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A REVISION OF THE GENUS *HYLCALOSIA* FISCHER (HYMENOPTERA: BRACONIDAE, ALYSIINAE)

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With 40 text-figures

ABSTRACT

The genus *Hylcalosia* Fischer, 1967 (Braconidae, Alysiinae, Alysiini) is revised. The type-species, *H. ruficeps* (Cameron, 1910) from Burma is redescribed and illustrated. Two new species, *H. hemiflava* spec. nov. from Indonesia, and *H. maetoi* from Japan, are described and illustrated. The species of *Hylcalosia* are keyed and their phylogeny is discussed.

INTRODUCTION

The genus *Hylcalosia* Fischer, 1967 (= *Holcalysia* Cameron, 1910, nec 1905) has long been considered monotypic, being known only from the holotype specimen of *H. ruficeps* from Burma. Owing to the kindness of Mr. Kaoru Maetō (Fukuoka) a second species from Japan was placed at my disposal; a third species from Indonesia was found during a visit to the Instituut voor Taxonomische Zoölogie (Afdeling Entomologie) at Amsterdam. The biology of the species is unknown; Alysiinae have only been recorded as endoparasites of dipterous larvae.

For the technical terms used, see Van Achterberg (1979).

PHYLOGENY

The phylogenetic relationships of the species of *Hylcalosia* are depicted in table 1; the first two apomorphic character-states, as well as the divided dorsal lobe of the mandible, are considered apomorphic because of out-group comparison. The antefurcal position of transverse veins is generally considered to be derived from a more distal position. The other apomorphic character-states are reductions, generally considered apomorphic within the Braconidae; however, such "negative apomorphies" should be used very carefully, bearing in mind that they are less reliable than "positive apomorphies", resulted from acquisitions. As shown in table 1, *H. hemiflava* and *H. maetoi* have more apomorphic

TABLE 1
Phylogenetic relationships of the species of *Hylcalosia*

○ (plesiomorph)	<i>maetoi</i>	<i>hemiflava</i>	<i>ruficeps</i>	● (apomorph)
length of fore tarsus 1.3-1.4 times fore tibia	○	○	●	length of fore tarsus ca. 1.7 times fore tibia
length of mesosoma ca. 1.4 times its height	○	○	●	length of mesosoma ca. 1.7 times its height
pleural sulcus evenly crenulate	●	●	○	pleural sulcus with indistinct crenulation
notauli complete	●	○	◐	notauli absent posteriorly
eye in dorsal view longer than temple	◐	○	●	eye in dorsal view shorter than temple
precoxal sulcus complete	◐	●	○	precoxal sulcus absent posteriorly
dorsal lobe of mandible undivided	◐	○	●	dorsal lobe of mandible divided
vein m-cu of hind wing (sub-) interstitial	○	●	○	vein m-cu of hind wing antefurcal
vein m-cu of fore wing postfurcal	○	◐	○	vein m-cu of fore wing antefurcal

character-states in common than does *H. ruficeps* with either one of these species. Therefore I consider *ruficeps* from Burma the oldest species, split off before the speciation of both insular species, *maetoi* (Japan) and *hemiflava* (Sumatra). The latter two have (in addition to the characters shown in table I) the 1st metasomal segment more widened (figs. 7, 39) than *ruficeps* (fig. 26).

The genus *Hylcalosia* Fischer occupies an isolated position in the Alysini because of the peculiar ovipositor (fig. 32), metasoma (fig. 1), mandible (figs. 1, 13) and third antennal segment (figs. 11, 17). Its sister-group is unknown to me and the elucidation of its relationships will need further study of the (sub)tropical Alysini.

Hylcalosia Fischer

Hylcalosia Fischer, 1967: 125 (replacement name for *Holcalysia* Cameron, 1910 nec 1905). Shenefelt, 1974: 993.

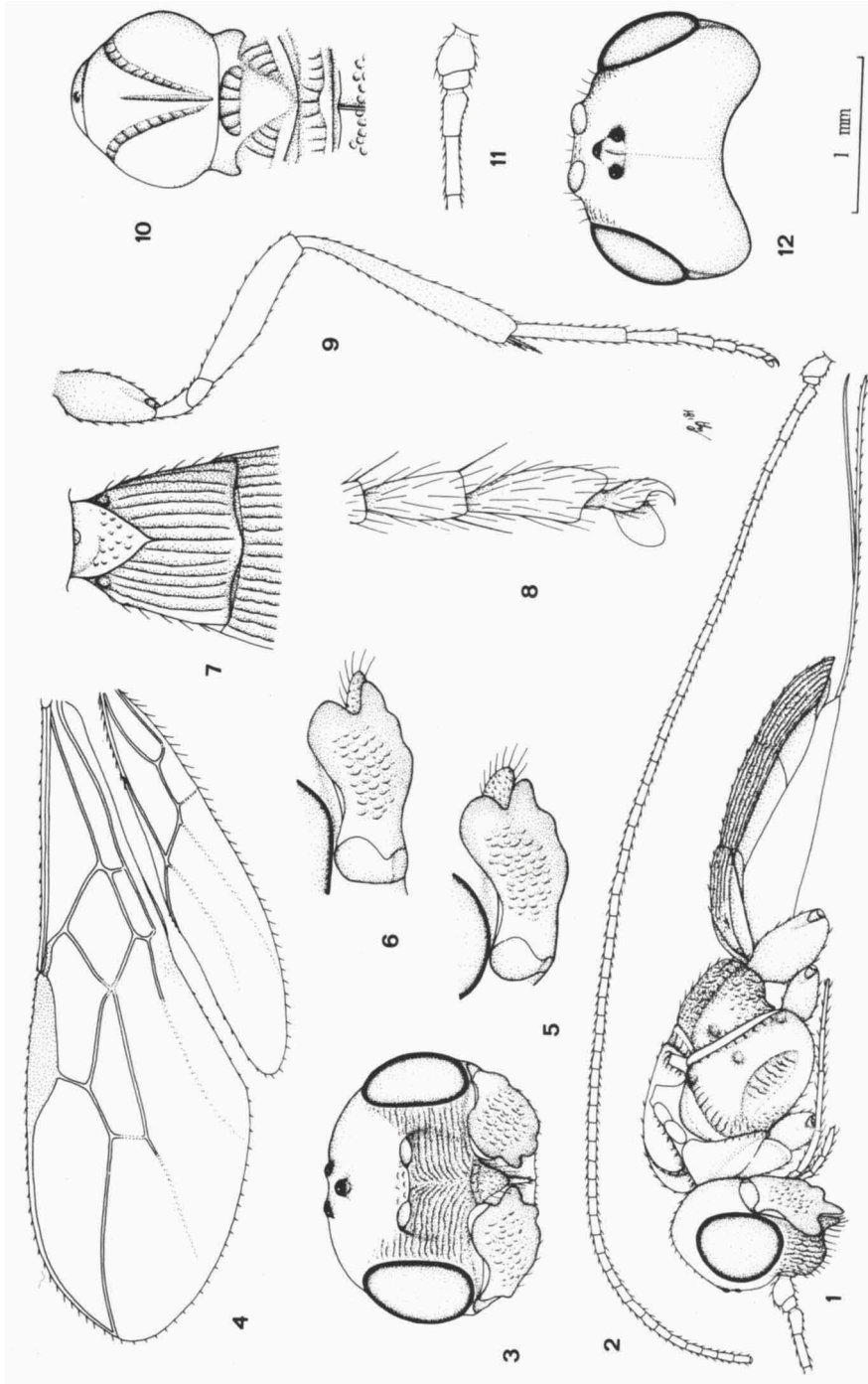
Holcalysia Cameron, 1910: 6. Shenefelt, 1974: 993.

Type-species: *Holcalysia ruficeps* Cameron, 1910.

Diagnosis. — Third antennal segment somewhat compressed and distinctly widened, its maximum width 1.5-1.7 times width of 4th segment, and shorter than 4th segment (including annellus; figs. 11, 17, 34); scapus stout, ventrally shorter than dorsally (fig. 34); clypeus triangular, acutely protruding anteriorly, and its margin not differentiated (fig. 22); eyes glabrous; malar space (almost) absent; mandible large, more or less 3- or 4-lobed, its ventral carina rather protruding and its dorsal lobe strongly enlarged (figs. 6, 14, 33); maxillary palp with 6 segments; labial palp with 4 segments; pronope deep; notauli present anteriorly; mesoscutum with long medio-posterior groove (figs. 23, 40); metanotum (rather) flat medially; precoxal sulcus present medially; vein r of fore wing emitted far behind middle of pterostigma (fig. 4); vein 2-SR of fore wing somewhat curved and longer than vein 3-SR (fig. 31); vein CU1b of fore wing shorter than vein 3-CU1 or subequal (fig. 4); vein M + CU of hind wing longer than vein 1-M (fig. 4); wing veins not enlarged; propodeum coarsely sculptured (but antero-laterally smooth), with a short medial carina (fig. 40), without areola and its posterior surface not differentiated; propodeal spiracle (very) small; 1st tergite with dorsal carina in its basal half, dorsope small; 2nd and 3rd tergites completely and coarsely longitudinally striate or rugose (fig. 26); 4th and following tergites (largely) retracted (figs. 1, 13); upper valve of ovipositor enlarged and somewhat flattened apically (fig. 32), its lower valve narrow and needle-shaped; ovipositor sheath largely glabrous, its length 0.4-0.8 times fore wing (but unknown of *ruficeps*).

KEY TO SPECIES OF *HYLALOSIA* FISCHER

1. Length of eye in dorsal view about 1.6 times temple (fig. 12); vein m-cu of hind wing far antefurcal (fig. 4); mesosoma, 1st and 2nd metasomal tergites, yellowish; head blackish-brown; maxillary palp reaching middle coxa if head is vertical (fig. 1); vein m-cu of fore wing (sub)interstitial (fig. 4); notauli complete (fig. 10) *hemiflava* spec. nov.
- Length of eye in dorsal view 0.7-1.1 times temple (fig. 21, 35); vein m-cu of hind wing (sub)interstitial (figs. 15, 31) or shortly postfurcal; mesosoma and metasoma (except prothorax), black, at most mesoscutum reddish; head reddish; maxillary palp (if head is vertical) not reaching middle coxa (figs. 13, 28); vein m-cu of fore wing shortly postfurcal (figs. 15, 31); notauli more or less reduced posteriorly (figs. 23, 40) 2
2. Length of eye in dorsal view about 0.7 times temple (fig. 21); length of fore tarsus about 1.7 times fore tibia (fig. 20); medial length of 2nd tergite equal to its maximum width (fig. 26); 3rd tergite with medio-posterior groove (fig. 26); pleural sulcus evenly crenulate (fig. 13) *ruficeps* (Cameron)
- Length of eye in dorsal view 1.0-1.1 times temple (fig. 35); length of fore tarsus about 1.3 times fore tibia; medial length of 2nd tergite two-thirds of its maximum width; 3rd tergite without groove medio-posteriorly; crenulation of pleural sulcus ventrally wider than dorsally (fig. 28) *maetoi* spec. nov.



Figs. 1-12. *Hylaeosia hemiflava* spec. nov., holotype. 1, habitus, lateral aspect; 2, antenna, lateral aspect; 3, head, frontal aspect; 4, wings; 5, mandible, full sight on 3rd tooth; 6, mesosoma, dorsal aspect; 7, 1st tergite; 8, outer hind claw; 9, hind leg; 10, mesosoma, dorsal aspect; 11, 1st-4th antennal segments; 12, head, dorsal aspect. 1, 2, 4, 9: scale-line (= 1 x); 3, 7, 10, 12: 1.3 x; 5, 6, 11: 2 x; 8: 5 x.

Hylcalosia hemiflava spec. nov. (figs. 1-12)

Holotype, ♀, length of body and fore wing both 4.1 mm.

Head. — Antennal segments 53 (but apical segments missing), length of 3rd segment 0.9 times 4th segment, length of 3rd and 4th segments 1.9 and 3.5 times their width, respectively; length of maxillary palp 1.1 times height of head, reaching middle coxa (fig. 1); length of eye in dorsal view 1.6 times temple (fig. 12); POL: Ø ocellus: OOL = 5:3:11; frons slightly convex, smooth, (except for some anterior rugae); face coarsely transversely rugose, protruding medially; clypeus punctate; mandible 3-lobed, with ventral carina somewhat protruding (figs. 5, 6).

Mesosoma. — Length of mesosoma 1.4 times its height; antescutal depression absent; precoxal sulcus present in anterior two-thirds of mesopleuron (fig. 1), crenulate-rugose; rest of mesopleuron smooth; ventral half of pleural sulcus distinctly crenulate, dorsal half finely crenulate (fig. 1); notauli completely impressed, crenulate; medial carina only in ventral half of metanotum (fig. 10).

Wings. — Fore wing: r:3-SR:SR1 = 7:12:44; 1-CU1:2-CU1 = 1:7; 2-SR:3-SR:r-m = 22:12:7; m-cu (sub)interstitial (fig. 4). Hind wing: m-cu far antefurcal (fig. 4).

Legs. — Length of fore tarsus 1.4 times fore tibia; tarsal claws medium-sized (as other spp., figs. 8, 24, 38); length of femur, tibia and basi-tarsus of hind leg 4.5, 8.5 and 7.6 times their width, respectively; length of hind tibial spurs 0.2 and 0.3 times hind basitarsus.

Metasoma. — Length of 1st tergite equal to its apical width, its surface longitudinally rugose, as 2nd and 3rd tergites, dorsal carinae of 1st tergite united (fig. 7); laterope obsolete; 2nd suture shallow, crenulate; medial length of 2nd tergite 0.7 times its maximum width; length of ovipositor sheath 0.41 times fore wing; hypopygium not easily visible because of glue.

Colour. — Brownish-yellow (including 10 basal segments of antenna and frons anteriorly); face, mandible, rest of antenna, pterostigma (but basally narrowly yellowish as parastigma), wing veins largely, posterior margin of meso- and metanotum, hind tibia (except base), 1st and 2nd hind tarsal segments, dark brown; base of all tibiae whitish; rest of head and 3rd tergite, black; wing membrane subhyaline.

Holotype in Instituut voor Taxonomische Zoölogie, Amsterdam: "Fort de Kock [Sumatra], 920 M., 1926, leg. E. Jacobson".

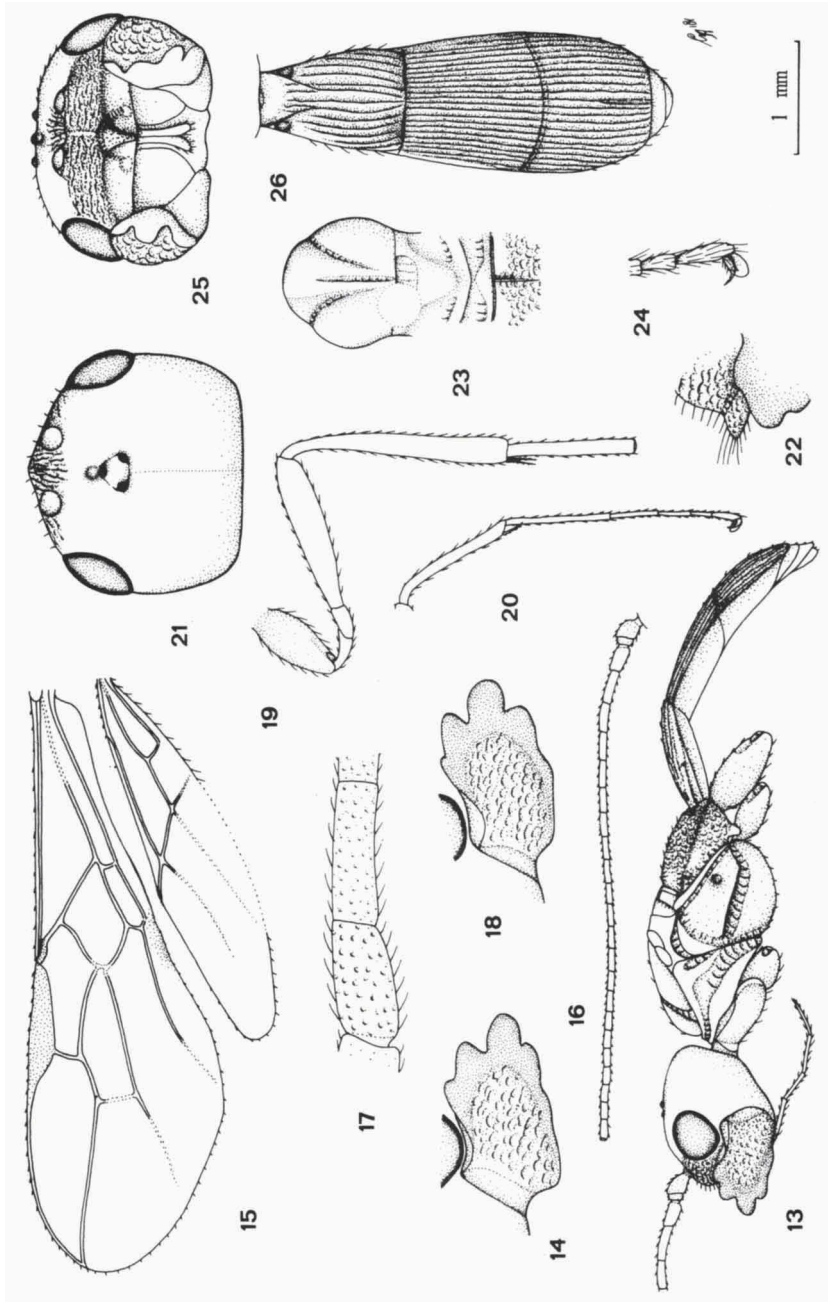
Hylcalosia ruficeps (Cameron) (figs. 13-26)

Hylcalosia ruficeps Cameron, 1910: 6.

Hylcalosia ruficeps; Fischer, 1967: 125-128, figs. 12-14. Shenefelt, 1974: 993.

Holotype, ♂, length of body 6.1 mm, of fore wing 5.0 mm.

Head. — Antennal segments 24 (but apical segments missing, according to original description at least 47), length of 3rd segment 0.9 times 4th segment, length of 3rd and 4th segments 2.0 and 3.3 times their width, respectively;



Figs. 13-26. *Hylcabosia ruficeps* (Cameron), holotype. 13, habitus, lateral aspect; 14, mandible, full sight on 1st tooth; 15, wings; 16, antenna; 17, 3rd and 4th antennal segments; 18, mandible, full sight on 3rd tooth; 19, hind leg; 20, fore tibia and tarsus; 21, head, dorsal aspect; 22, clypeus, lateral aspect; 23, mesosoma, dorsal aspect; 24, outer fore claw; 25, head, frontal aspect; 26, metasoma, dorsal aspect. 13, 15, 16, 19, 20: scale-line (= 1 x); 14, 18, 24: 2.5 x; 17: 5 x; 21, 25: 1.6 x; 22: 2 x; 23, 26: 1.3 x.

length of maxillary palp 1.3 times height of head, not reaching middle coxa (fig. 13); length of eye in dorsal view 0.7 times temple (fig. 21); POL:Ø ocellus: OOL = 4:2:14; frons flat, with deep pit in front of anterior ocellus (fig. 21), only anteriorly rugose; face transversely rugose, rather flat, lower part of face depressed and smooth (fig. 25); clypeus punctate; mandible 4-lobed, and ventral carina somewhat protruding (figs. 14, 18).

Mesosoma. — Length of mesosoma 1.8 times its height; antescutal depression narrow; prexocal sulcus complete, coarsely crenulate (fig. 13); rest of mesopleuron sparsely punctulate; pleural sulcus evenly crenulate; notauli distinct, but near medial groove obsolete, crenulate anteriorly (fig. 23); medial carina of metanotum absent.

Wings. — Fore wing: r:3-SR:SR1 = 11:21:72; 1-CU1:2-CU1 = 1:13; 2-SR:3-SR: r-m = 38:21:16; m-cu shortly postfurcal (fig. 15). Hind wing: m-cu basally sclerotized, subinterstitial (fig. 15).

Legs. — Length of fore tarsus 1.7 times fore tibia (fig. 20); length of femur, tibia and basitarsus of hind leg 5.3, 8.7 and 7.6 times their width, respectively; length of hind tibial spurs both 0.2 times hind basitarsus.

Metasoma. — Length of 1st tergite 1.5 times its apical width, its surface longitudinally striate (as 2nd and 3rd tergites); dorsal carinae of 1st tergite nearly reaching apex of tergite, not united (fig. 26); laterope absent; 2nd suture shallow and crenulate; medial length of 2nd tergite equal to its maximum width; 3rd tergite with medio-posterior groove (fig. 26, absent in other spp.); hypopygium small, truncate apically.

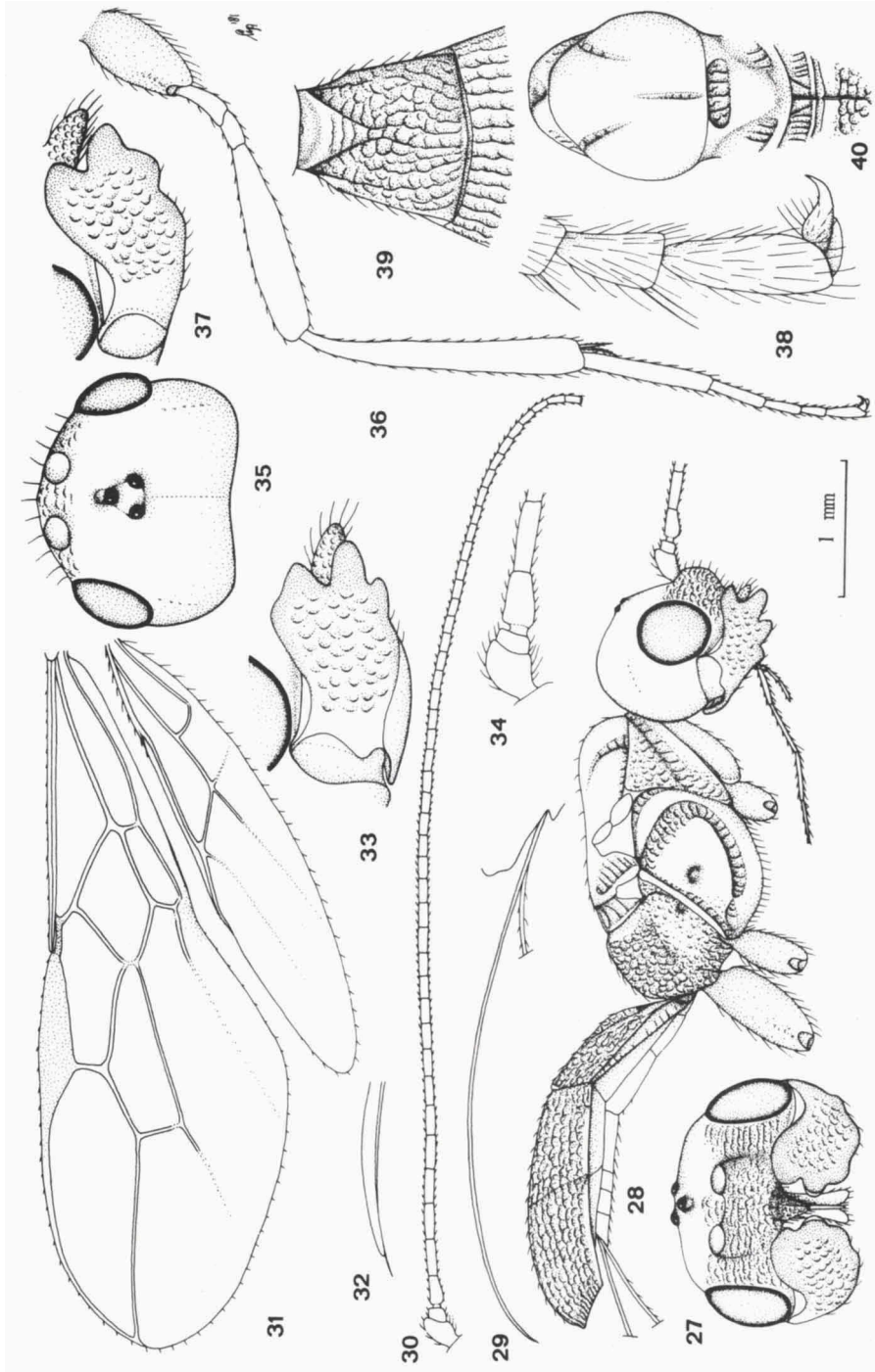
Colour. — Black; head (but stemmaticum black), 5 basal segments of antenna (rest dark brown or black), and propleuron, reddish-yellow; fore leg, apices of trochantelli, middle tibia and tarsus, and base of hind tibia, yellowish; rest of legs, pterostigma and veins, side of propleuron and tegula, dark brown; wing membrane light brown. According to Fisher (1967: 128) 2nd-5th hind tarsal segments yellow.

Holotype in Zoologisches Museum, Berlin: "Tenasserim [= Burma], Tanaong, 4000', Mai 190., Fruhstorfer SV", "*Holcalysia ruficeps* Cam., Type" (in Cameron's handwriting).

***Hylcalosia maetoi* spec. nov. (figs. 27-40)**

Holotype, ♀, length of body 5.3 mm; length of fore wing 5.0 mm.

Head. — Antennal segments 45 (but apical segments missing), length of 3rd antennal segment 0.8 times 4th segment, length of 3rd and 4th segments 2.1 and 3.5 times their width, respectively; length of maxillary palp 1.1 times height of head, not reaching middle coxa (fig. 28); length of eye in dorsal view equal to temple (fig. 35); frons flat, anteriorly with some reticulation; vertex with some lateral punctures (fig. 35); POL:Ø ocellus:OOL = 4:3:14; face transversely reticulate-rugose, rather strongly convex medially (fig. 28); clypeus reticulate-punctate; mandible 3-lobed, upper lobe truncate (fig. 33) and ventral carina protruding (fig. 37).



Figs. 27-40. *Hylcalosia maetoi* spec. nov., holotype. 27, head, frontal aspect; 28, habitus, lateral aspect; 29, ovipositor; 30, antenna; 31, wings; 32, apex of ovipositor; 33, mandible, full sight on 1st tooth; 34, 1st-4th antennal segments; 35, head, dorsal aspect; 36, hind leg; 37, mandible, full sight on 3rd tooth; 38, inner hind claw; 39, 1st tergite; 40, mesosoma, dorsal aspect. 27, 35, 39, 40: 1.2 x; 28-31, 36: scale-line (= 1 x); 32, 38: 5 x; 33, 34, 37: 2 x.

Mesosoma. — Length of mesosoma 1.4 times its height; antescutal depression absent; precoxal sulcus complete, crenulate-rugose (fig. 28); rest of mesopleuron smooth; mesosternum densely whitish setose (sparsely setose in other spp.); pleural sulcus ventrally wider crenulate than dorsally (fig. 28); notauli only anteriorly impressed and crenulate (fig. 40); medial carina of metanotum complete (fig. 40).

Wings. — Fore wing: r:3-SR:SR1 = 6:17:46; 1-CU1:2-CU1 = 2:17; 2-SR:3-SR:r-m = 47:34:20; m-cu postfurcal (fig. 31). Hind wing: m-cu interstitial.

Legs. — Fore tarsus 1.3 times fore tibia; length of femur, tibia, and basitarsus of hind leg 4.5, 8.1 and 7.6 times their width, respectively; length of both hind tibial spurs 1/4 times hind basitarsus.

Metasoma. — Length of 1st tergite equal to its apical width, coarsely reticulate, dorsal carina not united (fig. 39); laterope medium-sized (fig. 28); 2nd and 3rd tergites coarsely longitudinally reticulate-rugose, laterally narrowly smooth; medial length of 2nd tergite two-thirds of its maximum width; 3rd tergite without groove medio-posteriorly; length of ovipositor sheath 0.75 times fore wing; hypopygium medium-sized, acute posteriorly.

Colour. — Black; head (except stemmaticum), scapus basally, pedicellus partly, annellus, tegulae, fore leg, middle leg (except trochanter and coxa), and hind basitarsus), brownish-yellow; bases of tibiae whitish-yellow; prothorax, mesonotum (but posteriorly darkened), upper part of mesopleuron, red; rest of mesopleuron, middle coxa, hind trochanters, femur, tibia and basitarsus, pterostigma and wing veins largely, dark brown.

Holotype in Entomological Laboratory, Kyushu University, Fukuoka, (Type no. 2253): “Kikuchi-Suigen, Kikuchi City, Kumamoto Pref. [Kyushu], 31.vii.1977, Tadao Gotō”, “Japan”. Paratype: 1 ♀, Rijksmuseum van Natuurlijke Historie, Leiden: “Kanayama, Yamanashi Pref. [Honshu], 25.vii.1956, F. Nakasuzi”, “Japan”. Very similar to holotype, but metanotum somewhat more protruding, middle femur and tibia infuscated, mesosoma largely black, tegulae dark brown, notauli largely smooth and scutellar sulcus less rugose. Metasoma somewhat distorted; length of body 7.2 mm, of fore wing 6.1 mm; length of eye in dorsal view 1.1 times temple; vein m-cu of hind wing shortly postfurcal; length of ovipositor sheath 0.66 times fore wing.

Note. — It is a great pleasure to me to dedicate this species to Mr. Kaoru Maetō, who kindly provided me the specimens for identification.

ACKNOWLEDGEMENTS

I am much indebted to the following persons for providing unidentified specimens, type-specimens, or valuable comment: Mr. T. Huddleston (London), Dr. F. Koch (Berlin), Mr. Kaoru Maetō (Fukuoka), and Dr. P. Oosterbroek (Amsterdam).

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