

NOTES ON EUMENIDAE, VESPIDAE, SCOLIIDAE, SPHECIDAE,
EUCHALIDAE, CALCHIDIDAE AND ICHNEUMONIDAE
OF THE PALAU ISLANDS
(INSECTA, HYMENOPTERA)

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Introduction

The present article is based on material collected by the first author in the Republic of Palau when he joined the Scientific Expedition of Kagoshima University Research Center for the South Pacific in 1995 and preserved material of the Palauan Ichneumonidae in the collection of the Palau National Museum. The fauna of Micronesian Vespoidea has been studied by BEQUAERT and YASUMATSU (1939) and KROMBEIN (1949). During the expedition, 3 eumenid, 1 vespid, 1 scoliid and 8 sphecid species were collected. The fauna of Micronesian Eucharidae has been studied by WATANABE (1958). So far 6 species are recorded from Palau Is. During the expedition, only one species was collected.

In so far as we are aware, no species of the family Calchididae has hitherto been recorded from Palau Is. In the course of present investigation we found 3 species in Palau Is., all of which are new to Micronesia. The male of *Hockerria amamioshimensis* HABU was previously unknown. On the basis of the present specimens a description of the male is given.

The ichneumonid fauna of Micronesia has been studied by TOWNES (1958). So far 15 species belonging to 7 subfamilies are recorded from Palau Is. This present paper lists 7 species, of which one is new to Palau Is. Information on the host association of the Palauan Ichneumonidae is scanty and so far as we are aware, *Xanthopimpla flavolineata* CAMERON from India, Taiwan and China, *Trathala flavoorbitalis* (CAMERON) from India, Guam, Hawaii, China and Japan, and *Diatraea lissonota* (VIERECK) from India, Taiwan, Guam and China are the only three species, of which the host is known (after GURTA, 1987). *Echtoromorpha agrestoria semperi* KRIEGER has been recorded as a parasite of *Pericyma cruegeri* and *Heliothis zea* for the first time.

Enumeration

Eumenidae

1. *Delta esuriense* (FABRICIUS, 1787)

Specimens examined: 3 ♂2 ♀, 24-29. x. 1995, Malakal Is., K. KUSIGEMATI leg.

Distribution. Widely distributed in Oriental region including Micronesia.

This wide-spread species comprises some subspecies. We did not identify the Palauan form to subspecies.

2. *Rhynchium quinquecinctum* (FABRICIUS, 1787) subsp.

Specimens examined: 3 ♂ 2 ♀, 24-29. x. 1995, Malakal Is., K. KUSIGEMATI leg.

Distribution. South Pacific Islands, China, Korea, Japan.

This subspecific name of the Palauan form will be decided after a comprehensive comparison of all the geographical races of this species.

3. *Subancistrocerus palauensis* (BEQUAERT et YASUMATSU, 1939)

Specimens examined: 1 ♂, 27. x. 1995, Babeldaob Is. K. KUSIGEMATI leg.; 8 ♂ 1 ♀, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.

Distribution. Micronesia (Palau Is.).

This form is structurally very similar to *S. domesticus* (WILLIAMS) from the Philippines (T. TANO, pers). BEQUAERT and YASUMATSU (1939) treated this form as belonging to the genus *Pseudonortonia*.

Vespidae

4. *Ropalidia marginata sundaica* VECHT, 1941

Specimens examined: 1 ♂ 1 ♀, 23-29. x. 1995, Malakal Is., K. KUSIGEMATI leg.; 2 ♂ 2 ♀, 18-27. x. 1995, Babeldaob Is., K. KUSIGEMATI leg.; 4 ♂ 1 ♀, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.

Distribution. Sunda Is., Philippines, Malay Peninsula, Micronesia, Thailand, Japan (Volcano Is.).

Scoliidae

5. *Campsomeris palauensis* (TURNER, 1911)

Specimens examined: 8 ♂, 19-24. x. 1995, Malakal Is., K. KUSIGEMATI leg.; 2 ♂ 1 ♀, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.

Distribution. Micronesia (Caroline Is.).

Sphecidae (s. lat.)

6. *Sceliphron laetum* (SMITH, 1856)

Specimen examined: 1 ♂, 18. x. 1995, Babeldaob Is., K. KUSIGEMATI leg.

Distribution. Australia, New Guinea, New Caledonia, Solomon, Sulawesi, Micronesia.

7. *Chalybion bengalense* (DAHLBOM, 1845)

Specimen examined: 1 ♀, 29. x. 1995, Malakal Is., K. KUSIGEMATI leg.

Distribution. Widely distributed in Old World Tropics, Hawaii.

8. *Lestica (Solemius) constricta* KROMBEIN, 1949

Specimens examined: 1 ♂ 5 ♀, 24-29. x. 1995, Malakal Is., K. KUSIGEMATI leg.

Distribution. Micronesia (Palau Is.).

9. *Dasyproctus immaculatus* KROMBEIN, 1949

Specimen examined: 1 ♀, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.

Distribution. Micronesia (Palau Is.).

10. *Pison punctifrons* SCHUCHARD, 1837
Specimen examined: 1 ♂, 29. x. 1995, Malakal Is., K. KUSIGEMATI leg.
Distribution. Micronesia, Oriental region, Ogasawara, Japan.
11. *Pison iridipenne* SMITH, 1879
Specimen examined: 1 ♂, 29. x. 1995, Malakal Is., K. KUSIGEMATI leg.
Distribution. Widely in the South Pacific including Micronesia and Hawaii.
12. *Pison* sp.
Specimen examined: 1 ♀, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.
Distribution. Micronesia (Palau Is.).
A relatively large and polished species and could not be identified using KROMBEIN's (1949) key.
13. *Liris manilae* (ASHMEAD, 1905)
Specimens examined: 3 ♂5 ♀, 23-27. x. 1995, Babeldaob Is., K. KUSIGEMATI leg.; 3 ♂, 20. x. 1995, Peleliu Is., K. KUSIGEMATI leg.
Distribution. Widely in Oriental and Australian regions, South Pacific including Micronesia.

Euchalidae

14. *Schizaspidia ponapensis* ISHII, 1941
Specimen examined: 1 ♂, 20. x. 1995, Ngetengchau, Peleliu Is., K. KUSIGEMATI leg.
Host. Unknown.
Distribution. Micronesia (Caroline Is.).

Chalcididae

15. *Brachymeria* (*Brachymeria*) *lasus* (WALKER, 1841)
Specimen examined: 1 ♂, 29. x. 1995, Koror, Malakal Is., K. KUSIGEMATI leg.
Host. This species attacks pupae of many Lepidoptera, though sometimes parasitized Hymenoptera and Diptera secondary (after HABU, 1962 and KUSIGEMATI, 1986).
Distribution. Micronesia (Palau Is.), Fiji, Hawaii, Java, Vietnam, Philippines, Taiwan, Korea, China, Ogasawara Is., Ryukyus, Japan.
This is the first record of the species from Palau Is. The present specimen is more similar to the Philippine form than to the Japanese form (HABU, 1962).
16. *Brachymeria* (*Brachymeria*) *excarinata* GAHAN, 1925
Specimens examined: 2 ♀, 20. x. 1995, Ngetengchau, Peleliu Is., K. KUSIGEMATI leg.; 1 ♂, 26. x. 1995, Melekeok, Babeldaob Is., K. KUSIGEMATI leg.; 1 ♂, 27. x. 1995, Airai, Babeldaob Is., K. KUSIGEMATI leg.
Hosts. *Cnaphalocrocis medinalis* (Pyralidae, Lep.), *Diaphania pyloalis* (Pyralidae, Lep.), *Plutella xylostella* (Yponomeutidae, Lep.), *Grapholitha molesta* (Eucosmidae, Lep.), *Compsiolechia metagamma* (Gelechiidae, Lep.), *Adoxophyes orana* (Tortricidae, Lep.), *Homona* sp. (Tortricidae, Lep.), *Naranga aenescens* (Noctuidae, Lep.) (after HABU, 1962).
Distribution. Micronesia (Palau Is.), Java, Philippines, Taiwan, Ryukyus, Japan, China, India, Egypt.

This is the first record of the species from Palau Is. The present specimens, too, are similar to the Philippine form rather than to the Japanese form (HABU, 1962).

17. *Hockerria amamioshimensis* HABU, 1960

Specimens examined: 1 ♂, 23. x. 1995, Elauesachel, Imellit, Babeldaob Is., K. KUSIGEMATI leg.; 1 ♀, 27. x. 1995, Airai, Babelthaup Is., K. KUSIGEMATI leg.; 1 ♂, 29. x. 1995, Koror, Malakal Is., K. KUSIGEMATI leg.

Host: Unknown.

Distribution. Micronesia (Palau Is.), Ryukyus, Japan.

This is the first record of the species from Palau Is.

The present female specimen agrees well with HABU's redescription, but it differs in having the following features:-

Antennae with scape, pedicel, ring segment, and segments 4 to 7 yellowish brown; antennal segments 8 to 10 and club black; coxae almost brown, a little darker on hind coxa; hind femur blackish brown, yellowish brown at both ends; middle tibia blackish on about median 2/3, yellowish brown on basal 1/6 and apical 1/3.

The male of the species was previously unknown. On the basis of the present specimens a description of the male is given:-

♂. Differs from the female, apart from sexual differences, by the following characters:-

Head with antennae slender; scape distinctly shorter than in female, the apex distinctly distant from front ocellus, 5/6 as long as segments 2 to 4 together; pedicel distinctly shorter than in female, about as long as wide, 1/4 as long as segment 4; funicle weakly tapering toward apex; segment 4 weakly curved downward, about 3.2 times as long as wide, 5/6, 5/6, 7/9, 5/7, 2/3 and 2/3 as long as segments 5, 6, 7, 8, 9 and 10, respectively; club slightly tapering towards apex, about 1.3 times as long as segment 10; segments 4 to 10 and club with rather sparse sensoria and dense pubescence. Fore wing with postmarginal vein distincter and longer than in female. Hind coxa with small protuberance on outer dorsal side as in female. Abdomen a little longer than pronotum, mesoscutum and mesoscutellum together, widest at middle; 1st tergite moderately convex, glabrous, finely and sparsely punctate on postmedian dorsal area, impunctate laterally, with a few hairs on lateral side, about 1.3 times as long as 2nd to 6th tergites together, its apical margin weakly convex; 2nd to 6th tergites glabrous, very finely punctate and weakly reticulate.

Antennae entirely black; tegula blackish brown; front and middle femora black, the both ends brown; hind femur black, brown at extreme apex; tibiae almost black, brown at both ends; tarsi light yellowish brown to brown, the hind tarsus a little darker. Wings a little darker than in female; basal hyaline area of forewing narrower than in female; posterior spot of fore wing indistinct and smaller than in female.

Length: Body 2.7-3.6 mm., forewing 1.9-2.5 mm.

Ichneumonidae

Subfamily Ephialtinae

18. *Echthromorpha agrestoria semperi* KRIEGER, 1909

Specimens examined: 1 ♂, i. 1968, Koror, Malakal Is. H. ADELBAI leg.; 2 ♂ 2 ♀, 21. vi. 1983, Koror, bred from *Heliothis zea* on corn by H. ADELBAI; 1 ♂, viii. 1953, 1 ♂, iv. 1954, Koror, J. W. BEARDSLEY leg.; 1 ♂, 18. iv. 1960, Koror, D. O. OTOBED leg.; 1 ♂, 29. v. 1969, 1

♂ 1 ♀, 2. vi. 1969, Koror, D. L. MOODY leg.; 1 ♀, 26. ii. 1994, Koror, bred from pupa of *Pericyma cruegeri* on flame tree by D. O. OTOBED; 1 ♂ 2 ♀, 20. x. 1995, Ngetengchau, Peleliu Is. K. KUSIGEMATI leg.

Hosts. *Pericyma cruegeri* (Hesperiidae, Lep.) and *Heliothis zea* (Noctuidae, Lep.).

Distribution. Micronesia (Palau Is., Yap Is.), New Caledonia.

The present specimens agree well with the TOWENS' redescription, but it differs in having the following features:-

Head with ocellar area brown in both sexes; sixth tergite sometimes yellow on apicolateral part in female; in general coloration male paler than female; male wings a little darker than female; large area on upper central part of mesopleurum and small area on mesopleurum next middle coxa connected with a narrow yellow line; flagellum in male almost entirely yellowish brown.

Subfamily Tryphoninae

19. *Netelia* (*Toxochilodes*) *latro latro* (HOLMGREN, 1868)

Specimens examined: 1 ♂, Koror, Malakal Is., viii. 1952, J. W. BEARDSLEY leg.; 1 ♂, ii. 1953, light trap, Koror, Malakal Is., J. W. BEARDSLEY leg.

Host. Unknown.

Distribution. Indonesia, Micronesia, Samoa Islands, New Hebrides (Vanuatu), Loyalty Is, Bangladesh, India.

The present specimens agree well with the TOWNES' redescription, but it differs in having the following features:-

The transverse striae of front end of notaulus very weak or obsolete; metapleurum sometimes finely and transversely striate.

Subfamily Porizontinae

20. *Venturia nigra* (TOWNES, 1958)

Specimens examined: 1 ♀, ii. 1953, light trap, Koror, Malakal Is., J. W. BEARDSLEY leg.; 2 ♀, iii. 1953, light trap, Koror, J. W. BEARDSLEY leg.; 1 ♂, iv. 1953, light trap, Koror, Malakal Is., J. W. BEARDSLEY leg.; 2 ♂, 20. i. 1964, light trap, Koror, J. R. TENORIA leg.

Host. Unknown.

Distribution. Micronesia (Palau Is.).

Subfamily Cremastinae

21. *Trathala flavoorbitalis* (CAMERON, 1907)

Specimen examined: 1 ♀, light trap, 20. i. 1964, Koror, Malakal Is., J. A. TENORIO leg.

Hosts. This species attacks larvae of many Lepidoptera (after GUPTA, 1987).

Distribution. Micronesia, widely distributed throughout the Orient, Hawaii, Japan.

This is the first record of the species from Palau Is.

The present specimen agrees well with the TOWNES' redescription, but it differs in having the following features:-

The fore wing with nervulus interstitial; ovipositor about 3/4 as long as abdomen.

Subfamily Ophioninae

22. *Enicospilus aequalis* (SZÉPLIGETI, 1906)

Specimen examined: 1 ♀, 16. xii. 1963, light trap, Koror, Malakal Is., T. SUZUKI leg.

Host. Unknown.

Distribution. Indonesia, Papua New Guinea, Pacific Islands, N. and E. of New Guinea.

23. *Enicospilus shinkanus* (UCHIDA, 1928)

Specimen examined: 1 ♂, 24. x. 1995, Koror, Malakal Is., K. KUSIGEMATI leg.

Host. Unknown.

Distribution. Micronesia (Palau Is.), Malaysia, Philippines, New Caledonia, Fiji, Solomon Is., New Hebrides (Vanuatu), Taiwan, Ryukyus, Chagos Archipelago, India, China, Korea.

Subfamily Gelinae

24. *Diatora lissonota* (VIERECK, 1912)

Specimen examined: 1 ♀, 18. x. 1995, Airai, Babeldaob Is., K. KUSIGEMATI leg.

Hosts. *Syllepte derogata* (Pyralidae, Lep.), *Marasmia venilalis* (Pyralidae, Lep.) *Achaea janata* (Noctuidae, Lep.), *Perina nudsa* (Arctiidae, Lep.), *Apanteles machaeralis* (Braconidae, Hym.), *A. importunus*, *A. obliqua niger*, *Meteorus* sp. (Braconidae, Hym.) (after GUPTA, 1987).

Distribution. Micronesia, India, China, Taiwan, Ryukyus.

The present specimens agree well with the TOWNES' redescription, but it differs in having the following features:-

The propodeum with areola 1.5 times as long as wide at costula; scutellar fovea with 6 longitudinal striae; upper dorsal corner except for yellow humeral angle, lower margins of pronotum and propleurum tinged with yellowish brown; 2nd tergite black, the median basal 1/3 yellowish brown with pale yellow thyridium; 3rd to 6th tergites black; 7th tergite fulvous.

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