

Four New Species of the Genus *Pristocera* Klug (Hymenoptera: Bethyilidae) from East and Southeast Asia

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Abstract. Four new species of the genus *Pristocera* Klug, 1808, are described: *P. kinabalensis* and *P. sarawakensis* from Borneo, Malaysia, *P. sumatrensis* from Sumatra, Indonesia, and *P. changmaiensis* from Thailand. *Pristocera carinata* Magretti, 1987, from Myanmar is redescribed based on the type material and *P. formosana* Miwa et Sonan, 1935, is recorded from Korea for the first time.

Key words: Hymenoptera, Bethyilidae, *Pristocera*, new species, Asia.

Introduction

The genus *Pristocera* Klug, 1808, belonging to the subfamily Pristocerinae of the family Bethyilidae, is represented by 72 species most of which are distributed in the Ethiopian region, and a few in the Oriental (10 spp.), Palaearctic (6 spp.) and Australian (1 sp.) regions (Terayama, 1996). Of these 6 species are known only for males, and only 5 have been known for male-female associations. All the *Pristocera* species show distinct sexual dimorphism; males are fully winged and have ocelli, whereas females are completely apterous and lack ocelli. Therefore, the conspecificity of specimens of different sexes is very difficult to determine, unless the specimens of both sexes captured at the same time and place are available. They are parasites of elaterid coleopteran larvae (Miwa & Sonan, 1935; Evans, 1964).

Although Finnamore & Gauld (1995) synonymized *Apenesia* with the genus *Pristocera* without any explanation, we treat that they are distinct genera when applying the results of cladistic analysis of Pristocerinae (Terayama, 1996). We suggest that *Pristocera* and *Acrepyris* treated as subgenera of the genus *Pristocera* by many authors are distinct genera supported by apomorphic character states and their allopatric distribution pattern, and that *Apenesia* is also distinct genus (Terayama, 1996). The deeply incised subgenital plate of *Pristocera* (subgenital plate simple and not modified in *Apenesia* and *Acrepyris*) suggests that this genus is closely related to the African genera *Dicrogenium* Stadelmann, *Neodicrogenium* Benoit,

Diepyris Benoit, and *Kathepyris* Kieffer rather than to *Apenesia* and *Acrepyris*.

In the East and Southeast Asia, 3 species of *Pristocera*, *P. formosana* Miwa et Sonan from Taiwan, *P. puncticeps* Fouts from the Philippines, and *P. carinata* Magretti from Myanmar, have so far been known in this genus. The latter two species are known only for one sex, female and male respectively. In this paper, we describe 4 new species of this genus from this region.

The following abbreviations for descriptions are used in this paper: HL—head length; HW—head width; WF—width of frons; LM—length of mesosoma; LP—length of propodeum; LPD—length of propodeal disc; WPD—width of propodeal disc; FWL—forewing length; TL—total body length; EL—eye length; POL—distance between posterior ocelli; AOL—distance between posterior ocellus and anterior ocellus; OOL—distance from a posterior ocellus to nearest eye margin; WOT—distance across and including posterior ocelli.

The following abbreviation of institutions are also used: EUM—Entomological Laboratory, Ehime University, Matsuyama, Japan; FSK—Forest Department of Sarawak, Kuching, Malaysia; KUF—Entomological Laboratory, Kyushu University, Fukuoka, Japan; MSCN—Museo Civico di Storia Naturale, Genova, Italy; MU—Y; Yamagishi collection, Meijo University, Aichi, Japan; MZB—Museum Zoologicum Bogoriense, Indonesia; NSMT—National Science Museum, Tokyo, Japan; PMA—Provincial Museum of Alberta, Canada; NIAES—National Institute of Agro-Environmental Sciences, Tsukuba, Japan; TARI—Taiwan Agricultur-

al Research Institute, Taichung, ROC.

Descriptions

Pristocera carinata Magretti

(Figs. 1–6)

Pristocera carinata Magretti, 1897, *Ann. Mus. Civ. Stor. Nat. Gia. Dor, Ser. 2*, 17: 316 [Male].

Pristocera carina: Kurian, 1954, *Agra Univ. J. Res. Sci.*, 3: 280 [Unjustified Emendation].

Redescription of holotype. Male. HL 1.70 mm; HW 1.70 mm; WF 1.00 mm; LM 3.00 mm; LP 1.00 mm; WPD 1.20 mm; FWL 5.5 mm; TL 7.9 mm.

Head and alitrunk black except the pronotal collar brown; gaster blackish brown; mandibles blackish brown; antennae black and tinged with brown except the scape and pedicel blackish brown; legs brown; wings hyaline.

Head as long as wide excluding mandibles, with a convex posterior margin in frontal view; frons punctate, with smooth and shining interspaces; punctures on vertex smaller and weaker than those on frons, and vertex more sparsely punctate than frons. Clypeus slightly produced anteriorly with a straight anterior margin. Mandibles each with 4 teeth. First 5 antennomeres in a ratio of 11:2:5:5:5 in length; 3rd segment equal to 4th in length. Eyes 0.80 mm long; WF 1.45×EL. POL:AOL=12:11; OOL 1.5×WOT.

Pronotal disc smooth, shining, and with a few shallow punctures; 2 transverse carinae present; one on the anterior margin, and another at posterior 2/5; posterior carina with a blunt angle at midlength; lateral margins of disc carinate. Mesonotum smooth, shining, and scantily punctate. Propodeum 0.80× as long as wide; median carina almost reaching posterior margin of disc; 2 pairs of submedian carinae present; sublateral carinae present, but weak; basal triangular area and sublateral areas reticulate.

Gaster petiolate, ca. 3.3 mm long; subgenital plate with relatively large teeth on inner margins as in Fig. 6.

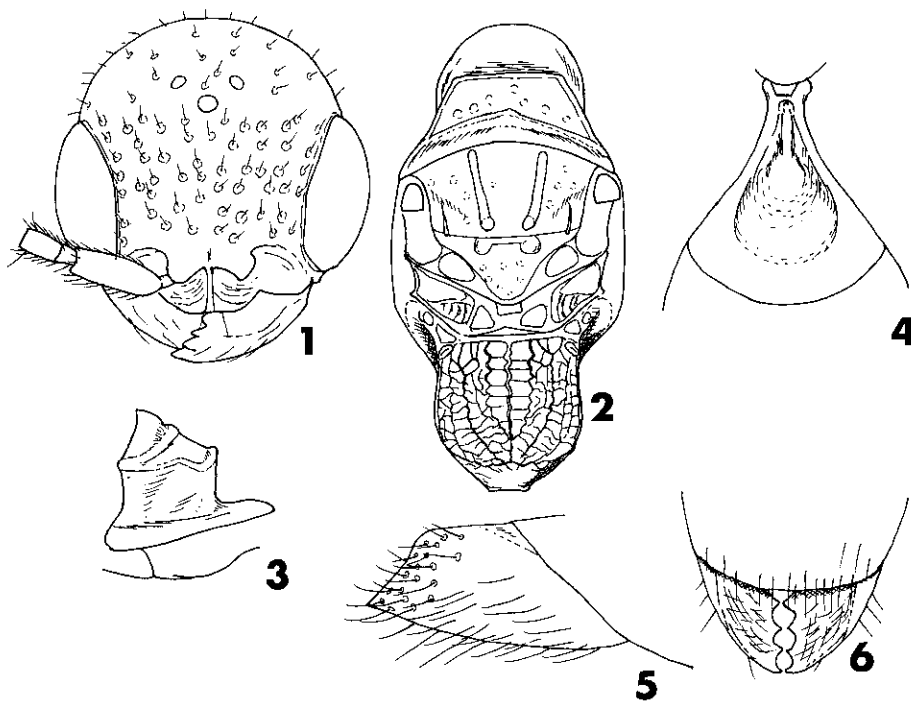
Specimen examined. Male, Carin Cheba, 900–1100 m, Burma, V. 88, L. Fea leg. [holotype; MCSN].

Pristocera changmaiensis sp. nov.

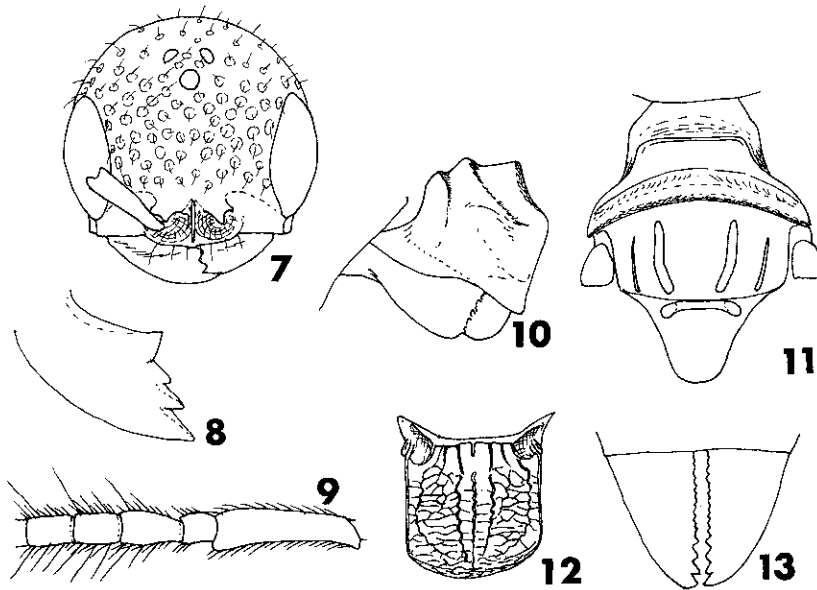
(Figs. 7–13)

Holotype. Male. HL 1.70 mm; HW 1.75 mm; WF 1.05 mm; LM 3.10 mm; LP 1.28 mm; WPD 1.33 mm; FWL 5.7 mm; TL 8.6 mm.

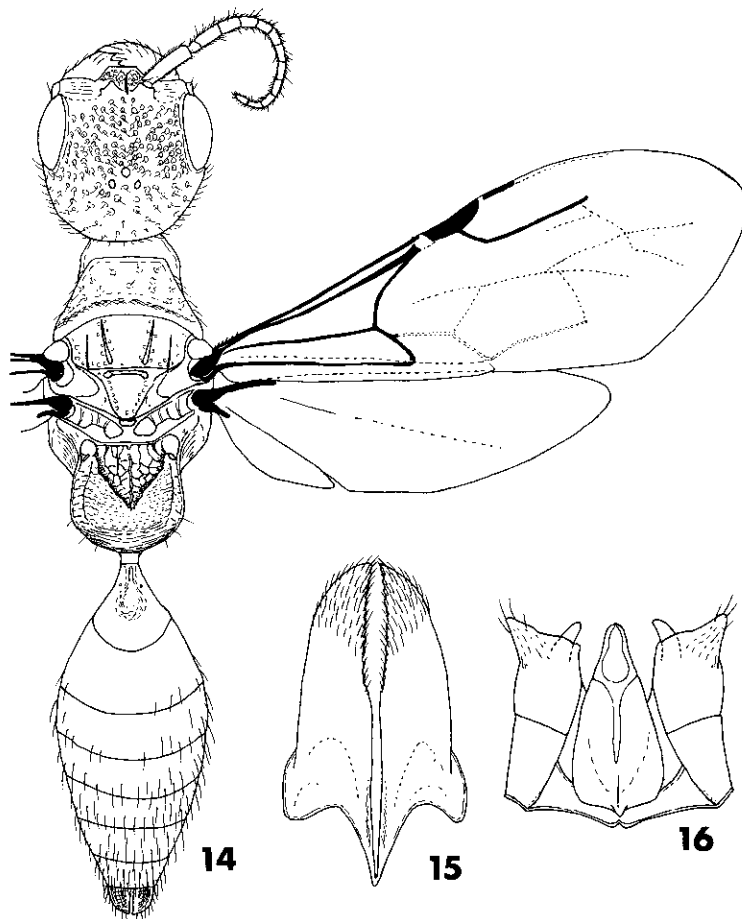
Head and alitrunk black; 1st and 2nd gastral tergites black each with a brownish red apical belt; 3rd to 5th gastral tergites black, with a brown tinge; mandibles blackish brown except the apices reddish brown; antennal scapes blackish brown except the apical 1/5 reddish brown; pedicel reddish brown; flagellum blackish brown; coxae, trochanters and femora dark brown; basal 2/3 of fore tibiae dark brown and



Figs. 1–6. *Pristocera carinata* Magretti, male, drawn from the type. — 1, Head, frontal view; 2, alitrunk, dorsal view; 3, pronotum, lateral view; 4, first gastral tergite, dorsal view; 5, subgenital plate, lateral view; 6, *ditto*, dorsal view.



Figs. 7–13. *Pristocera changmaiensis* sp. nov., male. — 7, Head, frontal view; 8, mandible; 9, first 5 segments of antenna; 10, pronotum, lateral view; 11, pro- and mesonotum, dorsal view; 12, propodeum, dorsal view; 13, subgenital plate, ventral view.



Figs. 14–16. *Pristocera formosana* Miwa et Sonan, male. — 14, Body, dorsal view; 15, subgenital plate, ventral view; 16, genitalia, dorsal view.

the rest yellow; middle and hind tibiae dark brown; tarsi yellow; wings subhyaline, tinged with brown; wing veins yellowish brown.

Head almost as long as wide, with convex posterior margin in frontal view; posterolateral corners not forming an angle; frons densely punctate, with smooth

interspaces; punctures relatively large, ca. 0.07–0.10 mm in diameter, and separated from one another by 0.5–1.0× their own diameters; vertex less abundantly punctate than frons. Mandibles each with 4 teeth; apical tooth largest; basalmost tooth broadly triangular; its tip turned inward. Anterior margin of clypeus very broadly rounded. Antennae short; funicles with relatively abundant long erect hairs; first 5 antennomeres in a ratio of 24 : 5 : 10 : 10 : 10 in length; 3rd segment 1.7× as long as wide, and equal to 4th in length; 4th segment 1.4× as long as wide. Eyes 0.88 mm long; WF 1.21×EL. Ocelli forming a compact triangle; OOL 1.5×WOT.

Pronotal disc smooth with a few punctures; 3 transverse carinae present; 1st one on the anterior margin, 2nd at midlength, and the last near posterior margin. Median area of mesoscutum smooth, largely impunctate; lateral areas densely punctate, with smooth interspaces; scutellum with about 20 punctures and smooth interspaces. Propodeum as long as wide in dorsal view, with 3 discal carinae; median carina long, almost reaching the posterior margin of disc; submedian carinae subparallel; sublateral areas strongly reticulate.

Gaster petiolate, seen from above 1.45 mm width; subgenital plate with a series of small teeth on the inner margins as in Fig. 13.

Holotype. Male, Doi Pui (1300 m alt.), Changmai, 8. VI. 1965, S. Asahina leg. [PMA].

Etymology. Named after the province from which it was collected.

Distribution. Thailand.

Pristocera formosana Miwa et Sonan

(Figs. 14–16, 32, 33)

Pristocera formosana Miwa et Sonan, 1935, *Trans. Nat. Hist. Soc. Formosa*, 25: 91 [Male].

Pristocera formosana: Yasumatsu, 1955, *J. Fac. Agr. Kyushu Univ.*, 10: 235 [Female].

Pristocera formosana: Terayama, 1995, *Jpn. J. Syst. Entomol.*, 1: 139 [Male and female].

Specimens examined. TAIWAN—1 male, Taichung, Lincuo, 25.V.1933 [holotype; TARI, Type No. 209]; 4 males, Shinchiku (Shinchi Hsien), 1–30. VII. 1918, J. Sonan & K. Miwa leg. [paratypes; TARI]; 1 male, Funkiko (Chiayi Hsien) 26. VII. 1927, J. Sonan & K. Miwa leg. [paratype, TARI]; 1 male, Taichung, Lincuo, 25. V. 1933, [paratype, TARI]; 1 male, 1 female, Tyokakurai, Daibu, 27. VII. 1936, S. Asahina leg. [KUF]; 1 male, Kenting Park, Pingtung Hsien, 15. VI. 1970, Y. Hori leg. [EUM]. KOREA—1 male, 1 female, Keikido, Suigen, 7. IX. 1923, K. Sato leg.

[NSMT]; 1 male, Sudo-san (400 m alt.), Kyongsangpuk-do, 17–18. VII. 1071, K. Yamagishi leg. [MU-Y]; 2 males, Sudo-san (1400 m alt.), Kyongsangpuk-do, 22. VIII. 1990, K. Yamagishi leg. [PMA].

Distribution. Taiwan, Korea (new record).

Remarks. Two elaterid host species, *Melanotus tam-suyensis* and *Agonischius obscuripes*, have been known (Miwa & Sonan, 1935).

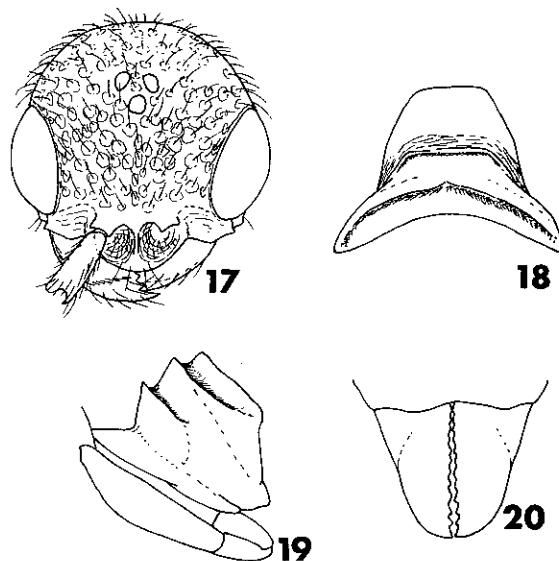
Pristocera kinabalensis sp. nov.

(Figs. 17–20)

Holotype. Male. HL 1.95 mm; HW 1.98 mm; WF 1.20 mm; LM 3.95 mm; LP 1.45 mm; WPD 1.53 mm; FWL 7.1 mm; TL 10.3 mm.

Head and alitrunk black; gaster black with a reddish tinge; mandibles blackish brown except the basal 1/3 yellowish and masticatory margin reddish brown; antennae black; legs castaneous; basal half of forewings hyaline, and apical half clouded with dark brown; wing veins blackish brown.

Head round, as long as wide, posterolateral corners not forming an angle in frontal view; frons and vertex moderately punctate, with smooth interspaces; punctures large, ca. 0.10 mm in diameter. Mandibles each with 5 teeth; apical tooth bluntly angulate; 2nd to 4th teeth broadly rounded; basal tooth largest. Anterior margin of clypeus very broadly rounded. First 5 antennomeres in a ratio of 27 : 6 : 17 : 13 : 11 in length; 3rd segment 2.2× as long as wide, distinctly longer than 4th; 4th segment 1.9× as long as wide. Eyes slightly prominent, 0.85 mm in length; WF 1.41



Figs. 17–20. *Pristocera kinabalensis* sp. nov., male.— 17, Head, frontal view; 18, pronotum, dorsal view; 19, *ditto*, lateral view; 20, subgenital plate, ventral view.

\times EL. Ocelli forming a compact triangle; OOL $1.57\times$ WOT.

Pronotal disc with scattered punctures and smooth interspaces; 2 longitudinal carinae present; one along the anterior margin and the other at posterior $1/5$. Mesonotum moderately punctate; interspaces smooth. Propodeum wider than long, with convex posterior margin in dorsal view; posterolateral corners rounded, not forming a distinct angle; posterior half of median carina weaker than anterior one; sublateral carinae present; transverse carina absent; basal triangular area depressed, with transverse rugae; sublateral areas largely reticulate.

Gaster petiolate, 1.78 mm wide in dorsal view; subgenital plate with a series of small teeth on inner margins as in Fig. 20.

Holotype. Male, Mt. Kinabalu N. P. (1500 m alt.), Sabah, Borneo, Malaysia, 15–24. V. 1987, A. Smetana leg. [PMA].

Etymology. This species is named after its type locality Mt. Kinabalu.

Distribution. Malaysia (Borneo).

Pristocera sarawakensis sp. nov.

(Figs. 21–28)

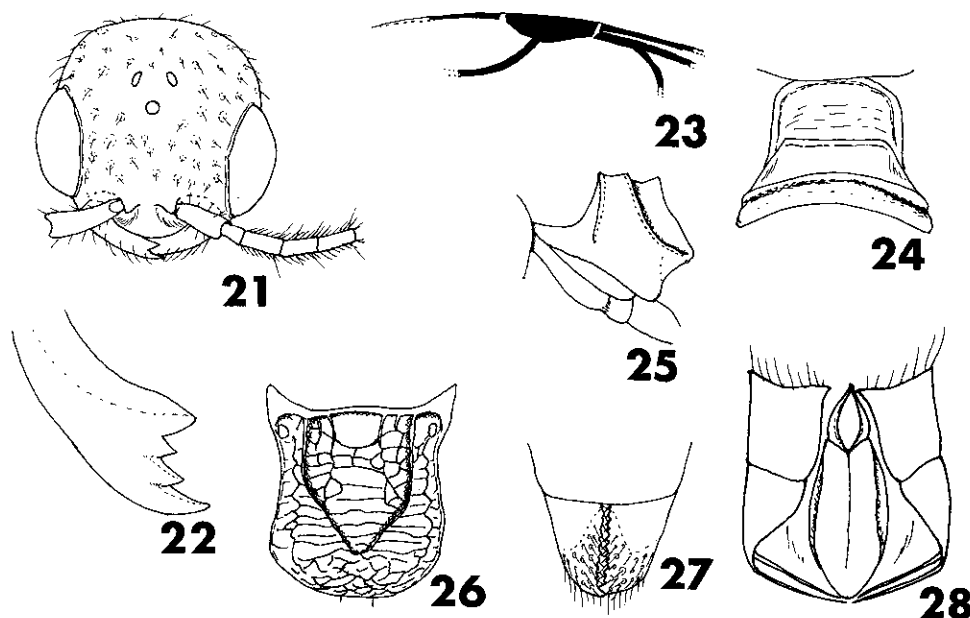
Holotype. Male. HL 1.55 mm; HW 1.62 mm; WF 0.95 mm; LM 2.80 mm; LP 1.10 mm; WPD 1.05 mm; FWL 4.5 mm; TL 7.5 mm.

Head and alitrunk black; gaster blackish brown; mandibles yellow except the masticatory margin dark

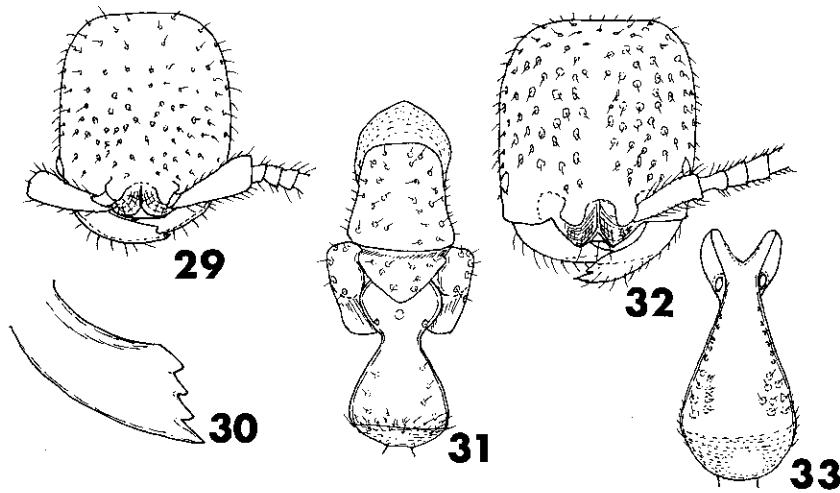
brown; antennal scapes dark brown; fore legs yellow; middle and hind legs yellow to yellowish brown except the femora dark brown; wings subhyaline, with basal half tinged with yellowish brown, apical half tinged with brown; median, anal, and Rs + M veins yellowish brown; pterostigma, radial vein, costa, and subcosta brown.

Head almost as long as wide, with convex posterior margin in frontal view; posterolateral corners not forming an angle; frons smooth with shallow weak sparse punctures; punctures ca. 0.07–0.10 mm in diameter, and separated from one another by $1.5\text{--}2.0\times$ their own diameters; punctures on vertex smaller than those on frons. Mandibles with 4 teeth; apical tooth acute and longest; 2nd and 3rd teeth smaller, each forming an acute triangle; basalmost tooth broadest and triangular. Clypeus without median carina; anterior margin very broadly rounded. First 5 antennomeres in a ratio of 20 : 5 : 9 : 9 : 8 in length; 3rd segment $2.0\times$ as long as wide, and equal to 4th in length; 4th segment $1.9\times$ as long as wide. Eyes 0.78 mm in length; WF $1.22\times$ EL. Ocelli forming an acute triangle; OOL $1.6\times$ WOT.

Pronotal disc smooth with a few punctures; 2 transverse carinae present; 1st one on the anterior margin and the other at posterior $1/3$. Median area of mesoscutum smooth, largely impunctate; lateral areas densely punctate, with smooth interspaces; scutellum with about 20 punctures and smooth interspaces. Propodeum as long as wide in dorsal view, with slightly convex posterior margin in dorsal view; median carina



Figs. 21–28. *Pristocera sarawakensis* sp. nov., male. — 21, Head, frontal view; 22, mandible; 23, pterostigma and postmarginal vein of left forewing; 24, pronotum, dorsal view; 25, *ditto*, lateral view; 26, propodeum, dorsal view; 27, subgenital plate, ventral view; 28, genitalia, dorsal view.



Figs. 29–33. *Pristocera sumatrensis* sp. nov., and *P. formosana* Miwa et Sonan, female. — 29–31, *P. sumatrensis* sp. nov.; 32, 33, *P. formosana* Miwa et Sonan (drawn from the allotype designated by Yasumatsu, 1955). — 29, 32, Head, frontal view; 30, mandible; 31, alitrunk, dorsal view; 33, propodeum, dorsal view.

absent; 3 pairs of submedian carinae present; inner 2 pairs short; outermost pair long, almost reaching posterior margin; depressed basal triangular area large, reticulate; sublateral areas with transverse rugae.

Gaster sessile, 1.20 mm in dorsal width; subgenital plate with a series of small teeth on inner margins. Genitalia short and broad as in Fig. 28; parameres short and truncate apically; aedoeagus relatively broad, tapering toward the apex.

Holotype. Male, Sarawak, Miri Lambir, Malaysia, 20–23. I. 1993 [FDS].

Etymology. This species is named after the type locality.

Distribution. Malaysia (Borneo).

Remarks. The type specimen was taken from Malaise Trap.

***Pristocera sumatrensis* sp. nov.**

(Figs. 29–31)

Holotype. Female. HL 1.51 mm; HW 1.25 mm; LM 2.20 mm; LP 0.95 mm; WPD 0.80 mm; TL ca. 8 mm.

Head and alitrunk black; gaster black, with a reddish brown tinge; mandibles and antennae brown; coxae, femora, tibiae dark brown; trochanters brown; tarsi yellowish brown.

Head rectangular, 1.20× as long as wide, with parallel sides and straight posterior margin in frontal view; frons and vertex smooth, with relatively shallow small sparse punctures. Mandibles with 4 triangular teeth. Anterior margin of clypeus broadly rounded, somewhat trapezoidal. First 5 antennomeres in a ratio of 26:4:5:5:5 in length; scape 2.9× as long as wide, 1.92× head width, and broadest at apical end; 2nd segment wider than long; 3rd and 4th segments

each as long as wide; terminal segment 1.8× as long as wide, as long as preceding 2 segments combined. Eyes 0.15 mm in diameter, consisting of many indistinct facets.

Alitrunk with flat dorsal outline in profile. Pronotal disc smooth and with scattered punctures, 1.0× as long as wide. Mesonotal disc triangular, 0.7× as long as wide; surface smooth with about 12 shallow punctures. Mesopleura smooth and sparsely punctate. Propodeal disc with a concave anterior margin and straight posterior margin; midlength 1.1× maximum width; maximum width 2.2× minimum width; surface smooth and shining, with a few small shallow punctures; propodeal declivity and lateral surfaces microreticulate and impunctate. Middle tibiae spinose.

Gaster sessile, smooth and shining; seen from above 1.50 mm in maximum width.

Holotype. Female. Lubuk, Gadang, W. Sumatra, Indonesia, 21–23. VIII. 1985, Sk. Yamane leg. [MZB].

Etymology. Named after its type locality.

Distribution. Indonesia (Sumatra).

Remarks. In the female this species is distinguished from the other Southeast Asian congeners by the quadridentate mandibles (tridentate in *puncticeps*), the punctated pronotal disc except the impunctate median longitudinal belt (smooth in *puncticeps*), and the short and wide propodeal disc (long and relatively narrow as in Fig. 33 in *formosana*).

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