga pallinervis* Thomson. MOLOKAI: ♀, Mauna Loa, 22. VI. 1926, Illingworth; ♀, Kawela, 14. XII. 1956, Beardsley; ♂, Kainalu, 27. VII. 1927, Swezey; ♂, Kaunakakai, 6. VIII. 1929, Swezey. OAHU: ♀, Honolulu, VII. 1949, Pemberton; Pond's Dairy, 15. V. 1907, ♀, Kaimuhonu, 12. VII. 1908, Swezey; ♂, Manoa, 27. IX. 1918, Swezey; 6♀♀, Kapahulu, V. 1907, Terry, ex Sarcophagid puparia. 2♀♀, ♂, Honolulu, VI. 1910, Terry, ex Muscid; 4 ♂♂, Waimanu, 20. IX. 1945, Bianchi; ♀, Honolulu Mts., 30. III. 1927, Swezey; ♂, Ewa, 27. IX. 1951, Pemberton, ex light trap. KAUAI: 2♀♀, Wailua, XII. 1956, Isenberg, ex light trap; Grove Farm, VIII. 1908, Terry; ♂, Waimea, 9. III. 1917.

This species was introduced into the Hawaiian Is. from the U. S. mainland about 1,905 and is now well established on the 5 major Hawaiian Is.

Genus **Cothonaspis** Hartig

Cothonaspis Hartig, 1839 (1849), Germar Ztschr. f. Ent. **2**: 186.—Weld, 1952, Cynipoidea (Hym.) 1905–1950, 242.—Yoshimoto, 1962, Ins. Micronesia, **19** (3). Type: *Cothonaspis pentatoma* Hartig, Desig. by Forester 1869.

Antenna of ♀ 13-segmented; segment 3 slightly shorter than 4; club 3–6 segmented. Antenna of ♂ 15-segmented, filiform; segment 3 longer than 4, slightly emarginate at inner side. Pronotal plate broadly truncate. Scutellar cup large, ovate to ovate-circular with small pits along its periphery; cup not reaching as far back as disc; scutellar disc with ridges radiating from cup to margin of rim. Wings hyaline, pubescent, ciliate at margin; radial cell closed in genotype or partially open. Tergite 2 without a hairy ring.

Cothonaspis is known from the Philippines, Micronesia, Java and the Hawaiian Is., including the Kure Is.

Cothonaspis (Cothonaspis) pacifica Yoshimoto Fig. 12B, E. I.

Ins. Micronesia **19** (3).

Female: Body length 0.9–1.1 mm; forewing 1.0–1.2. Black; antennae and legs ferrugineus, abdomen fuscous. Front view of head as in fig. 12B; malar space equal to 1/2 height of eye. Antennal segments 1 and 2, 1/2 as long as broad; segment 3 slightly shorter than 4; 4 and 5 subequal in length; 6–12 subequal in length, slightly longer than 5; 13 longer than 12, apex sharply acuminate (fig. 12I); club 5-segmented, striate. Pronotal plate rectangulate, dorsal median margin deeply emarginate; posterior margin of pronotum with a row of evenly spaced hairs. Anterior part of scutellar disc punctate-rugose. Scutellar cup ovate-circular shaped, surface with a large depression just beyond center of cup, periphery with 8 or 9 small evenly spaced pits (fig. 12E). Abdomen 0.4–1.7 longer than broad. Only tergite 2 visible on abdomen.

Male: Body length 1.2 mm; forewing 1.3. Similar to ♀ except as follows: Antennae

moniliform, 15-segmented; segment 3 longer than 4, slightly emarginate at inner side, narrow at base and wider at apex. Genitalia (fig. 1D).

MATERIAL EXAMINED: Holotype ♀ (BISHOP 3367), Peale I., Wake Atoll, VIII. 1940, Lyons. HAWAII: ♀, Kawaihae, XII. 1950, Krauss. MAUI: 3 ♀♀, Haiku, 22. XI. 1929. MOLOKAI: ♀, Kaunakakai, 25. I. 1929, Swezey, ex alfalfa. OAHU: ♀, Koko Head, 13. III. 1934, Swezey; 4 ♀♀, Oahu Sugar Co., 25. I. 1944, Swezey, ex *Agromyza pusilla* on potato; 4♀♀, Manoa, 5. I. 1930, Swezey, ex alfalfa; ♀, Honolulu, 6. V. 1927, Swezey; ♀, Ewa, 3. II. 1960, 8. III. 1961, 25. IV. 1961, 13. VII. 1961, Beardsley; ♀, Waianae, 3. III. 1929, Swezey; 7 ♀♀, ♂, Waimanalo, VI. 1962, Habeck, ex *Liriomyza* sp.; 4 ♀♀, Honolulu, VI. 1957, Beardsley, ex *Phytobia humeralis* (von Roser). KURE I.: 53♀♀, ♂, IX. 1961, Butler.

Genus **Eucoilidea** Ashmead

Eucoilidea Ashm., 1887, Amer. Ent. Soc., Trans. **14**: 154.—Weld, 1952, Cynipoidea, (Hym.) 1905–1950, 248.—Yoshimoto, 1962, Ins. Micronesia **19** (3). Type: *Eucoilidea canadensis* Ashmead. Desig. by Ashmead 1903.

Antenna of ♀ 13-segmented; antennal segment 3 slightly elbowed at base, shorter than 4. Antennal club indistinct. Pronotal plate broadly truncate, middle of dorsal margin deeply sinuate in profile. Mesothorax with parapsidal grooves united at 2/3 of distance, ending at base of posterior margin. Scutellar disc punctate, rounded behind; scutellar cup large, elliptical to ovate, reaching nearly to end of disc, surface with a deep depression and an elongate pit in center and a row of punctures on each side of depression. Wings hyaline, pubescent, ciliate on margin; radial cell closed. Tergite 2 with out hairy ring.

KEY TO SPECIES OF HAWAIIAN EUCOILIDAE

♀ antenna with 8-segmented club ..... **micromorpha**
♀ antenna with 5-segmented club ..... **rufula**

Eucoilidea micromorpha Perkins Fig. 13C, D, E.

Eucoilidea micromorpha Perk., 1910, Fauna Haw. **2** (4): 676.

Female: Body length 1.2 mm; forewing 1.2. Black; abdomen fuscous to blackish, legs and antennal segments 1 and 2 brownish yellow. Front view of head as in fig. 13C; malar space equal to 1/3 height of eye. Antennal segment 1 globose, as long as broad; 2 subcylindrical, slightly longer than broad; 3 slender, slightly shorter than 4; 4–7 subequal in length; 8–9 equal in length, slightly shorter than 4; 10–12 equal in length, slightly shorter than 9; 13 slightly longer than 12, apex acuminate (fig. 13E); club 8-segmented, segments striate and gradually thickened toward apical segment. Pronotal plate not distinct. Parapsidal groove distinct, with evenly spaced hairs on its inner margin. Mesopleuron with longitudinal depression near dorsal margin. Scutellar disc punctate-rugose, middle of cup with a depression in center and series of distinct punctures at its periphery (fig. 13D). Patch of whitish hairs on lateral portion of propodeum; no hairs on tergite 2 or pronotum. Abdomen 1.2× as long as broad. Tergite 3 not visible.

Male: Body length 1.0 mm; forewing 1.3. Similar to ♀ except as follows: Antennae 15-segmented; segment 3 nearly 2× as long as 4, greatly emarginate laterally. Abdomen as long as broad.

MATERIAL EXAMINED: Holotype ♀ (BISHOP 2592), "Oahu", Perkins; ♂ associated with ♀, Aina Haina, Oahu, V. 1955, Zimmerman. HAWAII: ♀, Waiohinu, 1. XI. 1950, Krauss. OAHU: ♀, Waipio, 5. VII. 1955, III. 1960, Beardsley, ex reared *Erigeron canadensis* L.; ♀, Aina Haina, V. 1955, ex *Zinnia* stem miner.

Eucoilidea rufula Yoshimoto, n. sp. Fig. 13A, B, F.

Female: Body length 1.3–1.4 mm; forewing 2.0. Ferrugineus to fuscous; antennae brownish, legs brownish yellow and margin of scutellar cup yellowish and transparent.

Front view of head as in fig. 13A; malar space equal to 1/3 height of eye. Distinct striation below genal suture. Antennal segment 1 obconical, 1.7× as long as broad; 2 subcylindrical, as long as broad; 3 slightly shorter than 4; 4–8 subequal in length, shorter than 9; 9–12 equal in length; 13 longer than 12, apex sharply acuminate (fig. 13F); club 5-segmented, segments striate and gradually thickened toward apical segment. Pronotal plate rectangulate, 1.3× as wide as deep, surface punctate. Posterior portion of parasidial groove flattened out laterally at one side of groove without definite groove pattern (fig. 13B). Scutellar cup 1.5× as long as broad, ovate, anterior portion sharply pointed, its angle facing downward in profile, middle of cup with an ovate depression, periphery of cup with series of punctures. Abdomen as long as broad. Only tergite 2 visible.

Male: Unknown.

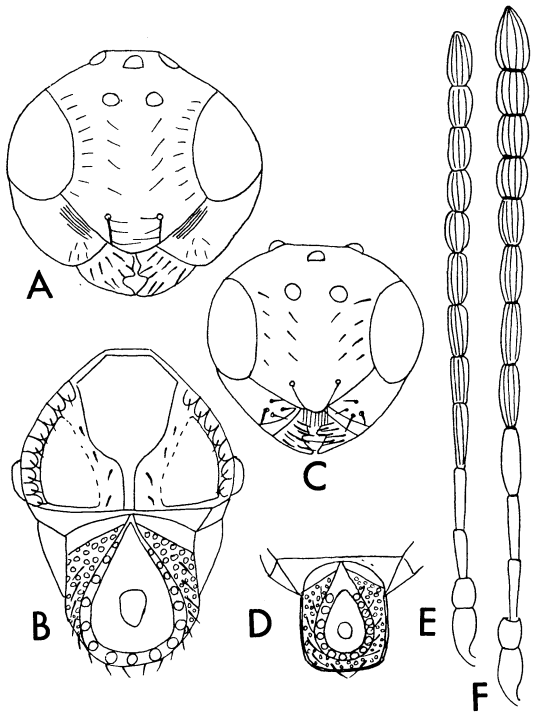

Fig. 13. *Eucoilidea* spp. A, *rufula* Yshm., head; B, *rufula*, dorsal view of thorax; C, *micromorpha* (Perk.), head; D, *micromorpha*, scutellum; E, *micromorpha*, ♀ antennae; F, *rufula*, ♀ antennae.

Holotype ♀ (BISHOP 3197), Quarantine I., Oahu, 15. III. 1920, O. H. Swezey, ex *Agromyza* in radish. Paratypes 25♀♀, Quarantine I., Oahu, 15. III. 1920, Swezey, *Agromyza* in radish; ♀, Kahana, 7. IX. 1927, Swezey, ex *Agromyza* in *Lobelia*; ? Honolulu, 3. IV. 1907; ♀, Manoa Valley, Oahu, 24. II. 1908, Swezey, ex leaf miner in radish; ♀, Maui Agr. Col., East Maui, 22. XI. 1929, Paxton, ex alfalfa field; ♀, Poamoho, Oahu, 11. XI. 1933, Swezey; ex *Agromyza* in *Solanum nigrum* L.

This species is closely related to *E. guamensis* Yoshimoto but differs in the brilliant reddish-brown color, and the anterior portion of scutellar cup.