

THE EUCOILINAE OF THE RYUKYU ARCHIPELAGO (Hymenoptera: Cynipoidea)

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Abstract: The Ryukyu Archipelago Eucoilinae are represented by 8 genera and 20 species, of which the following 12 species are described as new: *Endecameris erugatus*, *Odon-teucoila amamiensis*, *Leptolamina japonica*, *Hexacola quinaria*, *H. samuelsoni*, *H. cognata*, *H. antennata*, *H. octosegmenta*, *Rhoptromeris ryukyuensis*, *Pseudeucoila (Hexamerocera) parallela*, *P. (Pseudeucoila) okinawaensis*, and *P. (Pseudeucoila) shirozui*.

Up until today, no cynipids have been reported from this area. In this paper, 8 genera and 20 species are enumerated, all belonging to the subfamily Eucoilinae.

The present study is based largely on the results of the insect collections made from the U.S.—Japan Co-operative Science Program^{3,4}. Other study materials included in this paper are from the collections of Kyushu University and Bishop Museum. Under the Bi-national project, the first entomological expedition began in the summer of 1963 on the Amami Islands with 10 entomologists participating in field work. The second expedition to the Ryukyu Islands began in October 1963 and ended in March 1964 with the total of 15 entomologists participating.

The specimens reported upon here were collected by G. E. Bohart, M. Chujo, J. L. Gressitt, J. C. Harrell, T. Hidaka, Y. Hirashima, S. Miyamoto, Y. Miyatake, G. A. Samuelson, T. Shirôzu, K. Yasumatsu and C. M. Yoshimoto.

We are deeply indebted to the National Science Foundation and the Japan Society for the Advancement of Sciences for making this study possible. Our sincere appreciation goes to Dr T. Takara, Dean of Agriculture, University of the Ryukyus, and the University Administration, for much assistance. Also, to the U.S. Civil Administration of the Ryukyu Islands, Health and Welfare Department and the Government of the Ryukyus for their help.

The cynipid faunae of the Ryukyu Archipelago and the recently studied areas of the Pacific (Yoshimoto 1962a, 1962b, 1963a, 1963b) show, in general, close relationship of Ryukyu species to those from Micronesia and Polynesia and lesser ties with those of the Hawaiian fauna.

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3. Partial results of "Systematic Studies in Pacific Area Insects", National Science Foundation grant G-F-58. Contribution Ser. 2, no. 238. Entomological Laboratory, Kyushu University.
4. Partial results of "Zoogeography and Ecology of the Pacific Area Insects", Japan Society for the Advancement of Sciences.

Odonteucoila floccosa Yshm. from Ponape is represented in the Ryukyus. *O. amamiensis* n. sp. of this region is a close relative of *O. floccosa*. *Eucoilidea guamensis* Yshm. from S. Marianas is also present in the Ryukyus but not in Hawaii or Polynesia.

Leptolamina ponapensis Yshm. ranges from the Papuan subregion northward to the Caroline Islands and to Kyushu, Japan. *L. japonica* n. sp. occurs in the Ryukyus and Southern Japan.

The genus *Hexacola* is represented by a single species *H. tahitiensis* Yshm. in Polynesia. In the Ryukyus, five sympatric species, *H. quinaris*, *H. samuelsoni*, *H. cognata*, *H. antennata*, and *H. octosegmenta* are integrated in the complex environment.

The bulk of the cynipid collection is assigned to the world-wide genus *Pseudeucoila*. The common species, *Pseudeucoila (Pseudeucoila) rugipunctata* Yshm., *vulgaris* Yshm. and *latucauca* Yshm. known from the Ryukyus, are widely dispersed over the Pacific region. *P. (Pseudeucoila) elliptica* Yshm. is represented in Fiji, Ryukyus, and Japan. The three new species *Pseudeucoila okinawaensis*, *shirozui* and *parallela* are known from the Ryukyu area only.

The genus *Rhoptromeris*, a close relative of *Pseudeucoila*, is represented by a single new species *R. ryukyensis* in the Pacific area. The genus *Endecameris* was recently described from Polynesia. Here a second species is described, and specimens have been taken in New Guinea. This suggests a wide distribution for the genus, although few specimens have been collected.

SYSTEMATICS

The Ryukyu Eucoilinae are small parasitic wasps measuring 1 to 3 mm in length. The body is smooth and highly polished, without sculpture, and the color ranges from yellowish brown, ferrugineous, fuscous to black. Antenna of the female consists of 11 to 13 segments with 3 to 9-segmented club; the male antenna is 15-segmented and filiform. The scutellar cup is elevated; the scutellar cup and disc are important morphological characters in this subfamily. The fore wing does not possess a true stigma and the radial cell is either open or closed on the marginalis. The abdomen is laterally compressed.

KEY TO RYUKYU GENERA OF EUCOILINAE

1. Abdomen without hairy ring on tergite 2.....**Eucoilidea**
Abdomen with hairy ring on tergite 2..... 2
2. Scutellar cup narrow and long, reaching to back of disc **Leptolamina**
Scutellar cup ovate, elliptic or elliptic-circular.....3
3. Scutellar disc conical or tapering apically to a point as seen from above or in profile.....**Odonteucoila**
Scutellar disc rounded or truncate as seen from behind 4
4. Radial cell open.....5
Radial cell closed..... 7
5. Fore wing emarginated at distal end **Kleidotoma**
Fore wing rounded at distal end 6
6. ♀ antenna 13-segmented; radial cell typical of *Hexacola* (fig 2) **Hexacola**
♀ antenna 11 or 12-segmented; radial cell otherwise **Endecameris**

7. Radial cell $3.2\times$ as long as deep; anterior scutellar disc entirely smooth...**Rhoptromeris**
 Radial cell $2.3-2.5\times$ as long as deep; anterior scutellar disc partially smooth, punctate or punctate-rugose **Pseudeucoila**

Genus **Kleidotoma** Westwood

Kleidotoma Westwood, 1833, Ann. Mag. Nat. Hist. ser. 6: 494.—Weld, 1952, Cynipoidea 1905-1950: 204-5.—Yoshimoto, 1962, Pacific Ins. 4(4): 803-4; 1963, *Ibid.* 5(2): 434-35; 1964, Pacific Ins. Monog. 7: 509-512 (type: *Kleidotoma psiloides* Westwood; monob.).

Kleidotoma sp.

A single ♀ specimen of this genus, possibly of the subgenus *Kleidotoma*, collected on Yuwan, Amami-Oshima I., 7-9.IV.1956 by S. Miyamoto was not placed in the proper group because of the loss of both antennae. This specimen closely resembles *K. (Kleidotoma) kraussi* Yshm. While searching for other Ryukyu Eucoilinae in the insect collection of the Entomological Laboratory, Kyushu University, we came across several specimens of this genus, possibly *K. kraussi* collected in Kyushu, Japan. These specimens will be later studied with the Japanese Eucoilinae.

Genus **Endecameris** Yoshimoto

Endecameris Yshm., 1963, Pacific Ins. 5(2): 437 (type: *Endecameris striatus* Yshm.; orig. design.).

In further study of Eucoilinae from the Pacific, we found several ♀ specimens that fitted the generic description of the genus, *Endecameris* with the exception of having a 12-segmented antenna. The ♀ *Endecameris* is based on 11-segmented antenna; however, in the broad concept of generic evaluation, all ♀♀ with 11 or 12-segmented antenna and ♂♂ associated with the ♀♀ are included in this genus.

Endecameris striatus Yoshimoto

Endecameris striatus Yshm., 1963, Pacific Ins. 5(2): 437.

DISTRIBUTION: Fiji, Amami-Oshima.

SPECIMENS EXAMINED: ♀, Mikyo, 130 m, Tokunoshima, 24.VII.1963, Yoshimoto.

Endecameris erugatus Yoshimoto & Yasumatsu, n. sp.

♀. Body length 1.6 mm long; fore wing 1.6 mm.

Ferruginous to fuscous in general. Head black, legs and antennal club segments brownish and segments 1-6 ferruginous. Malar space $1/2$ height of eye. Antennal segment 1 obconical, $1.5\times$ as long as broad; segment 2 subcylindrical, as long as broad, shorter than 1; 3 stubby, as long as broad, longer than 4; 4-6 subequal in length, shorter than broad, together about $1/2$ as long as 3; club 6-segmented; segment 7 gradually tapering from base to apex; segments 8-11, $3\times$ as long as broad, subequal in length; segment 12, $3.5\times$ as long as broad, apically acuminate. Wings densely ciliate; anterior marginal cilia shorter than posterior; radial cell $2.3\times$ as long as deep. Pronotal plate rectangular, $2\times$ as broad as deep, dorsal median margin slightly emarginate. Mesonotum shiny with rows of dorsal

central hairs. Mesopleuron bare and shiny. Scutellar disc punctate-rugose, rounded behind; scutellar cup ovate, basal $1/3$ narrow and long, tapering toward anterior part, $2\times$ as long as broad, surface smooth and slightly concave at profile, anterolateral margin with 2 pairs of hairs, and at posterior end with a large rounded pit. Abdomen $1.5\times$ as long as broad. Tuft of whitish hairs at anterolateral part of pronotum; dense long whitish hairs on basolateral area of propodeum and base of tergite 2. Mid and hind coxae predominantly polished and bare except for a few scattered hairs and a tuft of hairs on anterior and posterior end of coxa.

♂. Unknown.

DISTRIBUTION: Yaeyama I.

SPECIMEN EXAMINED: Holotype ♀ (Kyushu Univ.), Kami, Iriomote I., 18.VII.1963, Y. Miyatake.

This species differs from *E. striatus* Yshm. by having antennal segments 4 to 6 subequal in length and the malar space $1/2$ the height of the eye.

Genus *Odonteucoila* Ashmead

Odonteucoila Ashm., 1903, Proc. Ent. Soc. Wash. **5**: 222.—Weld, 1921, Proc. U.S. Nat. Mus. **59**: 441.—Masner, 1960, Casopis Cesk. Spol. Ent. **57** (4): 348.—Yoshimoto, 1962, Ins. Micronesia (Bishop Mus.) **19** (3): 92.

Odonteucoila floccosa Yoshimoto

Odonteucoila floccosa Yshm., 1962, Ins. Micronesia (Bishop Mus.) **19**(3): 92.

DISTRIBUTION: Eastern Caroline Is. (Ponape), Amami-Oshima.

SPECIMEN EXAMINED: ♀, Yuwan-dake, 550 m, Amami Oshima I., 31.VII.1963, Gressitt.

Odonteucoila amamiensis Yoshimoto & Yasumatsu, n. sp. Fig. 1.

♀. Body length 1.3 mm; fore wing 1.3 mm long. Brownish yellow. Eyes small, sub-spherical, ratio of 1.5: 1.0 to malar space. Front view of head as in fig 1. Antennal segment 1 obconical, $2\times$ as long as broad; segment 2 subcylindrical, as long as broad, shorter than 1, segment 3 slender, longer than 4; 4-7 subequal in length, and subcylindrical; 8-13 ovate to subcylindrical, subequal in length except apical segment longer. Pronotal plate semi-spherical, $1.5\times$ as broad as deep, its surface slightly convex. Scutellar disc slightly narrower than width of cup, surface punctate-rugose, posteriorly tapering to a point. Scutellar cup ovate, surface convex, with minute punctations on lateral margin and edges slanted upward and a rounded pit at posterior end. Radial cell like *Pseudeucoila*, closed; cilia on lateral and posterior margin of fore wing long. Lateral bar smooth. Abdomen $1.4\times$ as long as broad. Dense woolly hairs on anterolateral part of pronotum, propodeum and base of tergite 2.

DISTRIBUTION: Tokunoshima, Okinoerabu Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6125), Mikyo, 130 m, Tokunoshima, 24.VII.1963, Yoshimoto. Paratype ♀, Oyama, 245 m, Okinoerabu I., 28-30.VII.1963, Yoshimoto.

Odonteucoila amamiensis is separated from *O. floccosa* Yshm. by the semi-spherical pronotal plate and the malar space which is $1/2$ the height of the eye.

Genus *Leptolamina* Yoshimoto

Leptolamina Yshm., 1962, Ins. Micronesia (Bishop Mus.) 19 (3): 93 (type: *Leptolamina ponapensis* Yshm.; orig. design.).

***Leptolamina gressitti* Yoshimoto & Yasumatsu, n. sp.**

♀. Body length 2.0–2.25 mm; forewing 2.5 mm.

Ferruginous to fuscous. Head entirely black except for area of clypeus and gena; antennal segments 1–8 brownish; sometimes abdomen and legs pale brown. Malar space 1/2 height of eye. Antennal club 5-segmented, ellipsoidal except apical segment ovate and without much differentiation in width between adjacent segments; segment 1, 1.3× as long as broad, longer than 2; segment 2, 1.5× as long as broad, narrower than 1; 3 shorter than 4; 4–5 subequal in length, 1.5× longer than 3; 6–7 subequal in length, slightly shorter than 5; 8–13 subequal in length with 3; apical segment acuminate at apex. Anterior margin of fore wing ciliate, short, becoming gradually longer toward apical and hind margins. Radial cell 2.5× as long as deep. Pronotal plate subrectangular, 2.5× as long as deep, median dorsal margin deeply emarginate. Scutellar disc rectangular; lateral margin with tall thin carina; surface shiny with minute reticulation; lateral bar striate. Scutellar cup thin and long, single hair near posterior pit. Head and thorax covered with distinct minute reticulation. Propodeum, mesosternite, and base of abdomen thickly covered with woolly hair. Abdomen 1.5× as long as broad, smooth and polished.

♂. Body length 1.25 mm; fore wing 1.5 mm. Similar to ♀ except as follows: Antenna 15-segmented and elongate-filiform; segments gradually becoming thinner in size toward apical segment; segment 3, 2× as long as 4. Abdomen as long as broad.

DISTRIBUTION: Yaeyama and Kyushu.

SPECIMENS EXAMINED: Holotype ♀ (Kyushu Univ.), Iriomote I., Ushiku-mori, 382 m, 9. III.1964, Y. Miyatake. Allotype ♂, Iriomote I., Ushiku-mori, 350 m, 7. XI.1963, Malaise trap, Samuelson. Paratypes: ♀, Okinoshima, Kyushu, 12. VI.1955, Hirashima & Hidaka; ♂, Ishigaki-Nagura, Yaeyama, 24. XI.1960, Yasumatsu.

This species can be distinguished from *Leptolamina ponapensis* and *L. papuensis* by the minute reticulation on the head and thorax and the large radial cell.

Genus *Hexacola* Foerster

Hexacola Foerster, 1868, Verh. Zool.-Bot. Ges. Wien 19: 342.—Weld, 1952, Cynipoidea (Hym.) 1905–1950: 209.—Yoshimoto, 1963, Pacific Ins. 5 (2): 436.

In Weld's key to genera, this homogeneous group of 5 new species reached the genus *Hexacola*. In general this group resembles *Hexacola* ss. except for two species where the scutellar discs are punctate instead of striate. Because of several intermediate forms among the examined specimens, we have placed them tentatively with this group until a better understanding of the higher classification of this subfamily can be attained.

KEY TO RYUKYU SPECIES OF HEXACOLA

1. Anterior margin of cilia of fore wing long (1.0–1.5); ratio of radial cell 2.0 : 1.25

- **samuelsoni**
- Anterior margin of cilia of fore wing short (0.5-0.25); ratio of radial cell 3.0 : 1.8-4.0 : 2.0..... 2
- 2. ♂ antennal club 5 or 6-segmented..... 3
- ♀ antennal club 7 or 8-segmented..... 4
- 3. Ratio of radial cell 3.0 : 1.5-3.5 : 1.8; antennal club 6-segmented..... **cognata**
- Ratio of radial cell 3.75 : 1.5-4.0 : 2.0; ♀ antennal club 5-segmented..... **quinaria**
- 4. Antennal club 7-segmented..... **antennata**
- Antennal club 8-segmented..... **octosegmenta**

Hexacola samuelsoni Yoshimoto & Yasumatsu, n. sp. Fig. 2.

♀. Body length 0.75 mm; fore wing 0.75 mm long.

Ferruginous to fuscous. Antennal segments 1-4 pale brown, other segments darker, legs

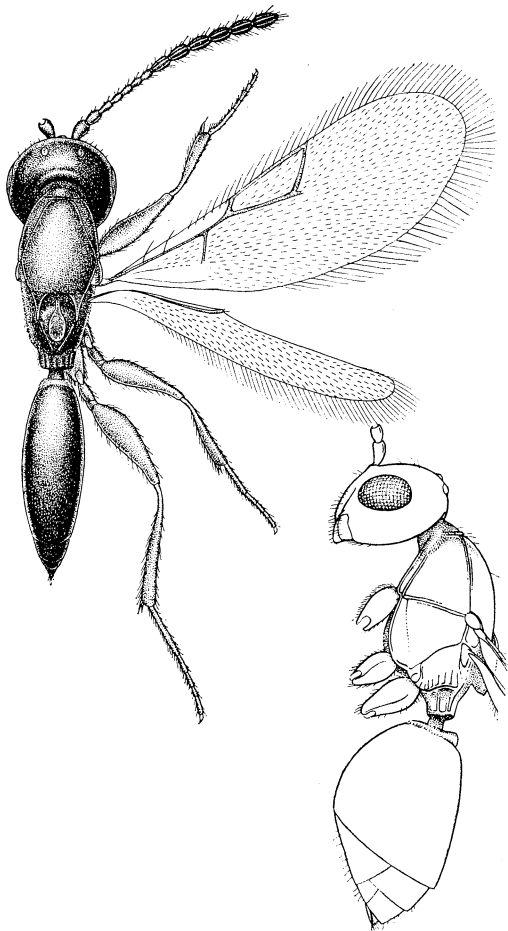


Fig. 1. *Odonteucoila amamiensis* n. sp., ♀.

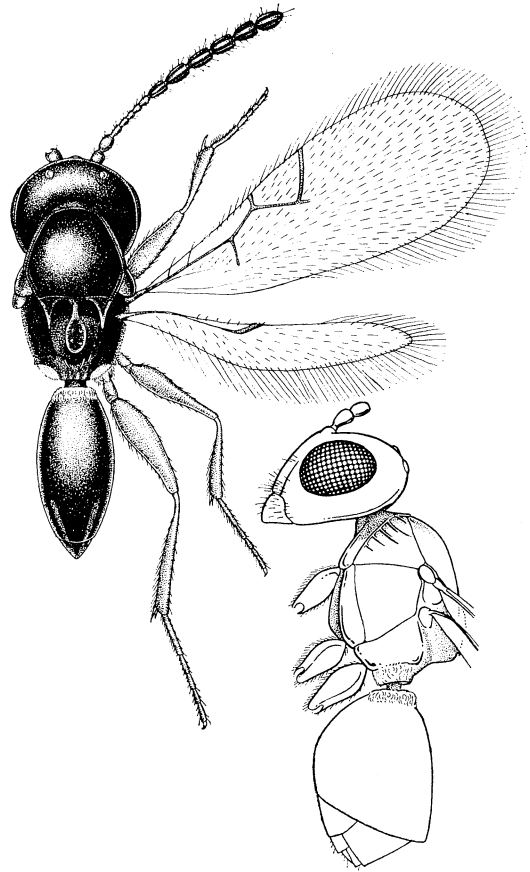


Fig. 2. *Hexacola samuelsoni* n. sp., ♀.

pale brown. Front view of head as in fig 2; malar space $1/3$ height of eye. Antennal club 5-segmented, ovate, gradually increasing in size toward apical segment; apical segment ellipsoidal, nearly $2\times$ as long as segment 12; segment 1, $2\times$ as long as broad, subequal in length to 2; segment 2 broader than 1; 3 elongate, nearly $2\times$ longer than 4; 4-5 subequal in length, shorter than 6; 6-7, subequal in length, slightly wider than 5. Wings hyaline, sparsely ciliate; margin of fore wing with long and widely spaced cilia, hind margin nearly $2\times$ longer than anterior marginal cilia. Radial cell open, $1.8\times$ as long as deep; radius 1 thin, radius 2 twice as thick as former. Pronotal plate subovate, $3\times$ as broad as deep, dorsal margin entire. Scutellar disc narrow, flat, smooth with trace of striation. Scutellar cup narrow, elevated, surface slightly concave as seen in profile, posterior end with a deep rounded pit. Abdomen $1.5\times$ as long as broad. White woolly hairs on lateral part of propodeum and base of tergite 2.

♂. Body length 0.7 mm; fore wing 0.7 mm long. Similar to ♀ except as follows: antenna 15-segmented and filiform; segment 3 curved, depressed evenly toward apex, longer than 4.

DISTRIBUTION: Amami and Yaeyama Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6127), Ushiku-mori, 350 m, Iriomote I., 7. XI.1963, Malaise trap, Samuelson. Allotype ♂, same data as holotype. Paratypes: 9♀♀, 3♂♂, Ushiku-mori, 350 m, Iriomote I., 7. XI.1963, Malaise trap, Samuelson; ♀, Hateruma-mori, Iriomote I., 5. X.1963, Miyamoto; 3♀♀, (Mt) Omoto-dake, 200 m, Ishigaki I., 20. XI. 1963, Malaise trap, Samuelson; ♀, ♂, Mikyo, 130 m, Tokunoshima, 24. VII. 1963, Malaise trap, Yoshimoto.

Hexacola quinnaria Yoshimoto & Yasumatsu, n. sp. Fig. 3.

♀. Body length 1.2 mm; fore wing 1.4 mm long.

Ferruginous to fuscous. Antennal segments 1-8 brownish, others darker brown, legs pale brown. Front view of head as in fig 3; malar space $1/3$ height of eye. Antenna similar to *H. samuelsoni*. Wings hyaline, sparsely ciliate; anterior and posterior margins of fore wing with short cilia; radial cell open, $2\times$ as long as deep; radius 1 and 2 nearly equal in thickness. Pronotal plate semi-ovate, $3\times$ as long as deep, dorsal margin entire. Scutellar disc steeply sloping at its sides, striate anteriorly and punctate-rugose at posterior end. Scutellar cup ovate, elevated, surface polished and slightly concave as seen in profile, anterolateral margin with 2 pairs of hairs and edge with narrow testaceous rim, posterior end with a deep rounded pit slightly facing backward. Abdomen $1.5\times$ as long as broad. Sparse whitish hairs on lateral portion of propodeum and base of tergite 2.

♂. Body length 1.0 mm; fore wing 1.2 mm long. Similar to ♀ except as follows: antenna 15-segmented and filiform; segment 3 slightly longer than 4, slightly curved and depressed along its longitudinal plane.

DISTRIBUTION: Amami and Yaeyama Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6128), Mikyo, 130 m, Tokunoshima, 24. VII. 1963, Yoshimoto. Allotype ♂, Ushiku-mori, 350 m, Iriomote I., 7. XI. 1963, Malaise trap, Samuelson. Paratypes: ♀, 2♂♂, Mikyo, 130 m, Tokunoshima, 24. VII. 1963, Malaise trap, Yoshimoto; ♀, Oyama, Okinoerabu I., 254 m, 28-30. VII. 1963, Yoshimoto; 2♂♂, Ushiku-mori, Iriomote I., 350 m, 7. XI. 1963, Malaise trap, Samuelson; ♂, Banna-dake, Ishigakijima,

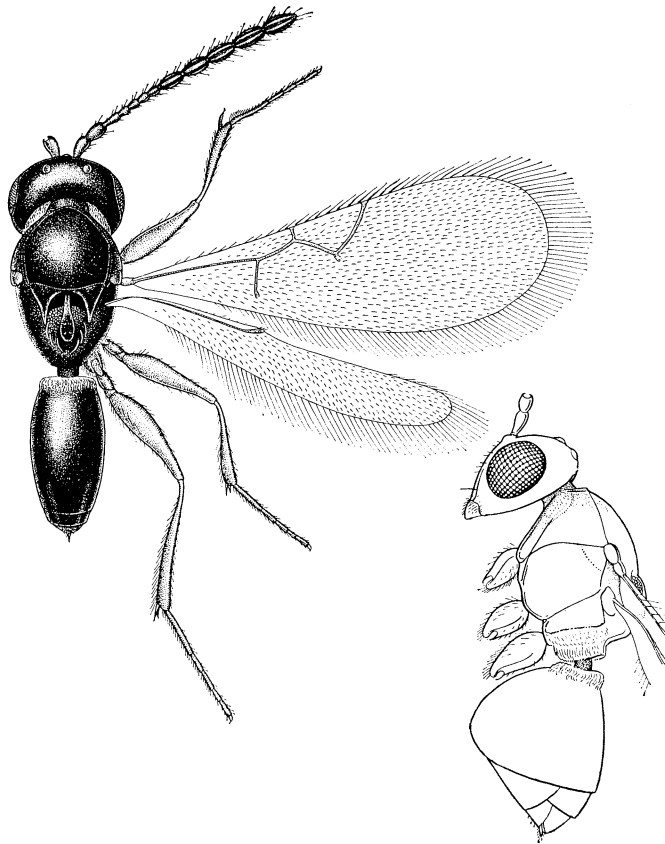


Fig. 3. *Hexacola quinaria* n. sp., ♀.

26.VII.1958, Hidaka.

Hexacola cognata Yoshimoto & Yasumatsu, n. sp. Fig. 4.

♀. Body length 1.0-1.2 mm; fore wing 1.0-1.5 mm long.

Ferrugineous. Head and venter of abdomen fuscous; antennal segments 1-7 brownish, club dark brown, legs pale brown. Front view of head as in fig 4; malar space $\frac{1}{3}$ height of eye. Antennal club 6-segmented, ovate to elongate-ovate except apical segment ellipsoidal; segment 1, $1.5\times$ as long as broad; segment 2 subcylindrical, shorter than 1; 3 longer than 4; 4-6 subequal in length and width; 7 slightly longer and thicker than 6. Fore wing similar to *H. samuelsoni* except anterior and posterior margins with shorter cilia; radial cell open, $2\times$ as long as deep. Pronotal plate $2\times$ as broad as deep, subrectangular, dorsal margin entire. Scutellar disc punctate to punctate-rugose. Scutellar cup ovate, elevated, $1.5\times$ as long as broad, anterior foveae shallow and smooth; antero-lateral margin with 2 hairs, posterior end with a pit facing slightly backward. Whitish woolly hairs on lateral portion of propodeum and base of tergite 2.

♂. Body length 1 mm; fore wing 1.2 mm long. Similar to ♀ except as follows: antenna 15-segmented; segment 1, 1.5× as long as broad; 2 nearly cylindrical, as long as broad; segment 3 slightly depressed along inner side, somewhat more slender than other segments; remainder of segments subequal in length.

DISTRIBUTION: Amami, Okinawa, and Yaeyama Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6129), Ushiku-mori, Iriomote I., 350 m, 7. XI.1963, G.A. Samuelson. Allotype ♂, same data as holotype. Paratypes: ♀, Ushiku-mori, 350 m, Iriomote I., 7.XI.1963, Malaise trap, Samuelson; ♂, Shirahama, Iriomote I., 4.X.1963, Hirashima; ♀, Ohama, Ishigaki-jima, 23.VII.1958, Hidaka; ♂, Yona, Okinawa, 16.VIII.1958, Hidaka; ♀, Ohara, Iriomote I., 27-31.VII.1962, Chûjô; 2♀♀, ♂, (Mt) Yuwandake, Amami-Oshima I., 10-300 m, 29. VII. 1963, Hirashima; 2♀♀, 2♂♂, Mikyo, Tokunoshima, 130-200 m, 27.VII.1963, Malaise trap, Gressitt & Yoshimoto.

This species is closely related to *H. samuelsoni* but differs by having the radial cell

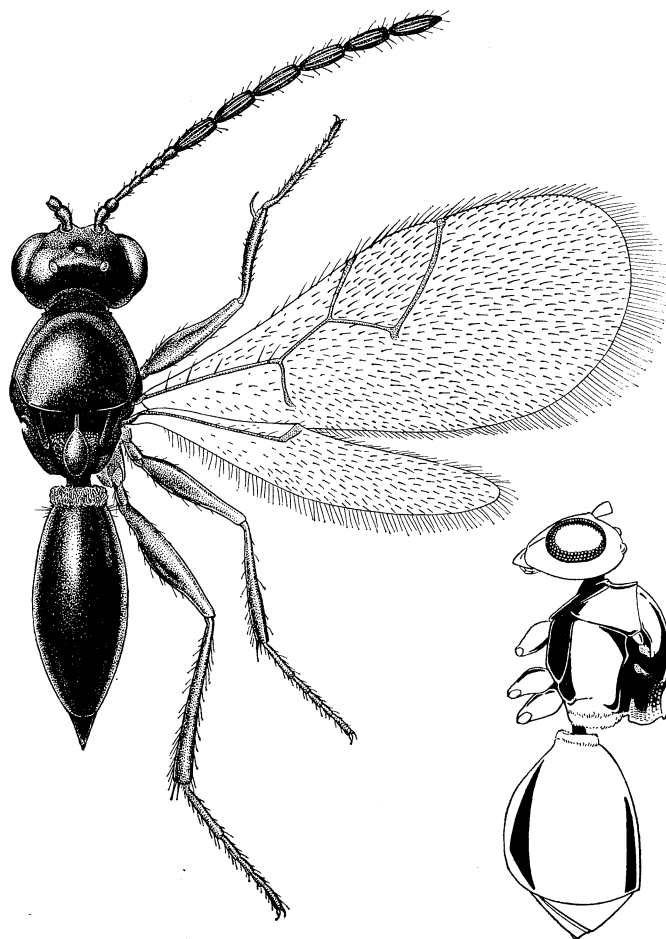


Fig. 4. *Hexacola cognata* n. sp., ♀.

slightly larger, radius 2 not remarkably thickened, marginal cilia shorter, and scutellar disc punctate to punctate-rugose.

Hexacola antennata Yoshimoto & Yasumatsu, n. sp.

♀. Body length 1.2–1.4 mm; fore wing 1.4 mm long.

Ferruginous. Head and ventral part of abdomen black, antenna brownish, legs pale brown. Malar space $1/3$ height of eye. Antennal club 7-segmented; segment 3 slightly longer than 4; 4–7 subequal in length; 5–6 thickened gradually toward apex; 7–12 ovate, as long as broad, and deeply striate; 13 slightly longer than 12, acuminate at apex. Wings densely ciliate; anterior and posterior margins of fore wing with short cilia; radial cell entirely open, $2.6\times$ as long as deep. Scutellar cup $1.5\times$ as long as broad, surface polished, posterior $1/2$ – $1/3$ of surface slightly curved backward as seen in profile, 2 hairs on antero-lateral margin, and posterior $1/4$ with a large deep pit. Lateral part of propodeum and base of tergite 2 with sparse short hairs.

♂. Unknown.

DISTRIBUTION: Yaeyama and Ryukyu Is.

SPECIMENS EXAMINED: Holotype ♀ (Kyushu Univ.), Kawara, Ishigaki I., 30.X.1963, Hirashima. Paratypes: ♀, Sonai-Shirahama, Iriomote I., 5.XI.1963, Samuelson; ♀, Ushikumori, Iriomote I., 7. XI. 1963, Samuelson; 2♀♀, Fall Kampire, Iriomote I., 25. VIII. 1962, Chûjô; ♀, Mt Komi, Iriomote I., 26. VIII. 1962, Chûjô; ♀, Yona-Hedo, Okinawa, 14. XI. 1960, Yasumatsu.

It would be difficult to distinguish the future specimen of ♂ *H. antennata* with that of ♂ *H. cognata* unless they can be associated with their females or dealt with their host-parasite relationship.

Hexacola octosegmenta Yoshimoto & Yasumatsu, n. sp.

♂. Body length 1.5 mm; fore wing 1.5 mm long.

Fuscous. Antennal segments 1–4 brownish, other segments darker brown, legs pale brown. Antennal club 8-segmented; segment 1 obconical, $1.5\times$ as long as broad, longer than 2; segment 2 cylindrical, as long as broad; segment 3 longer than 4; segments 4–5 subequal in length; club segments subequal in size except terminal segment longer. Pronotal plate like *H. cognata*. Scutellar disc slanted downward toward margin, smooth in anterior part and only in posterior end punctate-rugose. Scutellar cup narrow, ellipsoidal, $1.5\times$ as long as broad, surface convex in profile, yellowish rim at edge and posterior $1/3$ with a large pit. Dense thick whitish hairs on lateral part of propodeum and base of tergite 2. Abdomen $1.6\times$ as long as broad.

♂. Unknown.

DISTRIBUTION: Amami and Yaeyama Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6131), Mikyo, 130 m, Tokunoshima, 24. VII. 1963, Yoshimoto. Paratypes ♀, (Mt) Omoto-dake, Ishigaki I., 14.X.1963, Morimoto; ♀, Kawara, Ishigaki I., 30.X.1963, Hirashima.

Genus **Rhoptromeris** Foerster

Rhoptromeris Foerster, 1896, Verh. Zool.-Bot. Ges. Wien **19**: 344, 356 (type: *Cothonaspis*

eucera Hartig; design. by Weld, 1952).

Rhoptromeris ryukyuensis Yoshimoto & Yasumatsu, n. sp.

♀. Body length 0.7–0.9 mm; fore wing 1.0 mm long.

Ferrugineous. Head, venter and apex of abdomen fuscous. Antennal segments 1–6 and legs yellowish brown, club dark brown. Malar space $1/3$ height of eye. Antenna 7-segmented and ellipsoidal; segments 1–2 subequal in length, shorter than 3; segments 3–4 elongate, subequal in length; segment 5 equal in length and width but shorter than 4; segment 5 subequal in length with 4. Fore wing sparsely ciliate; hind margin nearly $2\times$ its length of anterior marginal cilia; radial cell $3.2\times$ as long as deep. Pronotal plate semi-ovate, $1.5\times$ as long as deep, dorsal margin entire. Anterior scutellar disc smooth, hind part of cup with a few punctations with radiating ridges. Scutellar cup narrow, ovate, not highly elevated, rim yellow, posterior $1/3$ with a large rounded pit, abdomen $1.5\times$ as long as broad. Sparse whitish hairs on lower portion of propodeum and base of tergite 2.

♂. Body length 0.8 mm; fore wing 1.0 mm long. Similar to ♀ except as follows: antenna 15-segmented and filiform; segments 3 and 4 subequal in length, slightly curved and emarginate at inner side. Segments 1–4 pale brown, other antennal segments dark brown.

DISTRIBUTION: Yaeyama Is.

SPECIMEN EXAMINED: Holotype ♀ (BISHOP 6132), Ushiku-mori, 350 m, Iriomote I., Malaise trap, Samuelson. Allotype ♂, Ushiku-mori, 350 m, Iriomote I., Malaise trap, Samuelson. Paratypes: 3♀♀, 3♂♂, same data as holotype and allotype; ♀, ♂, (Mt) Omoto-dake, Ishigaki I., 20.XI.1963, Malaise trap, Samuelson; ♂, Shirahama, Iriomote I., 4.VII.1963, Miyatake.

Genus **Pseudeucoila** Ashmead

Pseudeucoila Ash., 1903, Proc. Ent. Soc. Wash. 5: 222.—Weld, 1952, Cynipoidea 1905–1950: 234.—Yoshimoto, 1962, Pacific Ins. 4 (4): 827–38; 1963, *Ibid.* 5 (2): 439.

Subgenus **Hexamerocera** Kieffer

Pseudeucoila (Hexamerocera) parallela Yoshimoto & Yasumatsu, n. sp. Fig. 5.

♀. Body length 1.4–1.6 mm; fore wing 1.6 mm long.

Ferrugineous to fuscous. Antenna brownish to fuscous, pale brown. Front view of head as in fig 5; malar space $1/3$ height of eye. Antennal club 6-segmented, each segment $2\times$ as long as broad, ellipsoidal, except apical segment slightly longer and acuminate at apex. Segment 1 obconical, stout, as long as broad; 2–7 subcylindrical, subequal in length to segment 1, but shorter than 3; segment 3 slender, longer than 4; 4 slightly longer than 5; 5–7 subequal in length. Scutellar cup ovate, $1.7\times$ as long as broad, rim of cup testaceous, large pit covering $1/3$ its posterior end. Fore wing densely ciliate; radial cell longer than deep, marginal cilia short. Abdomen as long as broad, sparse long whitish hairs on lateral part of propodeum and at base of tergite 2.

♂. Body length 1.4 mm; fore wing 1.4 mm long. Similar to ♀ except as follows: antenna 15-segmented; segment 2 slightly emarginate at inner side; segments 4–15 ellipsoidal,

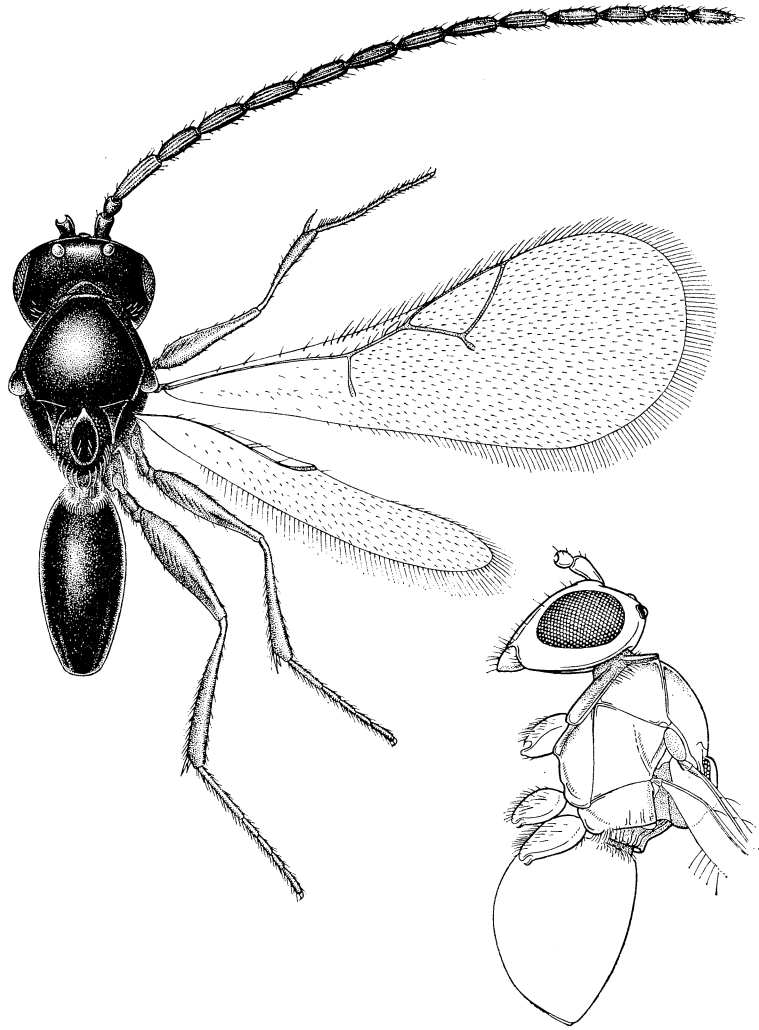


Fig. 5. *Pseudeucoila* (*Hexamerocera*) *parallela* n. sp., ♀.

2× as long as thick.

DISTRIBUTION: Amami, Okinawa, Yaeyama Is., and Shikoku I., Japan.

SPECIMENS EXAMINED: Holotype ♀ (KYUSHU UNIV.), Chinen, Okinawa, 6.XI.1959, Yasumatsu. Allotype ♂ (BISHOP), Mikyo, 130 m, Tokunoshima, 24.VII.1963, Yoshimoto. Paratypes: ♂, Mikyo, 130 m, Tokunoshima, 24.VII.1963, Yoshimoto; 2♂♂, Itajiki River, Iriomote I., 9.VII.1963, Miyatake; ♂, Ishigaki I., 200 m, (Mt) Omoto-dake, 20.XI.1963, Samuelson.

Subgenus *Pseudeucoila* Ashmead

KEY TO RYUKYU SPECIES OF PSEUDEUCOILA (PSEUDEUCOILA)

1. Scutellar cup ellipsoidal and convex, nearly or entirely covering scutellar disc...**elliptica**
Scutellar cup ovate or elongate-ovate; if ellipsoidal then small, lateral areas of scutellar disc greatly exposed 2
2. Surface of scutellar cup undulate, posterior 1/2 curved upward.....**rugipunctata**
Surface of scutellar cup not as above 3
3. Occipital area of head striate **okinawaensis**
Occipital area smooth..... 4
4. Anterior 1/2 to 2/3 of scutellar disc smooth or slightly striate **laticauca**
Anterior scutellar disc minutely punctate 5
5. Ratio of radial cell 4.0-4.5 : 2.0; cilia of anterior margin of fore wing sparse and long (1.0).....**vulgaris**
Ratio of radial cell 3.75 : 1.5; cilia of anterior margin of fore wing dense and short (0.5) **shirozui**

Pseudeucoila (*Pseudeucoila*) *rugipunctata* Yoshimoto

P. (Pseudeucoila) rugipunctata Yshm., 1962a, Ins. Micronesia (Bishop Mus.) **19** (3): 98;

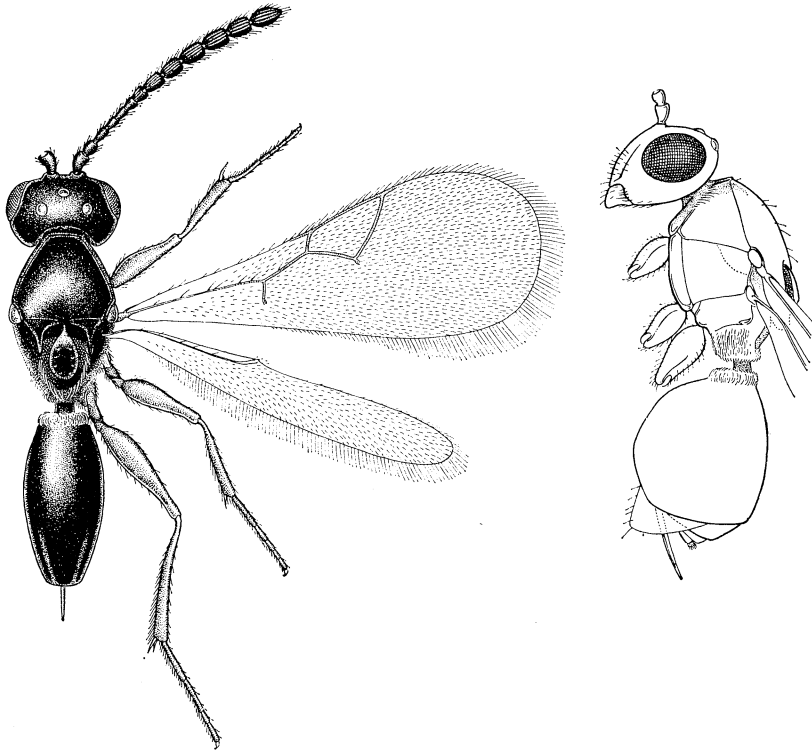


Fig. 6. *Pseudeucoila (Pseudeucoila) vulgaris* Yshm., ♀.

1962, Pacific Ins. 4(4): 831; 1963, *Ibid.* 5(2): 441.

DISTRIBUTION: S. Mariana, N. Mariana, Samoa, Hawaii, Yaeyama, Okinawa, Amami Is., Tsukushima I., Japan.

SPECIMENS EXAMINED: AMAMI IS.: ♀, ♂, (Mt) Yuwan-dake, Amami-Oshima, 550 m, 30. VII. 1963, Gressitt; ♀, ♂, (Mt) Yuwan-dake, 10-300 m, 29. VII. 1963, Hirashima; ♂, Mikyo, 130 m, Tokunoshima, 24. VII. 1963, Yoshimoto; ♀, Oyama, 254 m, Okinoerabu I., 28-30. VII. 1963, Yoshimoto. YAEYAMA IS.: ♀, Ishigaki I., 1-5. XII. 1952, Bohart; ♀, ♂, Iriomoto I., Omoto-dake, 100-500 m, 16. III. 1964, Miyatake. OKINAWA: 3♂♂, Yona, 19. X. 1963, Miyamoto; 2♀♀, Yona-Hedo 14. XI. 1960, Yasumatsu.

***Pseudeucoila (Pseudeucoila) laticauca* Yoshimoto**

P. (Pseudeucoila) laticauca Yshm., 1962, Ins. Micronesia (Bishop Mus.) 19 (3): 101; 1963,

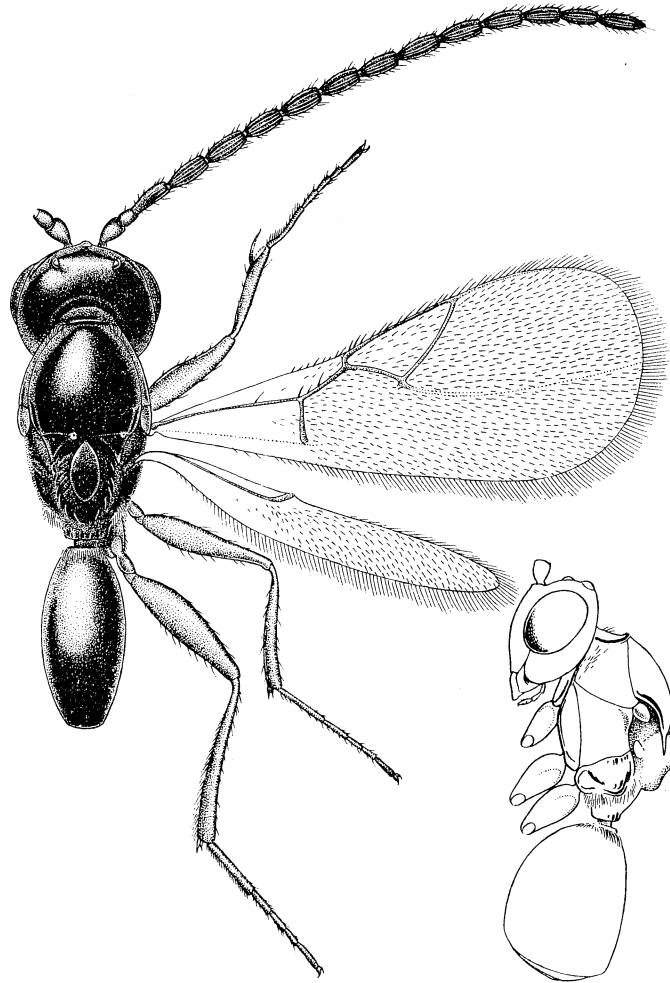


Fig. 7. *Pseudeucoila (Pseudeucoila) vulgaris* Yshm., ♂.

Pacific Ins. 5 (2): 440.

DISTRIBUTION: S. Mariana Is., Samoa, Fiji, Yaeyama Is.

SPECIMEN EXAMINED: YAEYAMA: ♀, Shirahama, Iriomote I., 4.X.1963, Hirashima.

Pseudeucoila (Pseudeucoila) vulgaris Yoshimoto Figs. 6 & 7.

P. (Pseudeucoila) vulgaris Yshm., 1962a, Ins. Micronesia (Bishop Mus.) 19 (3): 103; 1962b, Pacific Ins. 4(4): 29; 1963, *Ibid.* 5(2): 441.

DISTRIBUTION: S. Mariana, N. Mariana, Samoa, Hawaii, Yaeyama, Amami Is. and Kyushu, Japan.

SPECIMENS EXAMINED: AMAMI: ♀, ♂, (Mt) Yuwan-dake, 10-300 m, Amami-Oshima I., 29.VII.1963, Gressitt; ♀, Mikyo, 130 m, Tokunoshima, 24.VII.1963, Yoshimoto. YAEYAMA: ♀, ♂, Ushiku-mori, Iriomote I., 2.VII.1963, 9.II.1964, Miyatake; 19♂♂, Ushiku-mori, 350 m, Iriomote I., 7.XI.1963, Malaise trap, Samuelson; ♀, ♂, Shirahama, Iriomote I., 4.X.1963, Malaise trap, Hirashima; ♀, Ohara-kami, Iriomote I., 14.VII.1963, Miyatake; ♀, 3♂♂, Kawara, Ishigaki I., 30.X.1963, Hirashima. OKINAWA: 3♀♀, Yona, 19.X.1963, Miyamoto, 27.XI.1963, Samuelson; ♀, Ishigaki I., 25-30.XI.1952, Bohart.

Pseudeucoila (Pseudeucoila) elliptica Yoshimoto Fig. 8.

P. (Pseudeucoila) elliptica Yshm., 1963, Pacific Ins. 5 (2): 441.

DISTRIBUTION: Fiji, Amami Is., and Kyushu, Japan.

SPECIMENS EXAMINED: ♀, (Mt) Yuwan-dake, 10-300 m, Amami-Oshima I., 31.VII.1963, Gressitt; ♂, Nakaragawa, Iriomote I., 12.III.1964, 0-220 m, Yoshimoto.

Pseudeucoila (Pseudeucoila) okinawaensis Yoshimoto & Yasumatsu, n. sp.

♀. Body length 1.6 mm; fore wing 1.6 mm long.

Ferruginous to fuscous. Head blackish, antenna dark brown, legs yellowish brown. Malar space 1/3 height of eye; occipital area with striation. Antennal club 8-segmented; segment 1, 1.5× as long as broad; segment 2 cylindrical, as long as broad, shorter than 1; segment 3 elongate, longer than 4; segments 4-6 elongate, subequal in length; segments 7-13 gradually thickened toward apical segment; apical segment acuminate. Fore wing densely ciliate; anterior marginal cilia shorter than lateral and posterior marginals; radial cell closed, 2.4× as long as deep, radius 2 slightly thicker than radius 1 and marginalis. Pronotal plate 2.7× as broad as deep, semi-ovate middorsal margin slightly emarginate. Posterior margin of metapleuron with row of long whitish hairs. Scutellar disc punctate-rugose. Scutellar cup, elevated, ovate, 2.5× as long as broad, anterolateral margin with 3 hairs, posterior 1/3 with a large rounded pit slightly angled backward. Abdomen 1.4× as long as broad. Whitish wooly hairs on lateral part of propodeum and base of tergite 2. A single longitudinal row of tall white hairs on mid and hind coxae.

♂. Body length 1.5 mm; fore wing 1.6 mm long.

Similar to ♀ except as follows; antenna 15-segmented, filiform; segment 1 as long as broad; segment 3 curved, deeply depressed along inner side, 1/3 longer than 4.

DISTRIBUTION: Yaeyama and Okinawa Is.

SPECIMENS EXAMINED: Holotype ♀ (BISHOP 6133), Ushiku-mori, Iriomote I., 7.XI.1963,

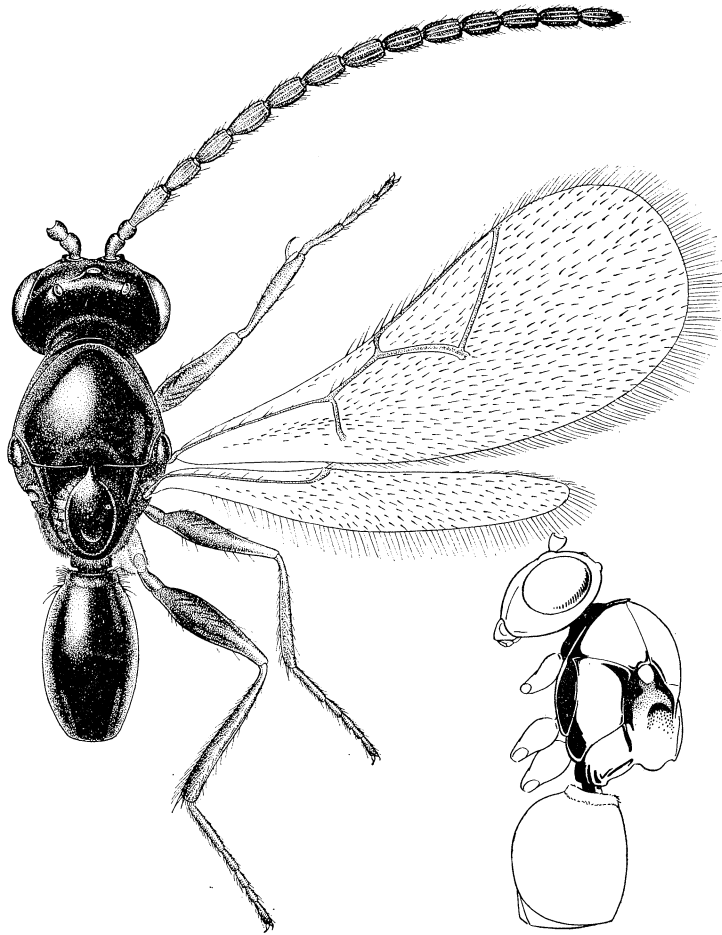


Fig. 8. *Pseudeucoila (Pseudeucoila) elliptica* Yshm., ♀.

Malaise trap, Samuelson. Allotype ♀, Yona-Hedo, Okinawa, 14.XI.1960, Yasumatsu. Paratypes ♀, Shirahama, Iriomote I., 6.III.1964, Miyatake; ♀, Ushiku-mori, Iriomote I., 9.XI.1964, Miyatake; ♂, Ushiku-mori, Iriomote I., 7.XI.1963, Samuelson.

This species can be easily separated from other species of Ryukyu *Pseudeucoila* by the presence of the striation on the occipital area.

***Pseudeucoila (Pseudeucoila) shirozui* Yoshimoto & Yasumatsu, n. sp.**

♀. Body length 1.8-2.0 mm; fore wing 1.8-2.0 mm long.

Ferruginous to fuscous. Antenna and legs pale brown, dorsum and apex of abdomen darker. Malar space $\frac{1}{3}$ height of eye. Antennal club 7-segmented and striated; segment 1 obconical, as long as broad, segment 2 subcylindrical, as long as broad, shorter than 1; segments 3-6 elongate, subequal in length; segments 7-12 ellipsoidal, subequal in length; apical segment longer than 12, acuminate at apex. Wings densely ciliate; radial cell 2.4

× as wide as deep, marginalis weakly developed beyond 1/2 its length, radius 1 and 2 well developed. Pronotal plate 2.5× as broad as deep, subrectangular, slightly emarginate on dorsal margin. Scutellar disc punctate. Scutellar cup large, ovate, 1.5× as long as broad, surface more or less flattened and polished, anterolateral margin with 4 pairs of hairs and posterior 1/3 with semi-circular, shallow pit. Abdomen 1.4× as long as wide. Few long white hairs on posterior margin of metapleuron; dense short hairs on lateral part of propodeum and base of tergite 2.

♂. Unknown.

DISTRIBUTION: Okinawa, Amami Is.

SPECIMENS EXAMINED: Holotype ♀ (Kyushu Univ.), Shuri, Okinawa I., 4.III.1964, Shirô-zu. Paratype ♀, (Mt) Yuwan-dake, 550 m, Amami-Oshima, 30.VII.1963, Gressitt.

Pseudeucoila shirozui is allied to *P. vulgaris* Yshm., but differs in having a dense short

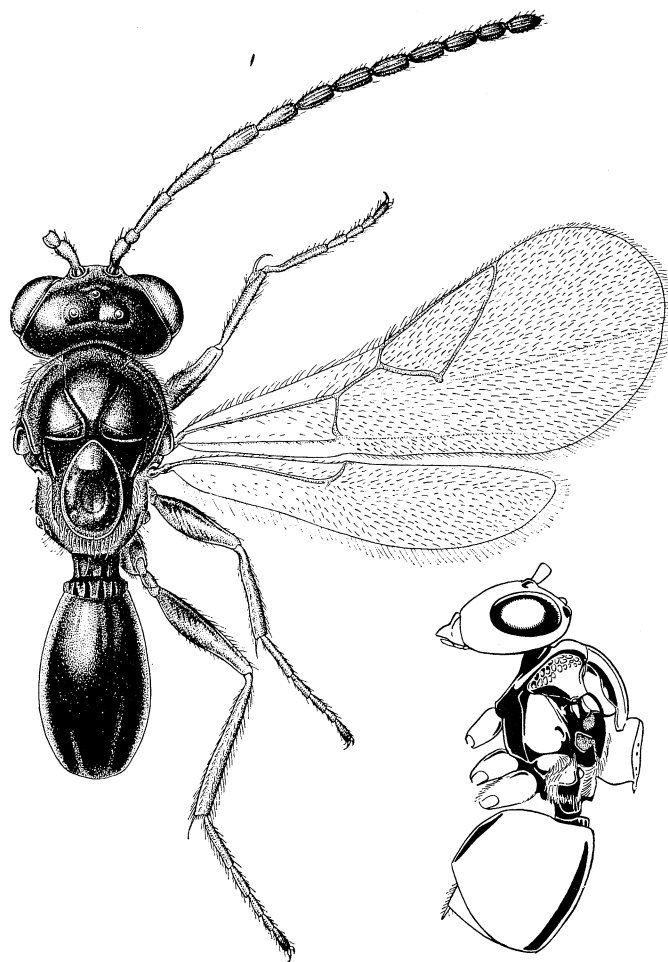


Fig. 9. *Eucoilidea guamensis* Yshm., ♀.

cilia of the fore wing and a large, somewhat flattened scutellar cup with a shallow semi-circular pit posteriorly covering nearly 1/3 of its cup.

Genus **Eucoilidea** Ashmead

Eucoilidea Ashmead, 1887, Trans. Amer. Ent. Soc. **14**: 157.—Weld, 1952, Cynipoidea 1905-1950: 248.—Yoshimoto, 1962, Ins. Micronesia (Bishop Mus.) **19** (3): 107.

Eucoilidea guamensis Yoshimoto Fig. 9.

Eucoilidea guamensis Yshm., 1962, Ins. Micronesia (Bishop Mus.) **19** (3): 107.

DISTRIBUTION: Mariana (Guam), Yaeyama, Okinawa Is., and Japan.

SPECIMENS EXAMINED: 2♀♀, Yona, Okinawa I., 18.X.1963, 19.X.1963, Hirashima, Miyamoto; ♂, Kudeken, Okinawa I., 28. III. 1964, Yoshimoto; ♂, Ishigaki I., 25-30. XI. 1952, Bohart.

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