Annals and Magazine of Natural History: Series 8

Publication details, including instructions for authors and subscription information:
<http://www.tandfonline.com/loi/tnah14>

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Published online: 09 Sep 2009.

To cite this article: Geoffrey Meade-Waldo M.A. (1912) XLVI.—An enumeration of the Hymenoptera (families Vespidae, Apidae, and Tenthredinidae) collected in dutch New Guinea by the expedition of the British Ornithologists' union , Annals and Magazine of Natural History: Series 8, 9:52, 446-455

To link to this article: <http://dx.doi.org/10.1080/00222931208693154>

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XLVI.—*An Enumeration of the Hymenoptera (Families Vespidae, Apidae, and Tenthredinidae) collected in Dutch New Guinea by the Expedition of the British Ornithologists' Union.* By GEOFFREY MEADE-WALDO, M.A.

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THE three families dealt with in the following paper are represented by thirty-two species, five of which are described as new. The genus *Icaria*, to which all five belong, appears to be very strongly represented in New Guinea, no less than nine of the fourteen species of Vespidae, subfamily Vespinae, collected, falling into it. As will be gathered from the localities, all of which are in river-valleys, the species must be regarded as lowland forms. Mr. A. F. R. Wollaston, the collector of all the Hymenoptera taken during the Expedition, is to be congratulated on the fine condition of the specimens. The whole collection here enumerated, including the types of the new species, is in the British Museum. All measurements of length are from the front of the head to the apex of the second abdominal segment.

Family Vespidae, Latr.

Subfamily EUMENIDINÆ, D. T.

EUMENES, Latr.

1. *Eumenes arcuata*, F.

Eumenes arcuata, F. Syst. Entom. p. 371. no. 40 (1775).

1 ♂, 2 ♀, Wataikwa River; August, September, 1910.

Three examples of the typical form, which occurs throughout the Eastern Archipelago.

2. *Eumenes agillima* (Smith), D. T.

Eumenes agilis, Smith, Journ. Proc. Linn. Soc., Zool. iv. Suppl. p. 127. no. 7 (1860).

4 ♀, Mimika River; July 1910.

Described from Amboyna; also recorded from Ceram (Wallace).

RHYNCHIUM, Spin.

3. *Rhynchium hæmorrhoidale*, F., subsp. *medium*, Maindron.

Rhynchium hæmorrhoidale, F., subsp. *medium*, Maindron, Ann. Soc. Ent. France, (6) ii. p. 278 (1882), pl. v. fig. 1.

4 ♀, Mimika River; July 1910.

ODYNERUS, Latr.

4. *Odynerus (Lionotus)* sp.

1 ♀, Mimika River; July 1910.

This single specimen belongs to the subgenus *Lionotus* and closely resembles *O. confluentus*, Sm., in coloration. There are structural differences which make it impossible to consider it as a variety, and it would thus be better to leave the species unnamed for the present.

Subfamily VESPINÆ, D. T.

ISCHNOGASTER, Guérin.

5. *Ischnogaster fulgipennis*, Guér.

Ischnogaster fulgipennis, Guér., Duperrey, Voy. 'Coquille,' Zool. vol. ii. pt. 2, p. 269, pl. ix. fig. 9 (1839).

1 ♀, Mimika River, July 1910; 1 ♂, Wataikwa River, August 1910.

6. *Ischnogaster iridipennis*, Smith.

Ischnogaster iridipennis, Sm. Journ. Proc. Linn. Soc., Zool. iii. p. 166. no. 1 (1858).

1 ♀, Mimika River; August 1910.

Also recorded from Mysol and Aru (*Wallace*).

ICARIA, Sauss.

The species of *Icaria* do not seem to vary much in colour or size, unlike *Polistes*, in which both of these characters vary extensively. All the five species here described as new have the clypeus of the typical form for the genus, *i. e.* short, broad, and produced to a point at the apex, so that it has not been considered necessary to refer to it in the detailed descriptions.

The subgenera, adopted by Dalla Torre in the 'Genera Insectorum,' Fam. Vespidae, have been used for the discrimination of the new species.

7. *Icaria conservator*, Smith.

Icaria conservator, Smith, Journ. Proc. Linn. Soc., Zool. iv. Suppl. p. 130. no. 1 (1860)

8 ♀, from Mimika River; July and August 1910.

The whole series of this species in the Museum is from

New Guinea, but *Polybia limatula*, Sm., which is synonymous with the above (Ann. & Mag. Nat. Hist. (8) vol. vii. p. 100, 1911), was described from Mysol and is in the Oxford University Museum.

8. *Icaria australis*, Sauss.

Icaria australis, Sauss. Étud. fam. Vesp. ii. p. 24. no. 2, pl. xxxiv. fig. 5 (1853).

The single specimen from Mimika River, July 1910, agrees well with Saussure's figure.

9. *Icaria maculiventris*, Guérin.

Rhopalidia maculiventris, Guérin, Duperrey, Voyage de la 'Coquille,' Zool. vol. ii. pt. 2, p. 266, pl. ix. fig. 8 (1839).

5 ♂, Mimika River; July and August 1910.

All these specimens have the second abdominal tergite almost entirely yellow, as mentioned by Du Buysson (Abhandl. der Senckenb. naturforsch. Gesell. Bd. xxxiv. Heft 2, p. 229, 1911). There are other specimens in the British Museum from Aru and Borneo.

Guérin's type was from Dorey, New Guinea, *not* Australia as given by Dalla Torre in the 'Genera Insectorum,' Fam. Vespidae.

10. *Icaria spilostoma*, Cam.

Icaria spilostoma, Cam. Nova Guinea, v. 1, p. 62 (1906).

3 ♂, Mimika River; July and August 1910.

Cameron's type, which is in the British Museum, is from Manokwari, in New Guinea.

Key to the new Species of *Icaria* here described.

A. Abdominal segment 2 broader than long.

(*Icariastrum*, D. T.)

a. Wings totally fuscous *wollastoni*, sp. n.

b. Wings hyaline, slightly fuscous along the costa.

a². Truncation of median segment smooth and shining, lateral angles produced to form two spines

bispinosa, sp. n.

b². Truncation of median segment finely punctured, clothed with grey pubescence, lateral angles bluntly rounded

mimikæ, sp. n.

B. Abdominal segment 2 longer than broad.

(*Icariola*, D. T.)

- a. Petiole elongate, widening gradually towards apex, armed medio-laterally with two small tubercles..... *semihyalinata*, sp. n.
 b. Petiole unarmed, widening abruptly towards apex *fluvialis*, sp. n.

11. *Icaria (Icariastrum) wollastoni*, sp. n.

♀. Niger; clypeo apice mandibulisque basi flavo-maculatis, margine interiore oculorum maculaque bilobata interantennali flavis, abdominis segmentis 2-6 flavo-fasciatis, petiolo apice lateribus flavo-maculato; capite (præcipue postoculos) thoraceque cano-pubescentibus; segmento mediano concave truncato; alis fuscis.

Black; two ovate marks on clypeus at apex, a small mark on the mandibles at base, a bilobed spot between the antennæ, a line along the inner margin of the eyes, a line on the apex of petiole laterally, and the apical margins of abdominal segments 2-6 deep yellow. Wings deep fuscous. Head rather broader than thorax, a blunt tubercle between the antennæ at base. Prothorax truncate anteriorly, somewhat sloping posteriorly, scutellum with a shallow longitudinal depression, median segment with the dorsal surface of the truncation excavated medially, the lateral angles bluntly rounded; petiole cup-shaped, widening abruptly towards apex.

Head and thorax finely, abdomen rather more closely punctured, the truncation of the median segment within the excavated area, impunctate. Head and thorax covered with a short dense pubescence, densest on face and clypeus and behind the eyes, pubescence on clypeus appearing golden when viewed from above.

Length $12\frac{1}{2}$ mm.

Hab. Mimika River, July 1910; 4 ♀.

This fine species is most closely allied to *I. maculiventris*, Guérin, but may be readily separated from it by the colour of the wings, which are dark fuscous, *not* hyaline as in that species, and by the colour-marking of the abdomen.

I have pleasure in naming this species after my friend Mr. A. F. R. Wollaston, who collected all the Hymenoptera brought home by the Expedition.

12. *Icaria (Icariastrum) bispinosa*, sp. n.

♀. Niger, griseo-punctatus; mandibulis macula flava basi minuta, abdominis segmentis flavo-fasciatis; pronoto petioloque lateribus ferrugineis; alis hyalinis.

Black; with two small elongate marks on the mandibles

at base, two small spots between the antennæ, yellow, all the abdominal segments both dorsally and ventrally with yellow apical fasciæ. Flagellum beneath apically, pronotum and petiole laterally marked with ferruginous. Wings hyaline.

Head rather broader than thorax, anterior margin of the prothorax truncate, scutellum with a shallow longitudinal furrow, median segment truncate, excavated medially on the dorsal surface, the lateral angles produced to form two spines. Petiole with two small medio-lateral tubercles, slender at base, widening abruptly towards the apex, which is flattened above.

Head, clypeus, mandibles, and abdomen very finely, thorax rather more coarsely punctured, the area immediately surrounding the insertion of the antennæ, and the surface of the truncation of the median segment, shining, impunctate.

The whole more or less covered with a greyish pubescence, most conspicuous on the vertex and the terminal segments of the abdomen.

Length $10\frac{1}{2}$ mm.

Hab. Mimika River, July and August 1910; 4 ♂.

This species comes very near *I. spilostoma*, Cam., but differs in having all the abdominal segments with apical yellow fasciæ, whereas in *I. spilostoma* the second segment alone is so coloured.

13. *Icaria (Icariastrum) mimikæ*, sp. n.

♂. Niger, griseo-punctatus; mandibulis, clypeo partim, antennis infra, margine interiore oculorum, pronoto antice, abdominis segmento secundo fascia apicali supra, segmento sexto omnino, tibiis tarsisque anticis, ochraceo-testaceis; scapo, propleuris, tegulis fusco-ferrugineis; alis hyalinis, costa cellulaque radiali infuscatis. Plus minusve punctatus; segmento mediano dense, capite, thorace, abdomine, sparse pilosis.

Black; two marks on clypeus at apex, mandibles, a line along the inner margin of the eyes, the antennæ beneath, anterior margin of the pronotum, a fascia on the apical margin of the second abdominal segment ochraceo-testaceous. Abdominal segments 3-5 with very faint apical fasciæ, abdominal segment 6 totally testaceous. Wings hyaline, fuscous along the costa and in the radial cell. Scape above, propleuræ, and tegulæ fusco-ferruginous.

Head considerably broader than pronotum, which widens posteriorly, scutellum and postscutellum prominent, median segment truncate, excavated medially, lateral angles bluntly rounded.

Petiole slender at base, widening abruptly at apex, flat beneath. Punctured, head and thorax for the most part rather coarsely, the abdomen more finely.

The area behind the eyes adjoining the mandibles and the postscutellum beneath shining, impunctate.

The whole clothed with short sparse golden pubescence, except the median segment, which is covered with a dense silvery pile.

Length 11 mm.

Hab. Mimika River; August 1910.

14. *Icaria (Icariola) semihyalinata*, sp. n.

♂. Niger, gracilis; mandibulis clypeoque basi, scapo infra, linea brevi margine inferiore oculorum, abdominis segmentis 2-6 fasciis apice ochraceis; tibiis omnino, tarsis plerumque ochraceis; prothorace tegulisque ferrugineis; alis fusco-hyalinis.

Black; mandibles at base, two spots on the clypeus at apex, the scape beneath, short lines on the inner margins of the eye, and apical fasciæ on abdominal segments 2-6 ochraceous yellow. Prothorax and tegulæ ferruginous; wings fusco-hyaline. Prothorax narrow anteriorly, widening towards the tegulæ, median segments truncate, medially excavated; petiole slender, gradually widening towards apex, armed medio-laterally with two small tubercles.

Punctured, the vertex and disc of mesonotum minutely, abdominal segments 2-6 rather more coarsely, the remainder impunctate. Clothed with greyish-white pubescence.

Length $9\frac{1}{2}$ mm.

Hab. Mimika River, July 1910; 1 ♀.

15. *Icaria (Icariola) fluvialilis*, sp. n.

♂. Niger; maculis duabus clypeo, margine inferiore oculorum, linea postoculari, abdominis segmentis apice fasciis, flavis; tibiis tarsisque anterioribus infra ferrugineis; alis hyalinis, costa cellulaque radiali pallide fuscis.

Black; two spots on the clypeus, the inner margin of the eyes, a long narrow line behind them, and all the abdominal segments (that on the petiole interrupted medio-dorsally) with narrow apical fasciæ yellow. Wings hyaline, somewhat fuscous along the costa, in the radial cell, and at the tip.

Head as broad as thorax; thorax short, massive, the prothorax truncate anteriorly; median segment truncate, the surface of the truncation hardly excavated. Petiole short, widening abruptly towards the apex, with no lateral tubercles.

Head (except clypeus and mandibles), thorax, and abdomen very finely punctured. Covered with a short, greyish, inconspicuous pubescence.

Length 9 mm.

Hab. Mimika River, August 1910; 1 ♂.

POLISTES, Latr.

16. *Polistes nigrifrons*, Smith.

Polistes nigrifrons, Smith, Journ. Proc. Linn. Soc., Zool. iii. 168. no. 4 (1858).

1 ♀, Mimika River; July 1910.

Smith reports it from Waigiou and Aru (*Wallace*).

17. *Polistes* sp.

18. *Polistes variabilis*, F.

Polistes variabilis, F. Spec. Insect. i. p. 466. no. 46 (1781).

1 ♀, Wataikwa River; August 1910.

An Australian species—Queensland: Inkerman, near Townsville (*W. Stalker*); Mackay (*Turner*); Port Darwin and Bathurst Island (*J. J. Walker*).

19. *Polistes tepidus*, F.

Polistes tepidus, F. Syst. Entom. p. 366. no. 17 (1775).

3 ♂, Mimika River; July and August 1910.

Australia: Queensland (var. *facilis*, Sauss.), Cooktown, Cairns, and Mackay (*Turner*); Victoria (*French*); Darnley Island; Lizard Island. New Guinea, Manokwari (*Wichmann*); New Pomerania (*Ribbe*) (race *novæ-pomeraniæ*, Schulz); Solomon Islands (*W. W. Froggatt*); Key Island, Aru, Bachian, Waigiou (*Wallace*).

VESPA, L.

20. *Vespa cincta*, F., var. *affinis*, F.

Vespa cincta, F., var. *affinis*, F. Mant. Ins. i. p. 287. no. 2 (1787).

2 ♂, Wataikwa River; August 1910.

Widely distributed throughout the Eastern Archipelago.

Family **Apidae**, Leach.Subfamily **ANTHRENINÆ**.21. *Nomia* sp.

Hab. Wataikwa River, August 1910; 2 ♂.

This may possibly be a new species, but it is not advisable to describe the species of this genus from males alone.

Subfamily **PODALIRIINÆ**.**ANTHOPHORA**, Latr.22. *Anthophora zonata*, L.

Anthophora zonata, L. Syst. Nat. no. 15, p. 576 (1758).

1 ♀, Mimika River; August 1910.

23. *Anthophora* sp.

There are four males and two females of a species of *Anthophora* from the Mimika and Wataikwa Rivers, July and August 1910.

Possibly they are colour-varieties of *A. zonata*, with the abdominal fasciæ greenish white.

Subfamily **NOMADINÆ**.**CROCISA**, Jurine.24. *Crocisa cæruleifrons*, Kirby.

Crocisa cæruleifrons, Kirby. Proc. Zool. Soc. Lond. p. 343 (1883).

6 ♀, Mimika River; July 1910.

Kirby described this handsome species from Maroe, Timor-Laut (*H. O. Forbes*); it has also been received from Mackay, N. Queensland (*Turner*).

Subfamily **MEGACHILINÆ**.**MEGACHILE**, Latr.25. *Megachile albiceps*, Friese.

Megachile albiceps, Friese, Zeitschr. Hym. Dipt. iii. p. 243 (1903).

4 ♀, Mimika River; July 1910.

Described from Goram.

26. *Megachile nidulator*, Smith.

Megachile nidulator, Sm. Journ. Proc. Linn. Soc., Zool. viii. p. 92. no. 4 (1864).

4 ♀, Mimika River; July 1910.

Described from New Guinea.

27. *Megachile malayana*, Cam.

Megachile malayana, Cam. Proc. Zool. Soc. Lond. ii. p. 245 (1901).

1 ♀, Mimika River; July 1910.

This specimen agrees with Cameron's type from New Guinea in all essential characters, but is larger and has the anterior tarsi black, not pale testaceous.

Subfamily *APINÆ*.

MELIPONA, Ill.

28. *Melipona præterita*, Wlk.

Melipona præterita, Wlk. Ann. & Mag. Nat. Hist. (3) v. p. 305 (1860).

3 ♀, Mimika and Wataikwa Rivers; July and August, 1910.

This appears to be a fairly widely spread species, occurring in Burma and Ceylon (*Bingham*), Singapore (*Ridley*), and is recorded from Etna Bay and Merauke by Friese ('Nova Guinea,' v. 2, p. 355, 1908) among the collection formed by the Wichmann Expedition.

29. *Melipona planifrons*, Smith.

Melipona planifrons, Sm. Journ. Proc. Linn. Soc., Zool. viii. p. 93. no. 2 (1864).

2 ♀, Mimika River; July 1910.

As Friese notes in his account of the Apidæ captured on the Wichmann Expedition, this species appears to be confined to New Guinea. There are specimens in the British Museum from the Charles Louis Mountains (Dutch New Guinea) and from Dorey (*Wallace*).

30. *Melipona* sp.

4 ♀, Mimika and Wataikwa Rivers, July and August 1910; Iwaka River, February 1911.

Family Tenthredinidæ.

Subfamily LOPHYRIDINÆ.

ANCYLONEURA, Cam.

31. *Ancyloneura nigripes*, Smith.

Cryptocampus nigripes, Smith, Journ. Proc. Linn. Soc., Zool. v. p. 136 (1861).

1 ♀, Mimika River; August 1910.

Described from New Guinea.

32. *Ancyloneura* sp.

1 ♀, Iwaka River; February 1911.

XLVII.—On a new Species of Melolonthid Beetle (*Phytalus smithi*) destructive to Sugar-cane. By GILBERT J. ARROW.

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THE beetle here described has recently appeared in enormous numbers in Mauritius, where its presence was discovered for the first time by the very serious damage to the roots of the cane-crops caused by its subterranean larvæ. The first account of it was given by M. d'Emmerez de Charmoy in an official Report issued by the Government of the Colony and dated 7th Aug., 1911. The insect was provisionally attributed to *Schizonycha*, of which two species have been catalogued as natives of the Madagascan region; but specimens referred to me for accurate determination showed it to belong not to that Old-World genus, but to the American *Phytalus*. I eventually found three specimens labelled "Trinidad" in the British Museum, which, although of small size and in bad preservation, undoubtedly belong to the same species. I failed, however, to find any record of such an insect being known to West-Indian entomologists, and as Mr. Guy Marshall, of the Entomological Research Committee, was visiting the islands, he kindly undertook to make an effort to find it, taking specimens sent to me from Mauritius for comparison. In this he was quite successful, discovering the beetle and larva at the roots of cane-stumps in Barbados, the