Table 15. Character coding for the analysis of the generic relationships in the tribe Cephalonimiini.

? = states unknown, P = polymorphic.

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Achephalonomia	?	?	2	0	0	0	0	0	1	1	1	0	1	?
Chephalonomia	1	p	1	0	0	0	0	0	1	1	1	0	1	0
Israelius	1	1	1	0	0	0	0	0	0	0	0	1	0	?
Plastanoxus	1	1	1	0	0	0	0	0	0	1	0	0	1	1
Prolops	2	2	1	1	1	1	1	1	0	1	0	0	1	0
Outgroup	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 16. Characters and character states used in the analysis of subfamily Mesitiinae.

0, plesiomorphic; 1, apomorphic.

1. Head. Shorter [0], elongate [1].
2. Surface of head. Without strong punctures [0]; covered with strong punctures [1].
3. Median carina of clypeus. Simple [0]; dilated anteriorly [1].
4. Eyes. Moderate in size [0]; smaller [1].
5. Eyes. Moderate in size [0]; larger [1].
6. Ocelli. Distinct [0]; small and indistinct [1].
7. Surface of pronotum. Without strong punctures [0]; moderately to strongly punctate [1].
8. Median longitudinal furrow on pronotum. Absent or not completely developed [0]; completely developed [1].
9. Lateral borders of pronotum. Straight or weakly concave [0]; strongly concave [1].
10. Median furrow of mesonotum. Absent or indistinct [0]; distinct [1].
11. Parapsidal furrows. Distinct [0]; indistinct or absent [1].
12. Scutellum. Only weakly convex dorsally [0]; extremely convex dorsally [1].
13. Propodeum. Without median furrow [0]; with a longitudinal median furrow [1].
14. Sublateral carinae of propodeum. Present [0]; absent [1].

15. Posterolateral borders of propodeum. Not spinose [0]; spinose [1].

16. Transverse carinae of sublateral areas of propodeum. Present [0]; absent [1].

17. 2nd gastral tergite. Moderate in size [0]; large [1].

18. Hairs on gastral tergites. Scattered [0]; abundant [1].

19. 2nd gastral tergite. Weakly to moderately punctate [0]; strongly punctate [1].

Table 17. Character coding for the analysis of the generic relationships in the subfamily Mesitiinae.

? = states unknown.

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Anaylax	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0
Bradepyris	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0
Clytrovorus	0	1	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	0	0
Heterocoelia	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0
Incertosulcus	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0
Mesitius	0	1	1	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0
Metrionotus	0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0
Parvoculus	1	1	0	1	0	0	1	1	1	1	0	1	0	0	1	0	1	0	0
Pilomesitius	0	1	0	0	1	0	1	1	0	1	0	1	0	0	1	0	1	1	0
Pseudomesititus	0	0	0	0	0	1	0	0	0	?	1	0	0	0	1	0	1	0	0
Pycnomesitius	0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	1
Sulcomesitius	0	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0
Outgroup	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 18. Characters and their states used in the analysis of subfamily Bethylinae.

0, plesiomorphic; 1, apomorphic.

1. Number of antennal segments. 13 [0]; 12 [1].
2. Number of segments of maxillary palpi. 6 [0]; 5 [1].
3. Mumber of segments of labial palpi. 3 [0]; 2 [1].
4. Head. Long, flat, and more or less rectangular [0]; broad and rounded [1].
5. Anterior border of clypeus. Angulate at middle [0]; rounded or truncated [1].
6. Median carina of head. Short [0]; long, at least reaching the middle level of eyes [1].
7. Lateral borders of head. Almost straight or weakly convex [0]; strongly convex [1].
8. Posterior margin of pronotum. Almost straight [0]; slightly produced backward medially [1].
9. Notauli. Present, [0]; absent [1].
10. A pair of pits in basal inner portion of propodeum. Absent [0]; present [1].
11. A pair of pits in basal outer portion of propodeum. Absent [0]; present [1].
12. Median carina of propodeum. Present [0]; absent [1].
13. Transverse carina of propodeum. Present [0]; absent [1].

14. Mesopleura. Simple [0]; with a dull cornicle [1].
15. Pterostigma. Thin [0]; broad [1].
16. Prostigma. Not forming distinct large triangle [0]; large and forming a triangle [1].
17. Basal vein. Connected with subcosta near the pterostigma [0]; meeting subcosta by about length of pterostigma [1].
18. Basal vein. Oblique [0]; forming a distinct angle with a short branch [1].
19. Anal and transverse median veins. Round, not forming an angle [0]; forming an angule [1].
20. Marginal cell. Present [0]; absent [1].
21. Submedian cell. Present [0]; absent [1].
22. Discoidal cell (= areolet). Present [0]; absent [1].
23. Fore femora. Moderately broad [0]; extremely broad [1].
24. Hind coxae. Simple, without spine [0]; with a large blunt spine [1].
25. A strong notch on the anterior margin near the base of hind wings. Absent [0]; present [1].
26. Claws. Weakly to moderately curved [0]; strongly curved [1].

Table 19. Character coding for the analysis of the generic relationships in the subfamily Bethylinae.

"P" indicates polymorphic.

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Bethylus	1	1	1	1	1	0	0	0	1	0	0	1	1	0	1	0	1	1	1	1	1	1	0	0	1	1
Sierola	0	1	0	0	0	0	1	0	1	0	0	1	P	0	1	0	0	0	0	1	0	0	1	0	1	1
Goniozus	0	1	0	0	0	0	P	0	1	0	0	1	P	0	1	1	0	0	0	1	1	P	1	0	1	1
Prosielora	0	1	0	0	0	1	1	1	1	1	0	1	0	0	1	0	0	0	0	1	1	0	0	0	1	1
Odontepyris	0	1	0	0	0	1	1	0	1	0	1	0	0	1	1	0	0	0	0	1	1	P	0	0	1	1
Lytopsenella	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	1
Outgroup	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 20. Number of genera in each subfamily by zoogeographical regions. Figures in parentheses are endemic genera.

PAL: Palaearctic region, ORI: Oriental region, AUS: Australian region, ETH, Ethiopian region, NEA: Nearctic region, NET: Neotropical region.

Subfamilies & tribes	Region						Total
	PAL	ORI	AUS	ETH	NEA	NET	
Pristocerinae	6(1)	9(2)	1(0)	16(10)	5(0)	5(0)	20
Parapenesiinae				1(1)			1
Epyrinae							
Epyrini	8(1)	16(4)	3(0)	13(0)	11(0)	11(0)	22
Sclerodermini	3(0)	5(2)	5(0)	3(0)	3(0)	7(3)	12
Cephalonomiini	4(1)	3(0)	0	0	3(0)	2(0)	5
Galodoxinae		1(1)					1
Mesitiinae	9(5)	5(0)	0	6(2)	0	0	12
Bethylinae	5(0)	4(0)	4(0)	2(0)	3(0)	3(0)	6
Incertae cedis		1					1
Total	35(7)	44(9)	13(0)	41(12)	25(0)	27(3)	80

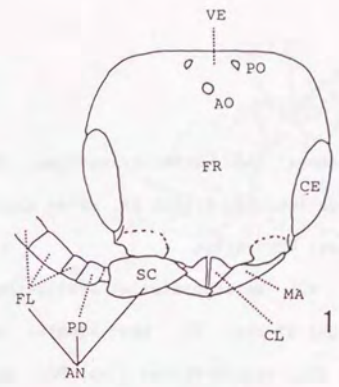
Table 21. Host records of some bethylid genera.

(Modified from Tachikawa (1980, 1985) and Evans (1978).)

Subfamilies & Genera	Host	
	Order	Family
Pristocerinae		
Acrepyris	Coleoptera	Elateridae
Apenesia	Coleoptera	Curculionidae
Pristocea	Coleoptera	Elateridae
Dissomphalus	Coleoptera	Myrmecophilous Coleoptera
Pseudisobrachium	Coleoptera	Myrmecophilous Coleoptera
Parascleroderma	Coleoptera	Bostrychidae
		Cleridae
Epyrinae		
Epyris	Coleoptera	Scolytidae
		Tenebrionidae
Holepyris	Coleoptera	Cerambycidae
		Cucujidae
		Curculionidae
		Silvanidae
		Tenebrionidae

Laelius	Coleoptera	Bostrychidae
		Dermestidae
Rhabdepyris	Coleoptera	Curculionidae
		Tenebrionidae
Sclerodermus	Coleoptera	Anobiidae
		Bostrychidae, Bruchidae,
		Buprestidae, Cerambychidae,
		Lamiidae, Lyctidae, Scolytidae,
		Cynipidae, Tenebrionidae,
		Trogositidae
Lepidosternopsis	Coleoptera	Curculionidae
Plastanoxus	Coleoptera	Ciidae, Cucujidae
Cephalonomia	Coleoptera	Anobiidae, Bostrychidae, Ciidae
		Cucujidae, Curculionidae,
		Cynipidae, Ptinidae, Scolytidae
		Trogositidae
Prorops	Coleoptera	Scolytidae
Bethylidae		
Bethylus	Lepidoptera	Cosmopterygidae,
		Coleophoridae, Gelechiidae,
		Olethreutidae, Tineidae
		Tortricidae

Goniozus	Lepidoptera	Blastobasidae, Coleophoridae, Cosmopterygidae, Crambidae, Gelechiidae, Glyphipterygidae, Gracilariidae, Olethreutidae, Phycitidae, Psychidae, Pyralidae, Pyraustidae, Tineidae, Torticidae, Xylorictidae
Prosielora	Lepidoptera	Olethreutidae, Tortricidae



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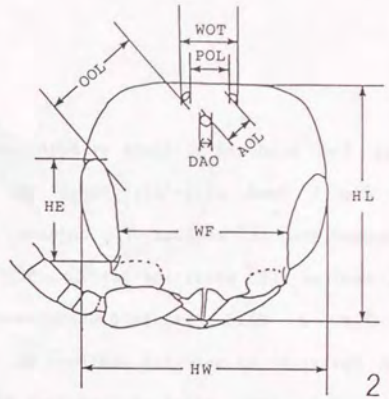

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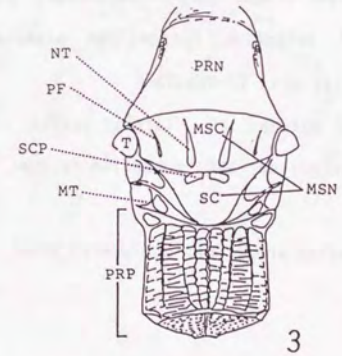

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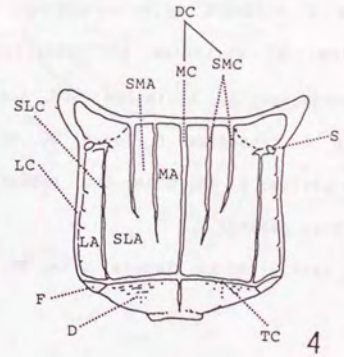

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Figs. 1-4. Head and alitrunk of Bethylidae.

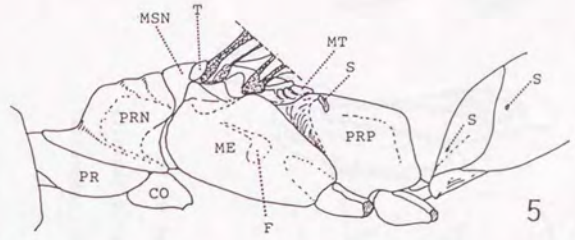
Fig. 1. Head, major structures. AN, antenna; AO, anterior ocellus; CE, compound eye; CL, clypeus; FL, antennal flagellum; FR, frons; MA, malar space; PD, pedicel; PO, posterior ocellus; SC, scape; VE, vertex.

Fig. 2. Head, standard measurements. AOL, anteroposterior ocello-line; DAO, daiameter of anterior ocellus; HE, height of eye; HL, head length; HW, head width; LPD, width of propodeal disc; OOL, ocello-ocular line; POL, posterior ocello-line; WF, width of frons; WOT, width of ocellar triangle.

Fig. 3. Alitrunk, major structures, dorsal view. MSC, mesoscutum; MSN, mesonotum; MT, metanotum; NT, notaulix; PF, parapsidal furrow; PRN, pronotum; PRP, propodeum; SC, scutellum; SCP, scutellar pit; T, tegula.

Fig. 4. Propodeum. F, fovea; DC, discal carina; LC, lateral carina; MC, median carina; S, spiracle; SLC, sublateral carina; SMC, submedian carina; TC, transverse carina.

D, declivity; LA, lateral area; MA, median area; SLA, sublateral area.



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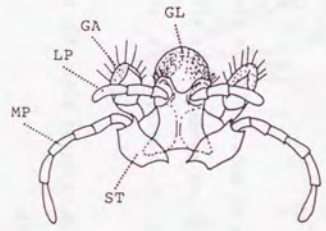

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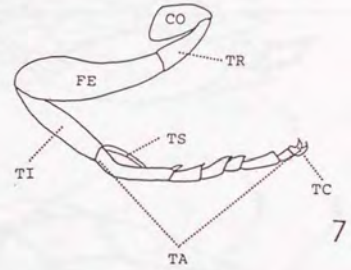

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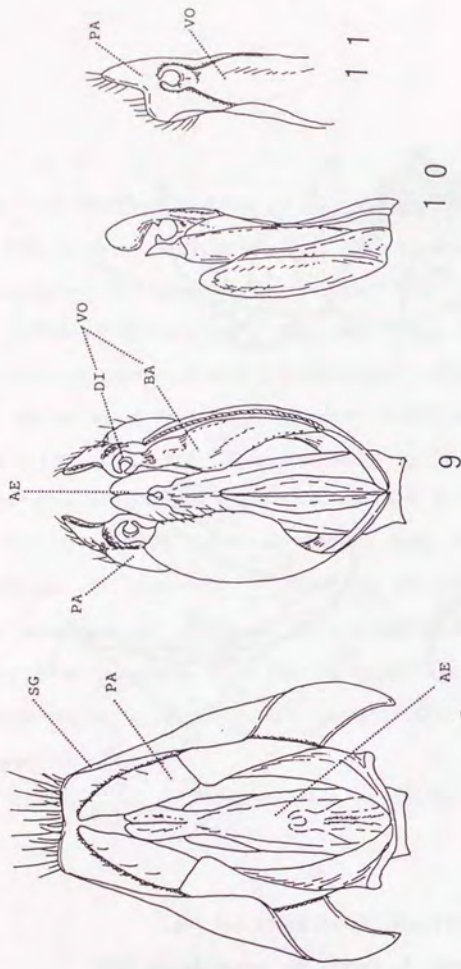
Figs. 5-7. Major structures of alitrunk, mouth parts and leg.

5. Alitrunk, lateral view. CO, coxa; F, fovea; ME, mesopleurom; MSN, mesonotum; MT, metanotum; PR, propleuron; PRN, pronotum; PRP, propodeum; S, spiracle; T, tegula.

6. Mouth parts; GA, galea; GL, glossa; LP, labial palp; MP, maxillary palp; ST, stipes.

7. Fore leg. CO, coxa; FE, femur, TA, tarsus, TC, tarsal claw; TI, tibia; TR, trochanter; TS, tibial spur.



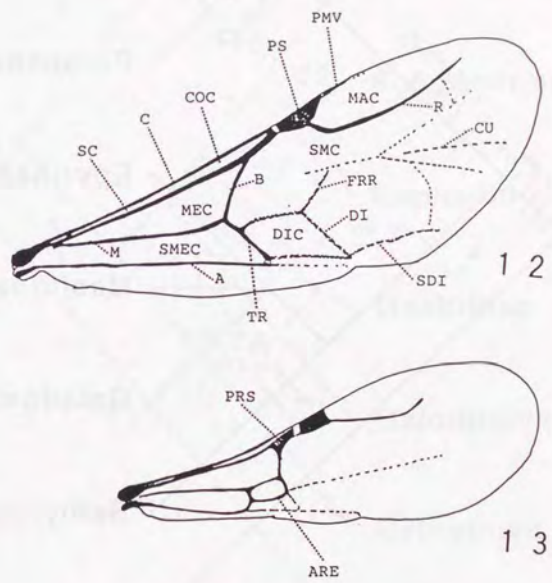
Figs. 8-11. Major structures of male genitalia and subgenital plate.

Fig. 8. Male genitalia and subgenital plate of Acrepyris japonica (Yasumatsu), dorsal view. AE, aedeagus; PA, paramere; SG, subgenital plate.

Fig. 9. Male genitalia, ventral view. AE, aedeagus; BA, base; DI, digitus; VO, volsella.

Fig. 10. Aedeagus, lateral view.

Fig. 11. Paramere (PA) and volsella (VO), inner lateral view.



Figs. 12-13. Forewings of Bethylidae. 12, Pristocera sp.; 13, Goniozus sp.

A, anal vein; ARE, areolet; B, basal vein; C, costa; CU, cubital vein; DI, discoidal vein; FRR, first recurrent vein; M, median vein; PMV, post marginal vein; PRS, prostigma; PS, pterostigma; R, radial vein; SC, subcosta; SDI, subdiscoidal vein; TR, transverse median vein.

COC, costal cell; DIC, discoidal cell; MAC, marginal cell; MEC, median cell; SMC, submarginal cell; SMEC, submedian cell.

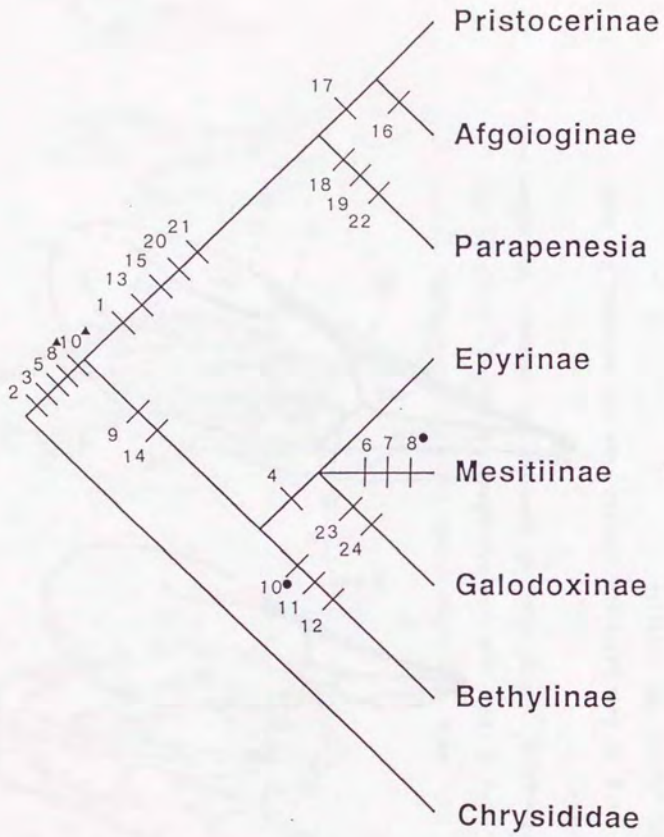


Fig. 14. Proposed phylogeny of the subfamilies of Bethylidae.

▲: showing later reversal.

●: reversal of previous change.

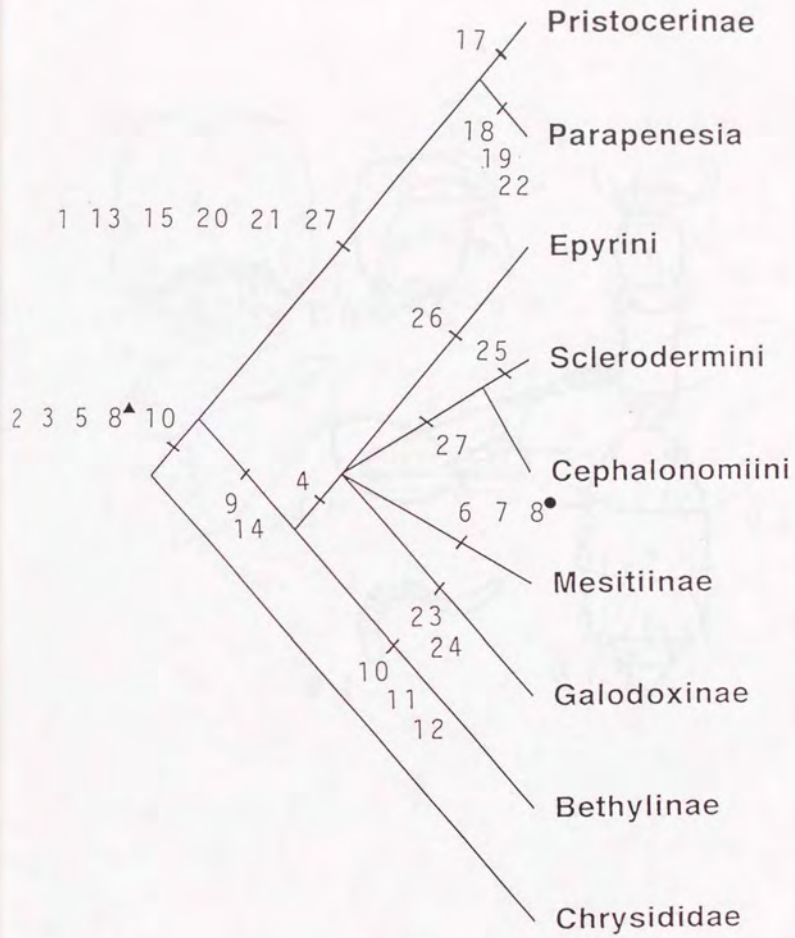
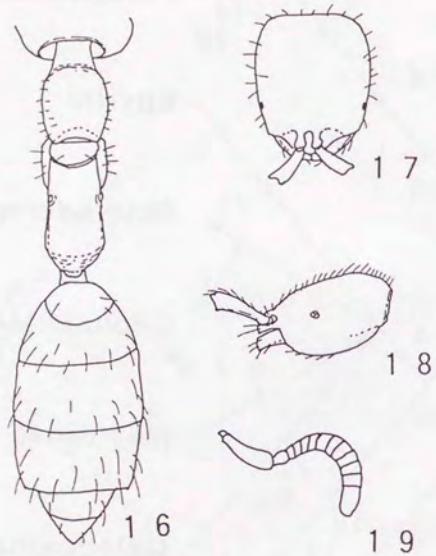


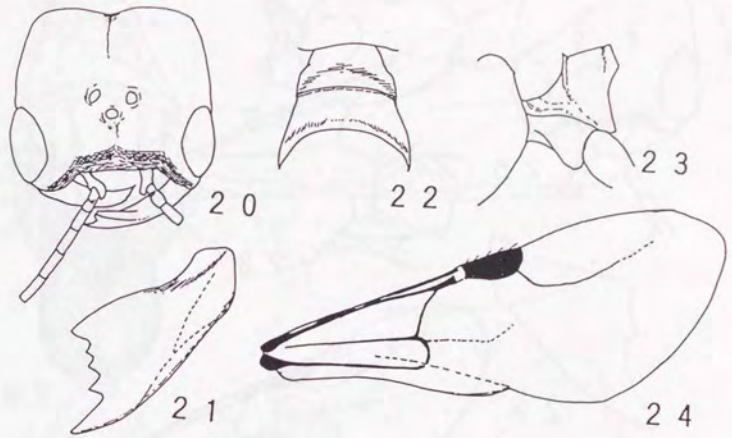
Fig. 15. The most parsimonious cladogram of the subfamily level analysis.

▲: showing later reversal.

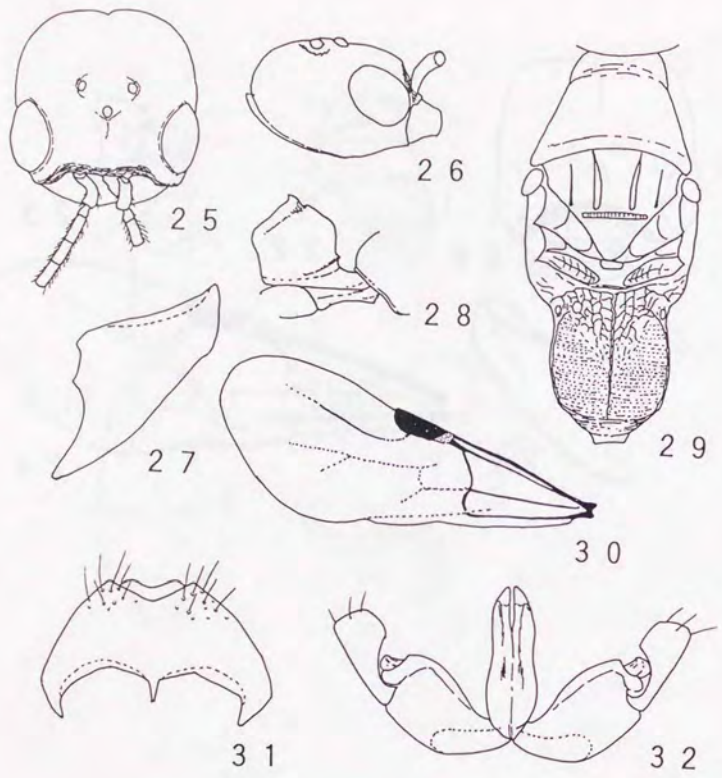
●: reversal of previous change.



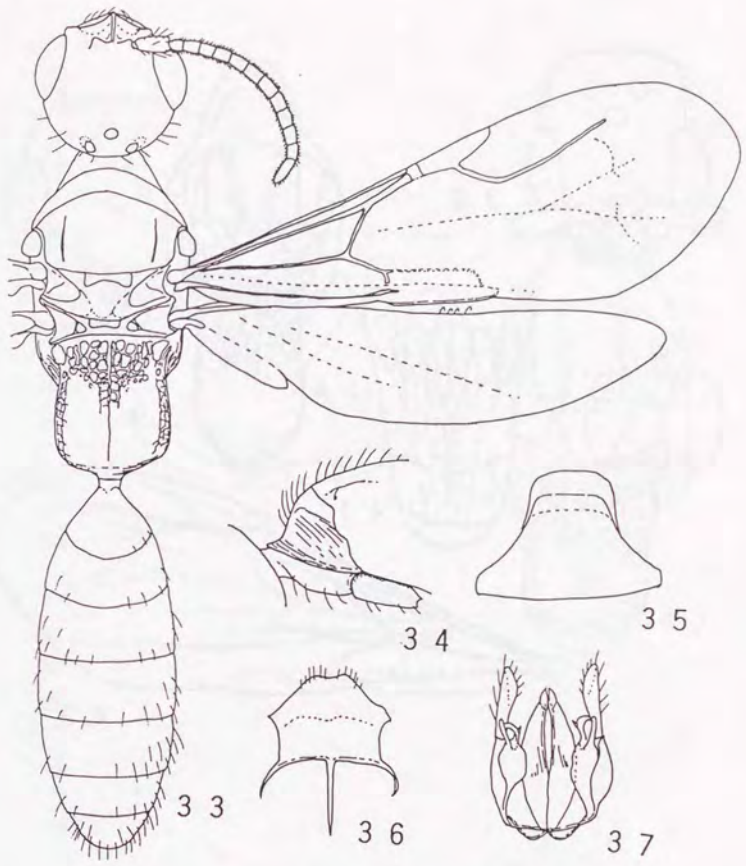
Figs. 16-19. Psilobethylus luteipes Kieffer. 16, alitrunk and gaster, dorsal view; 17, head, frontal view; 18, head, lateral view; 19, antenna.



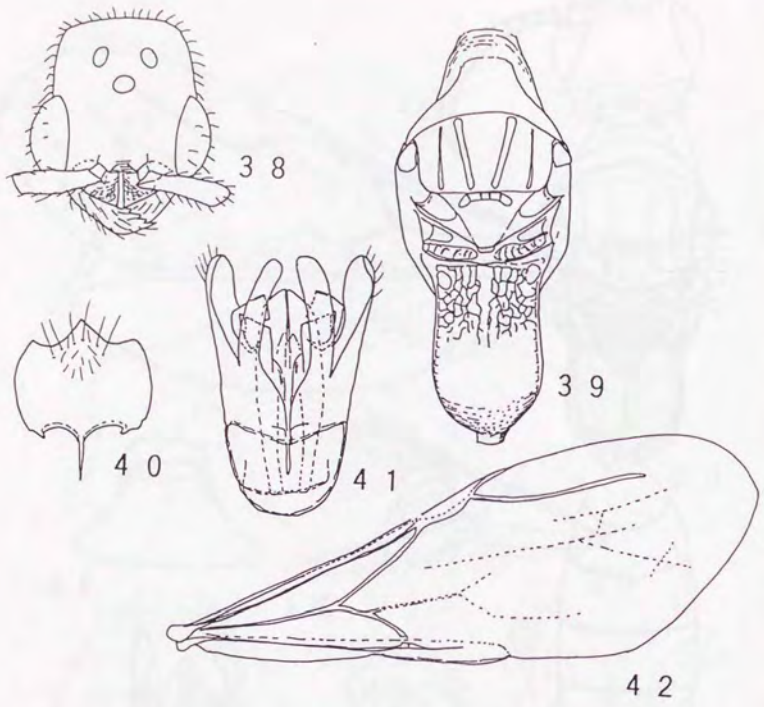
Figs. 20-24. Prosapenesia lacteipennis Kieffer. 20; head, frontal view; 21, mandible; 22, pronotum, dorsal view; 23, pronotum, lateral view; 24, forewing.



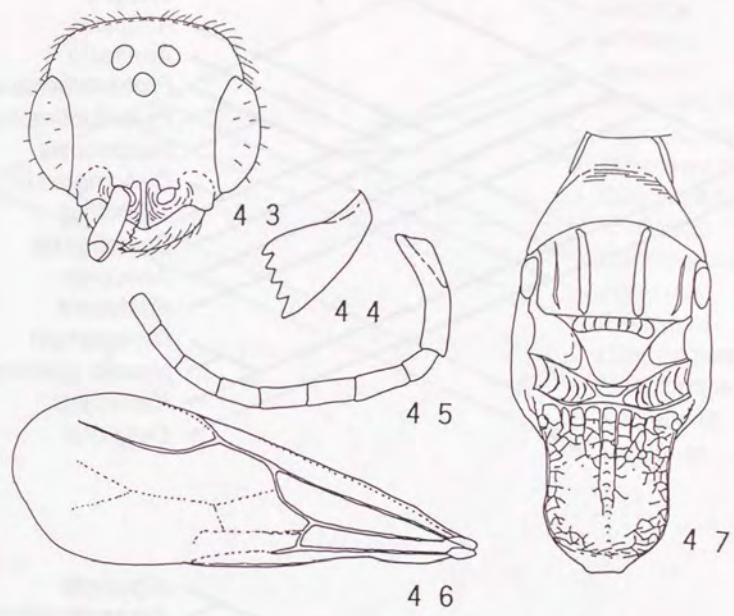
Figs. 25-32. Neusakosia schoutedeni Benoit. 25, head, frontal view; 26, head lateral view; 27, mandible; 28, pronotum, lateral view; 29, alitrunk, dorsal view; 30, forewing; 31, subgenital plate; 32, genitalia.



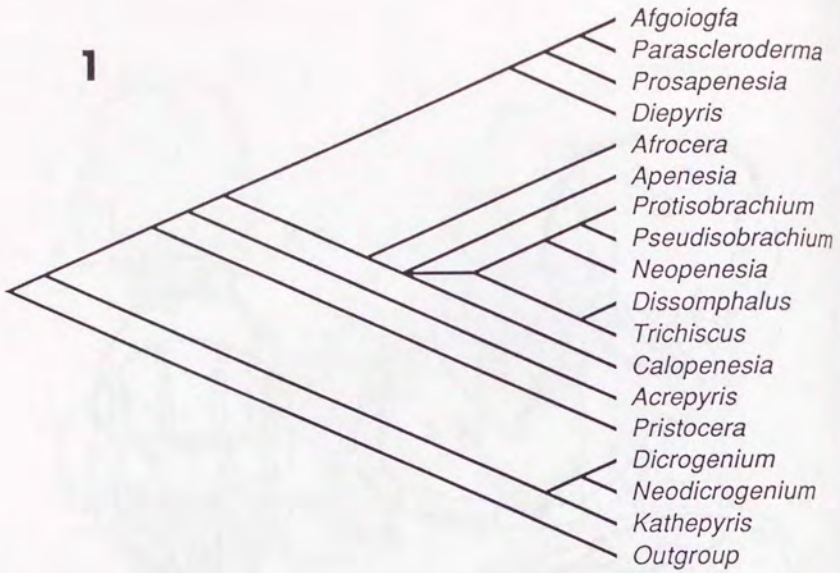
Figs. 33-37. Neopenesia leytensis gen. et sp. nov. 33, profile; 34, pronotum, lateral view; 35, pronotum, dorsofrontal view; 36, subgenital plate; 37, genitalia.

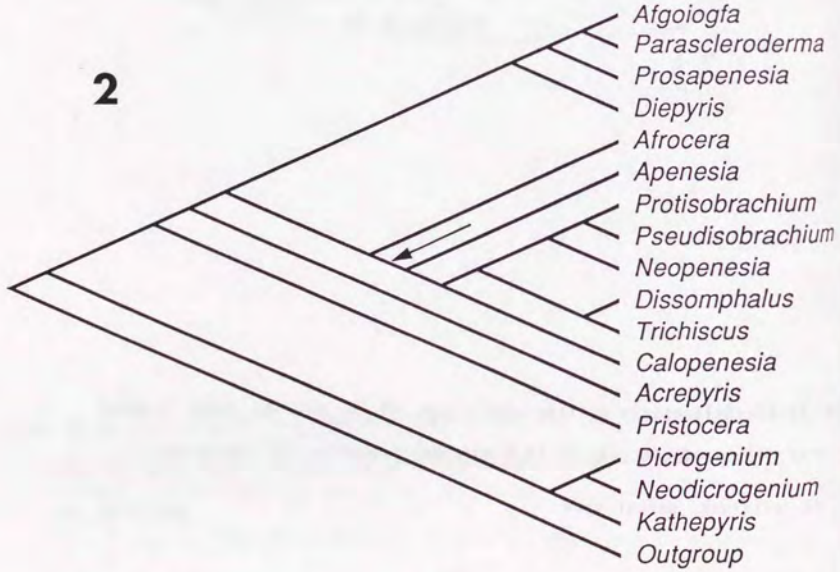


Figs. 38-42. Calopenesia thailandianus gen. et sp. nov. 38, head, frontal view; 39, alitrunk, dorsal view; 40, subgenital plate; 41, genitalia; 42, forewing.



Figs. 43-47. Calopenesia phillipinensis gen. et sp. nov. 43, head, frontal view; 44, mandible; 45, first 9 antennal segments; 46, forewing; 47, alitrunk, dorsal view.





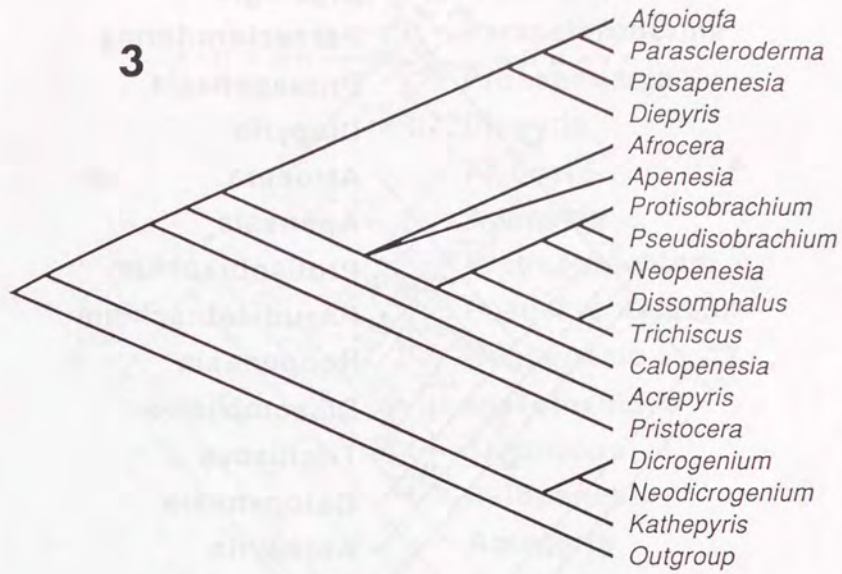


Fig. 48. Most parsimonious cladograms of subfamily Pristocerinae.

Tree 2 has a zero length internode by ACCTRAN.

Arrow: zero length internode.

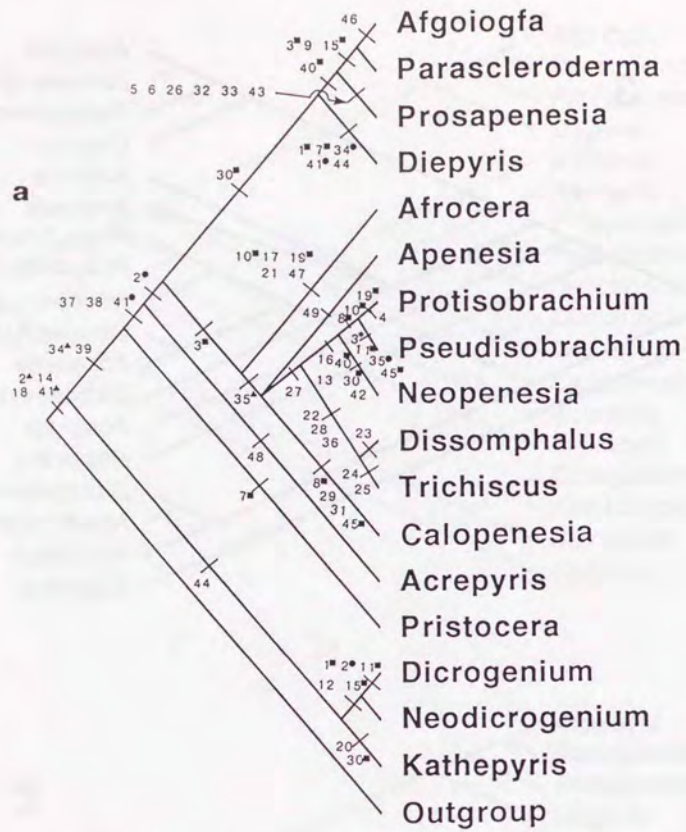


Fig. 49-a. One of the most parsimonious cladograms from the cladistic analysis of the 18 genera of Pristocerinae.

■: convergence elsewhere on tree. ▲: showing later reversal.

●: reversal of previous change. ∗: character change from 1 to 2.

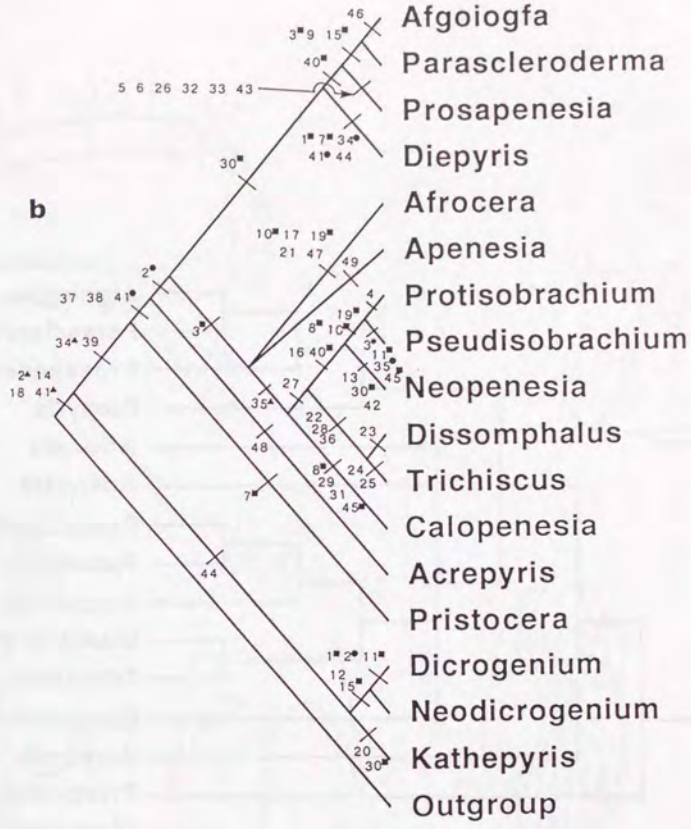


Fig. 49-b. One of the most parsimonious cladograms from the cladistic analysis of the 18 genera of Pristocerinae.

■: convergence elsewhere on tree. ▲: showing later reversal.

●: reversal of previous change. ∗: character change from 1 to 2.

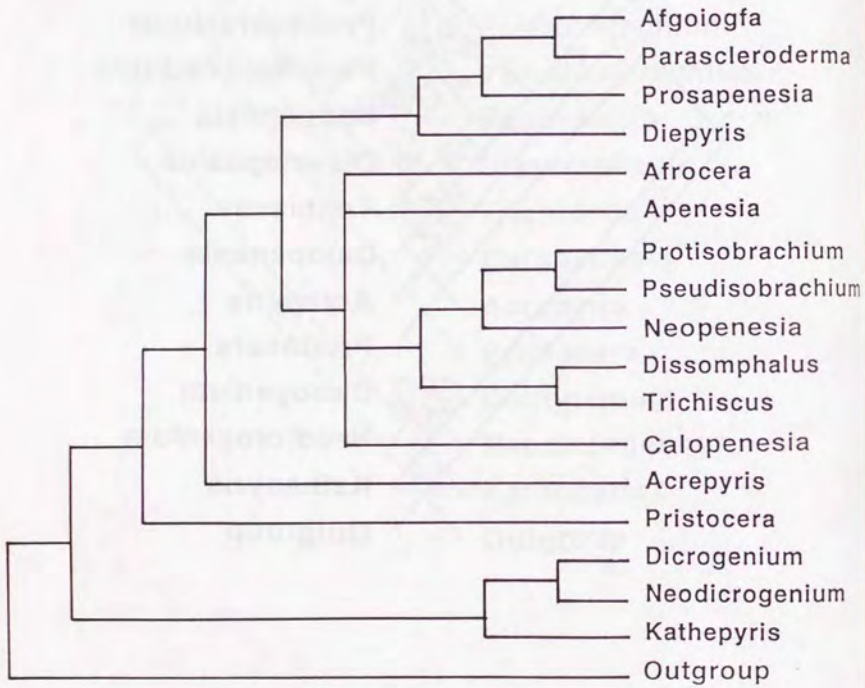
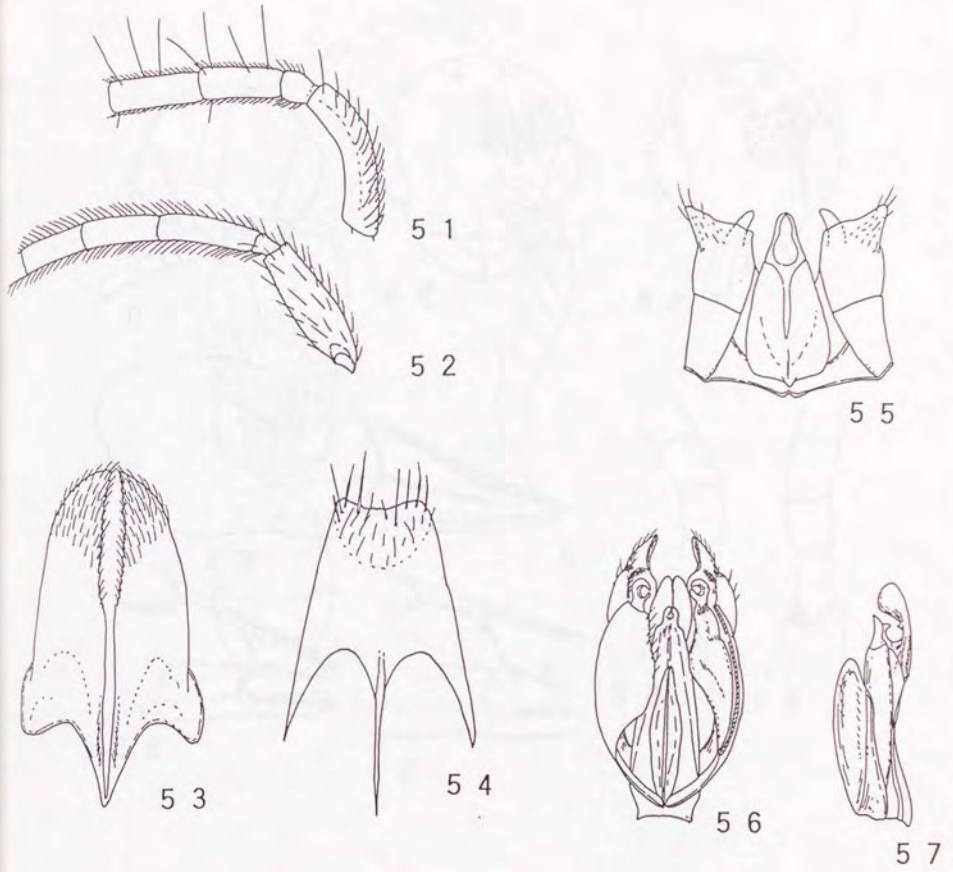


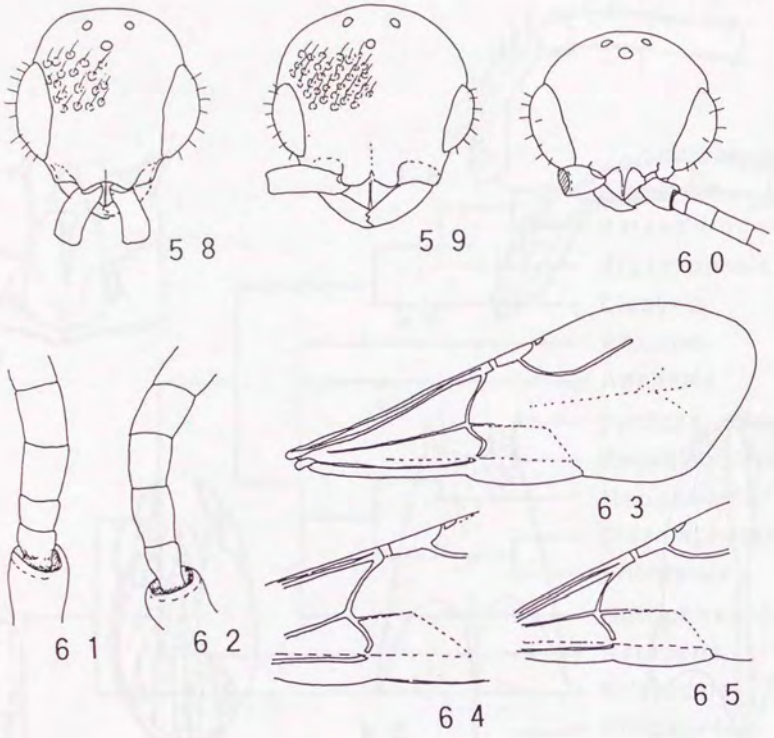
Fig. 50. Strict consensus cladogram for the genera of Pristocerinae.



Figs. 51-57. Genera Pristocera and Acrepyris.

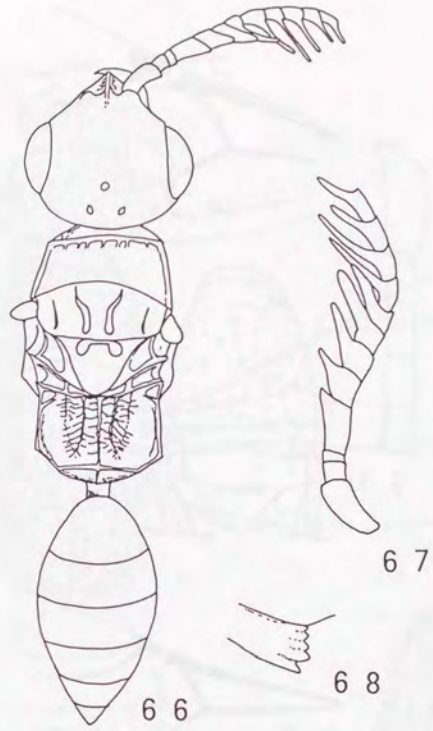
51, 53, 55, Pristocera; 52, 54, 56, 57, Acrepyris.

51, 52, antennae; 53, 54, subgenital plates; 55, 56, genitalia; 57, aedeagus, lateral view.

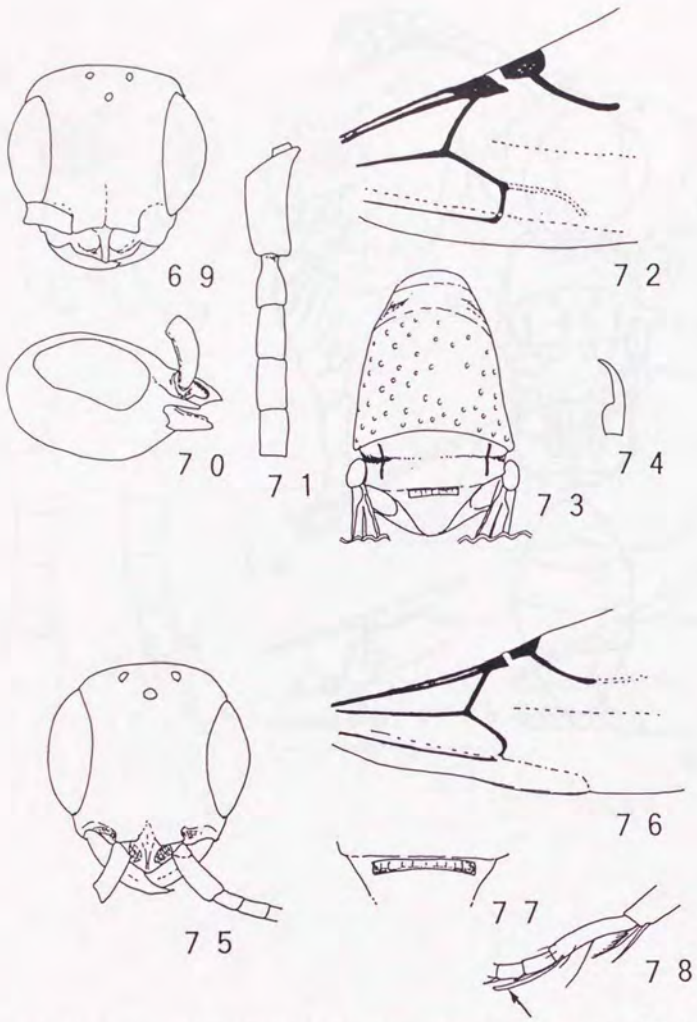


Figs. 58-65. Homoglenus spp.

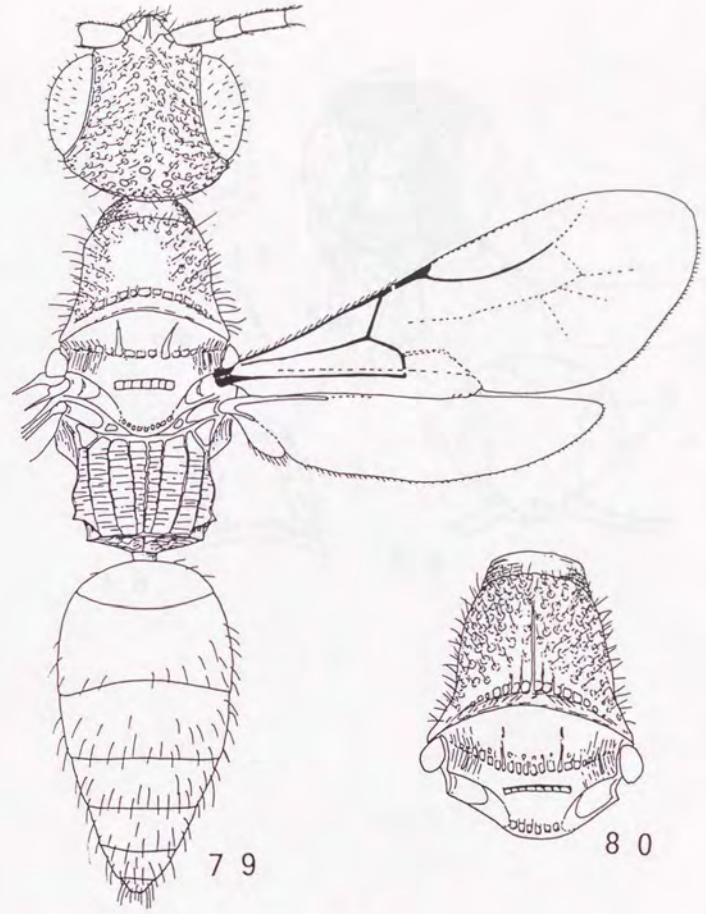
58, 61, 63, H. punctatus Kieffer; 59, 62, 64, H. montanus (Kieffer); 60, 65, H. indicus (Kieffer); 58-60; head, frontal view; 61,62, antenna; 63-65, forewing.



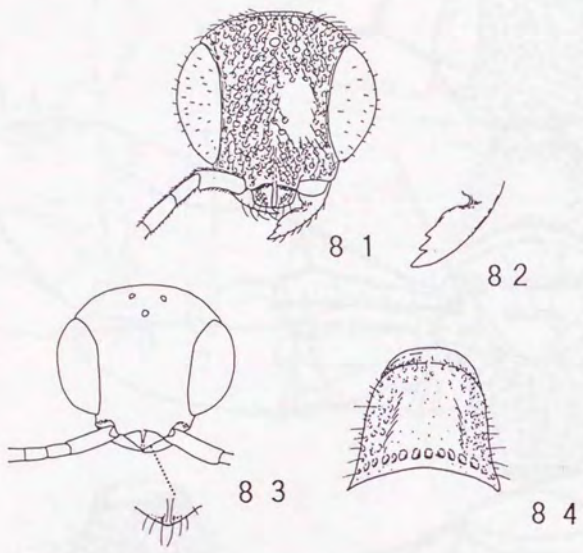
Figs. 66-68. Procalyoza westwoodi (Cameron). 66, profile, dorsal view; 67, antenna; 68, light mandible.



Figs. 69-78. Disepyris rufipes Kieffer and Lytepyris biscrensis (Kieffer).
69-74. Disepyris rufipes; 75-68. Lytepyris biscrensis.
69. head frontal view; 70. head, lateral view; 71. first 4 segments of mandible; 72. forewing; 73. pro- and mesonota, dorsal view; 74. claw; 75. head frontal view; 76. fore wing; 77. scutellar groove; 78. lake of fore tarsi.



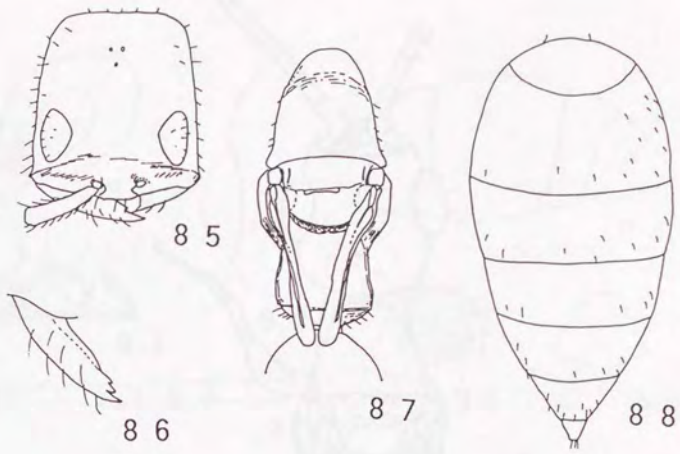
Figs. 79, 80. Orientepyris thailandiensis, gen. et sp. nov. 79. profile, male; 80. pro- and mesonota, female.



Figs. 81-84. Orientepyris indicus gen. et sp. nov. and O. thormini gen. et sp. nov.

81, 82, Orientepyris indicus; 83, 84, O. thormi.

81, 83, head, frontal view (surface scultptures are omitted in Fig. 83) ; 82, mandible; 84, pronotum, dorsal view.



Figs. 85-88. Bethylopsis fullaweyi Fouts, female. 85, head frontal view; 86, right mandible; 87; alitrunk and wings, dirsal view; 88, gaster, dorsal view.

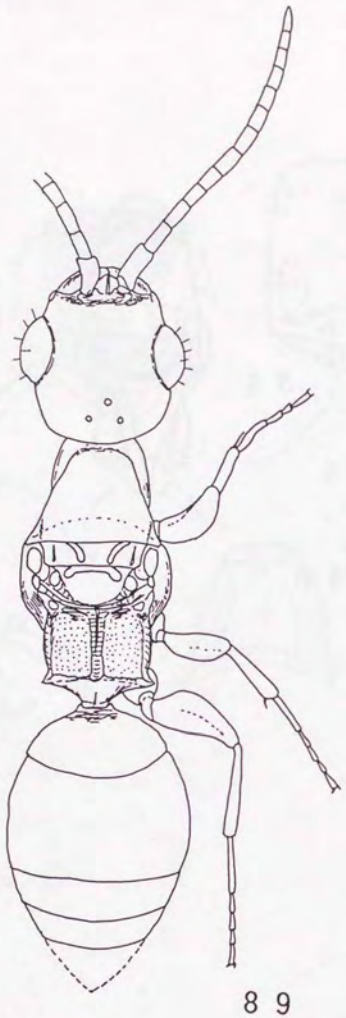
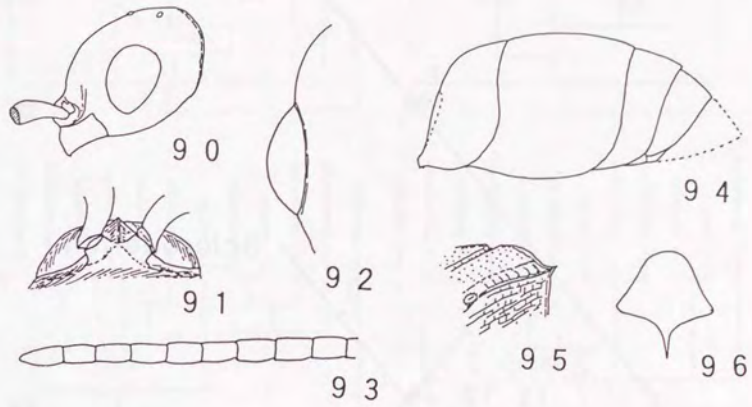


Fig. 89. Bradepyris inermis Kieffer, female, profile, dorsal view.



Figs. 90-96. Bradepyris inermis Kieffer.

90, head, lateral view; 91, posterior portion of head, dorsal view; 92, eye; 93, antennal 5-13 segments; 94, gaster, lateral view; 95, propodeal spine; 96, subgenital plate.

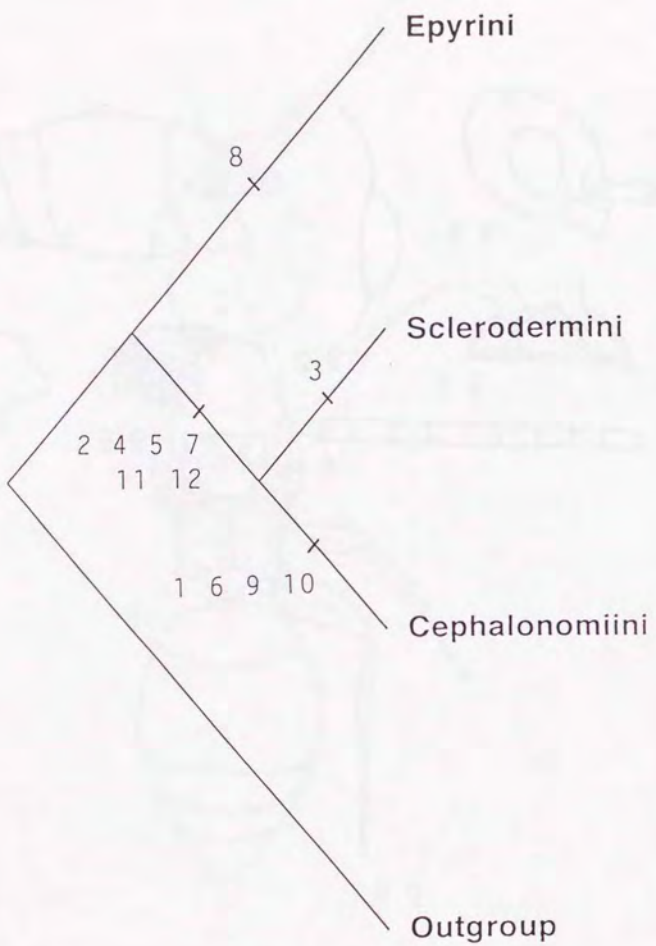
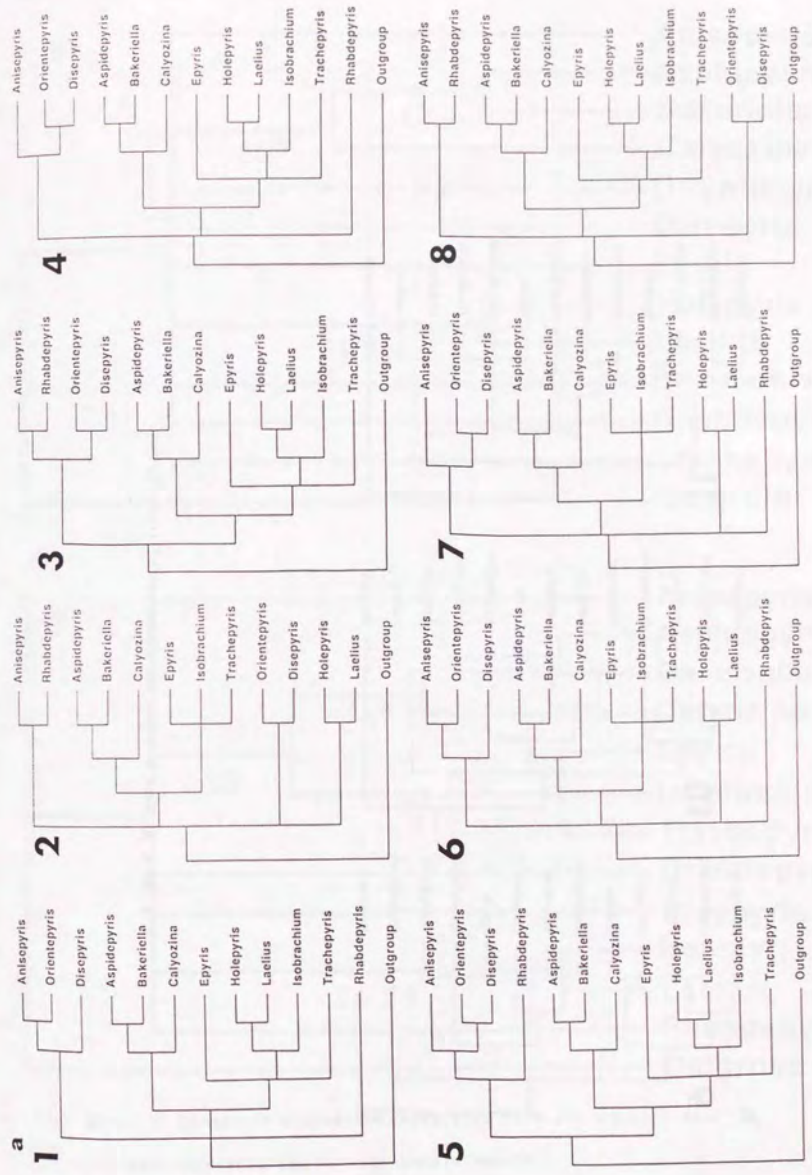


Fig. 97. Proposed phylogeny of the tribes of Epyrinae.



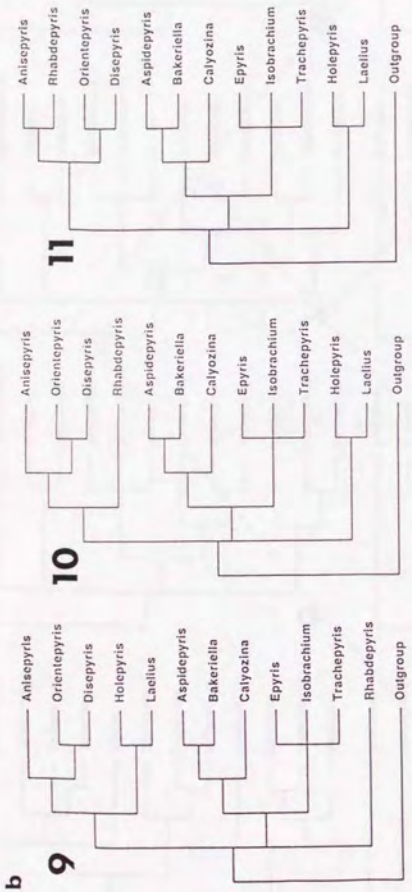


Fig. 98-a, b. Most parsimonious cladograms of tribe Epyrini.

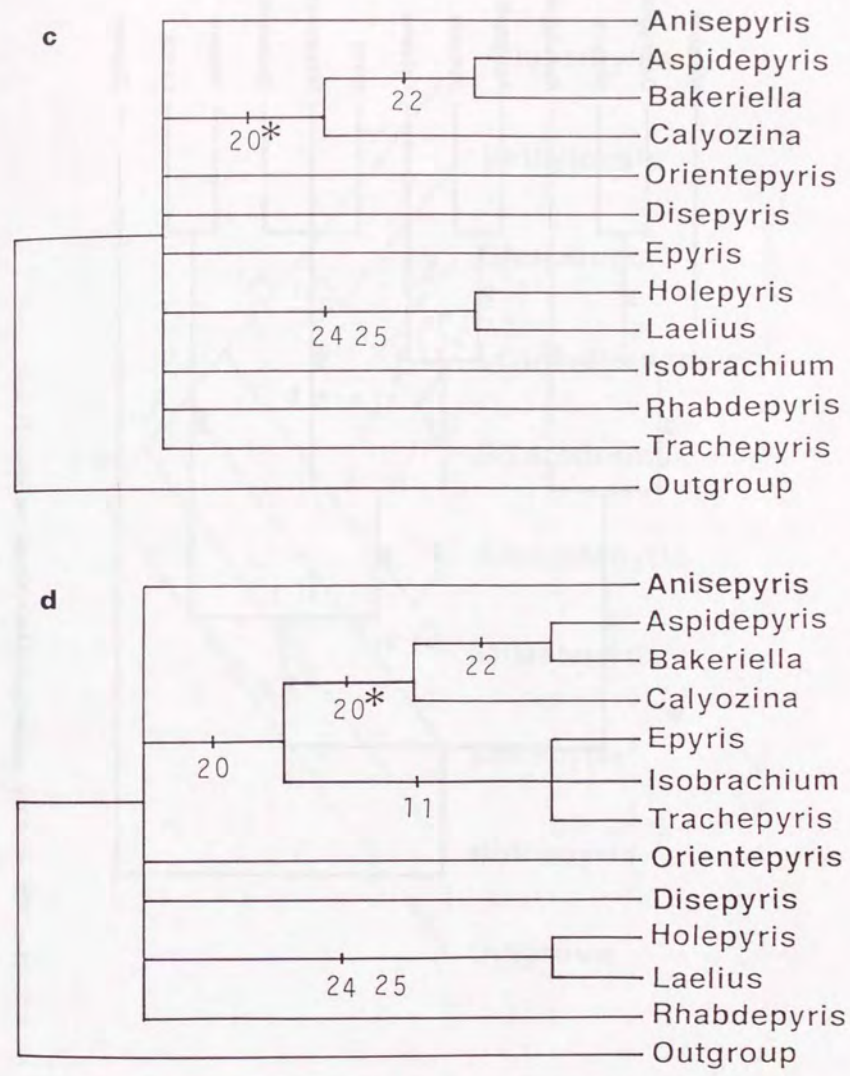


Fig. 98-c, d. Consensus cladograms calculated from the equally most parsimonious cladograms for the genera Epyrini.

c: strict consensus cladogram.

d: Adams consensus cladogram.

*: character change from 1 to 2.

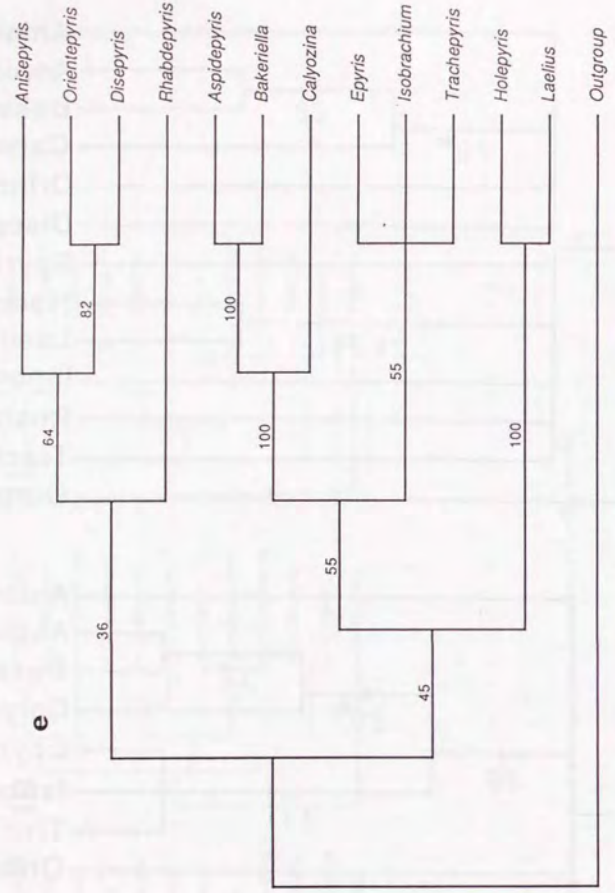


Fig. 98-e. 50% majority consensus cladogram from the equally most parsimonious cladograms for the genera Epyrini.

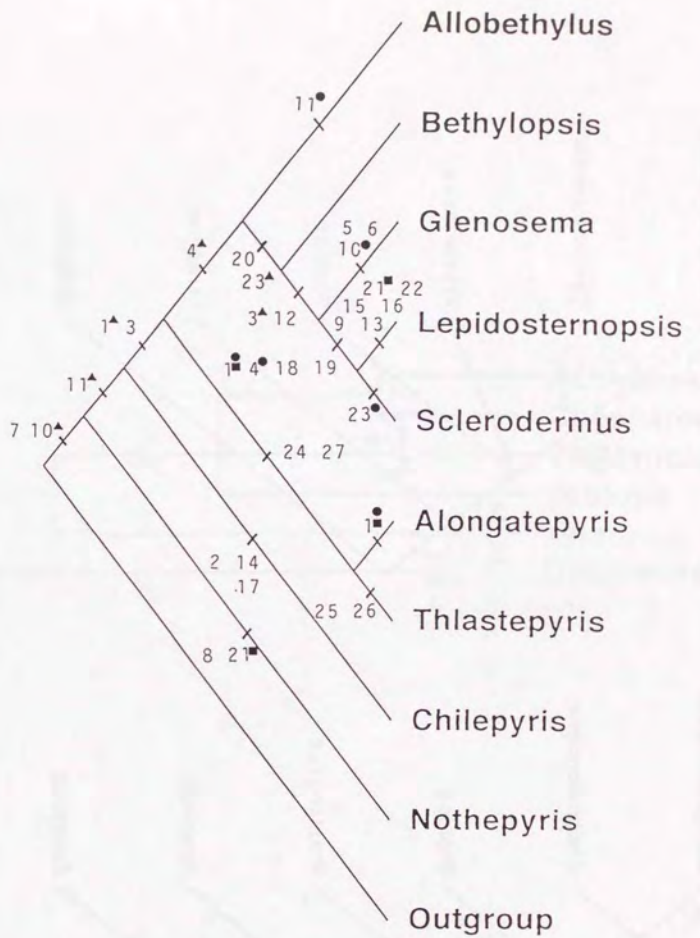


Fig. 99. Most parsimonious cladogram of tribe Sclerodermini.

■: convergence elsewhere on tree. ▲: showing later reversal.

●: reversal of previous change.

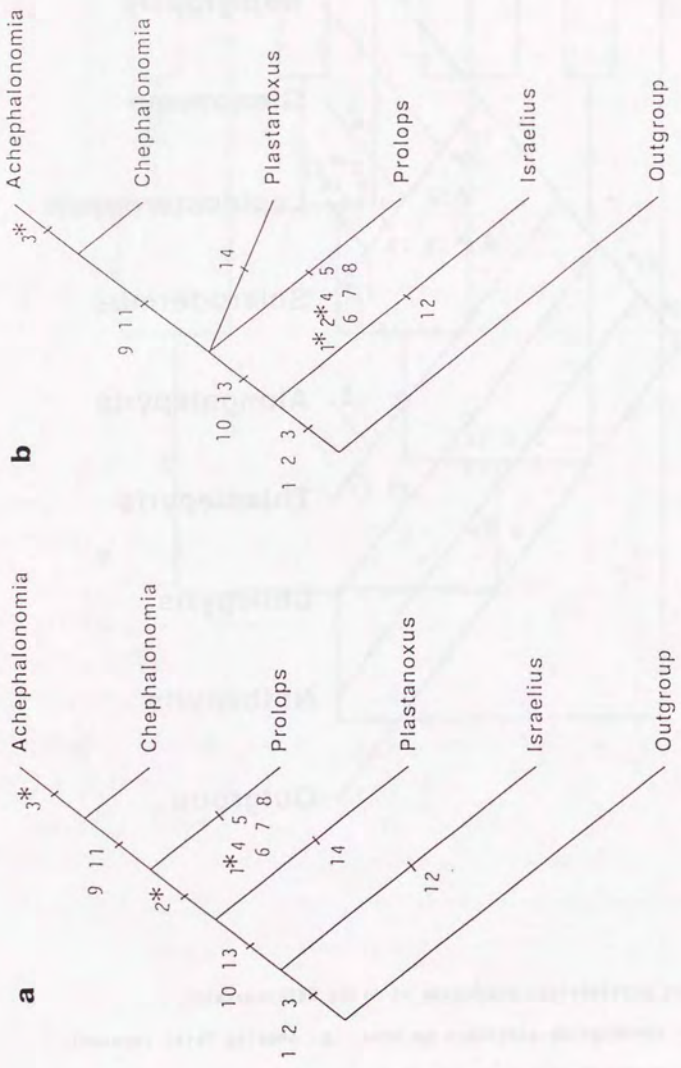


Fig. 100-a,-b. Most parsimonious cladgrams of tribe Cephalonomiini.
*: character change from 1 to 2.

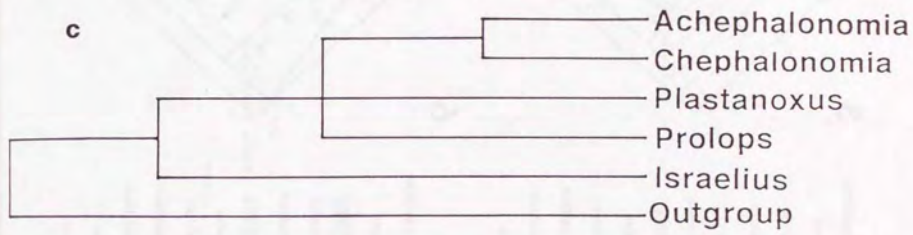


Fig. 100-c. Strict consensus cladogram calculated from the 2 equally most parsimonious cladograms for the genera of Cephalonomiini.

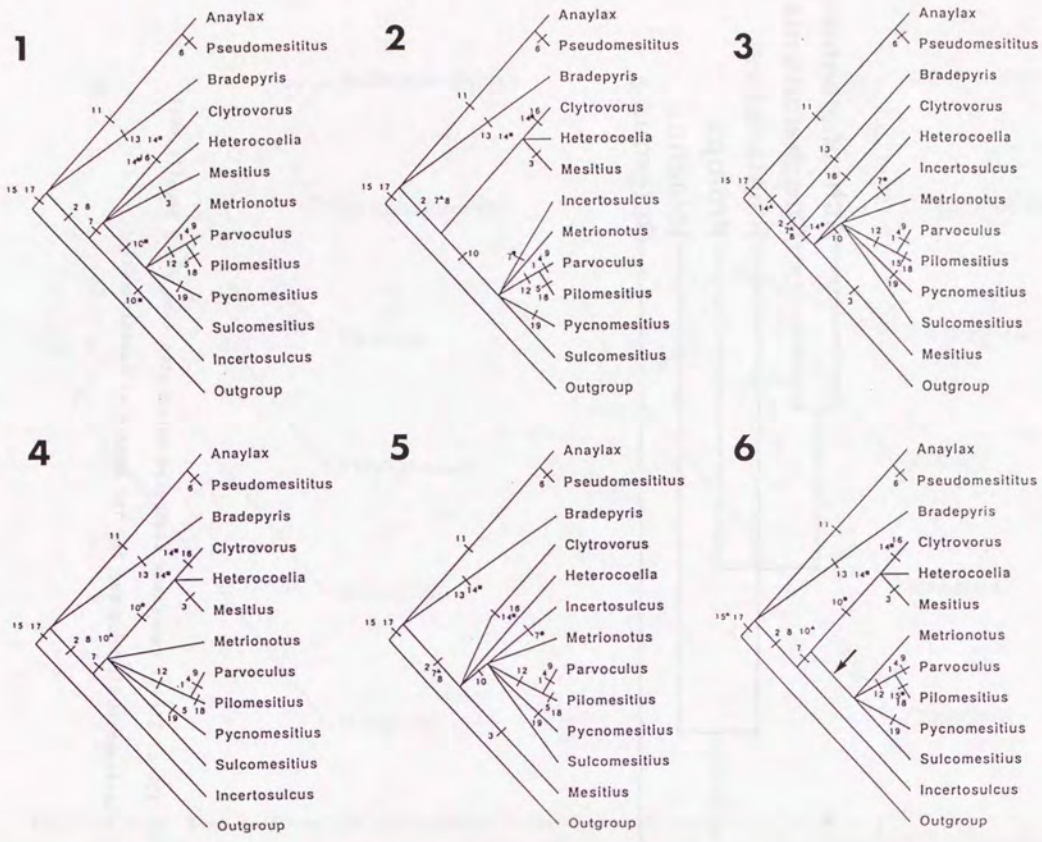


Fig. 101. Most parsimonious cladograms of Mesitiinae.

■: convergence elsewhere on tree. ▲: showing later reversal.

●: reversal of previous change.

Tree 6 has a zero length internode by ACCTRAN.

Arrow: zero length internode.

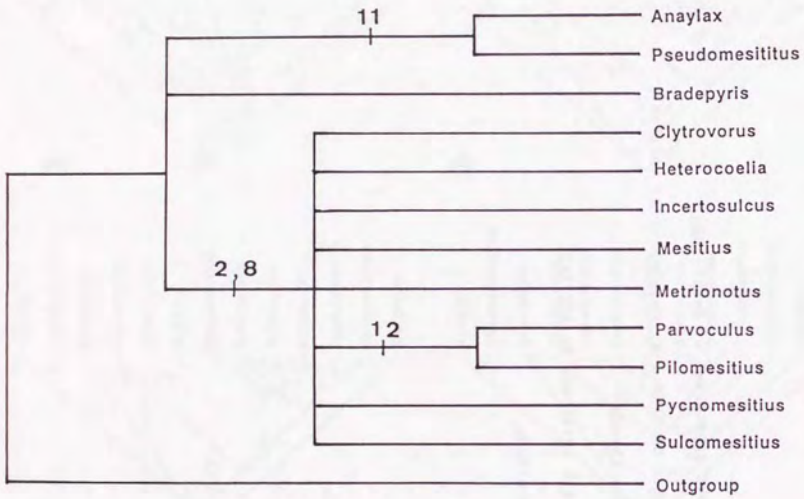
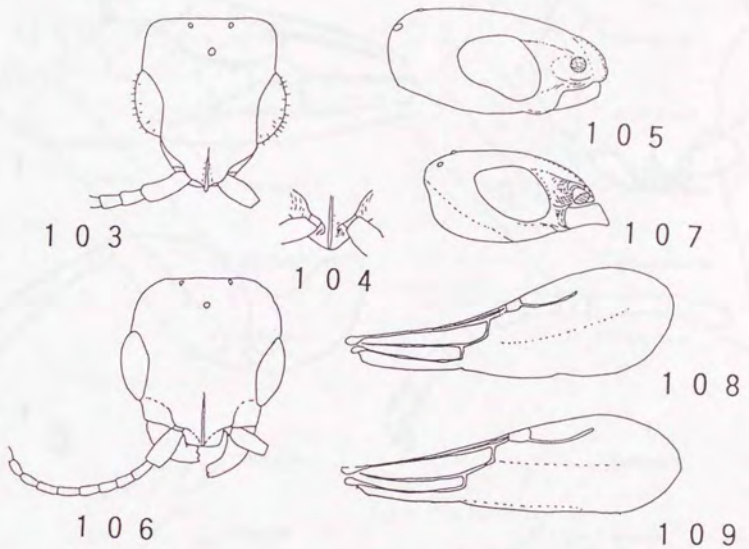
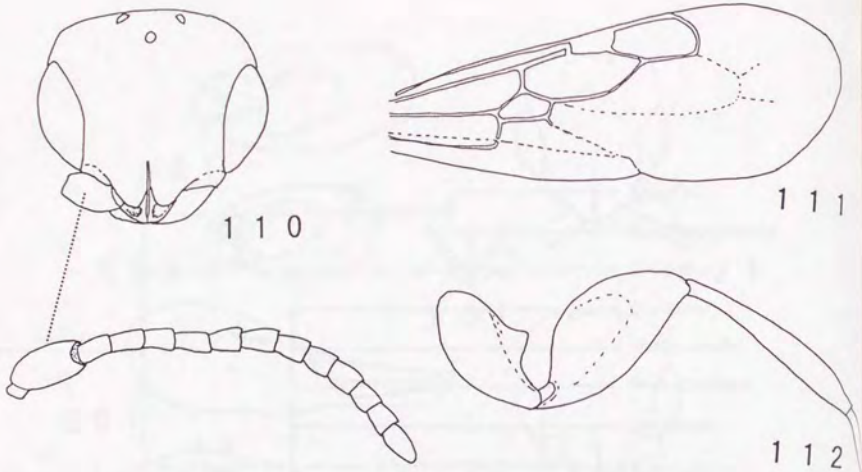


Fig. 102. Strict consensus cladogram calculated from the 5 equally most parsimonious cladograms for the genera of Mesitiinae.



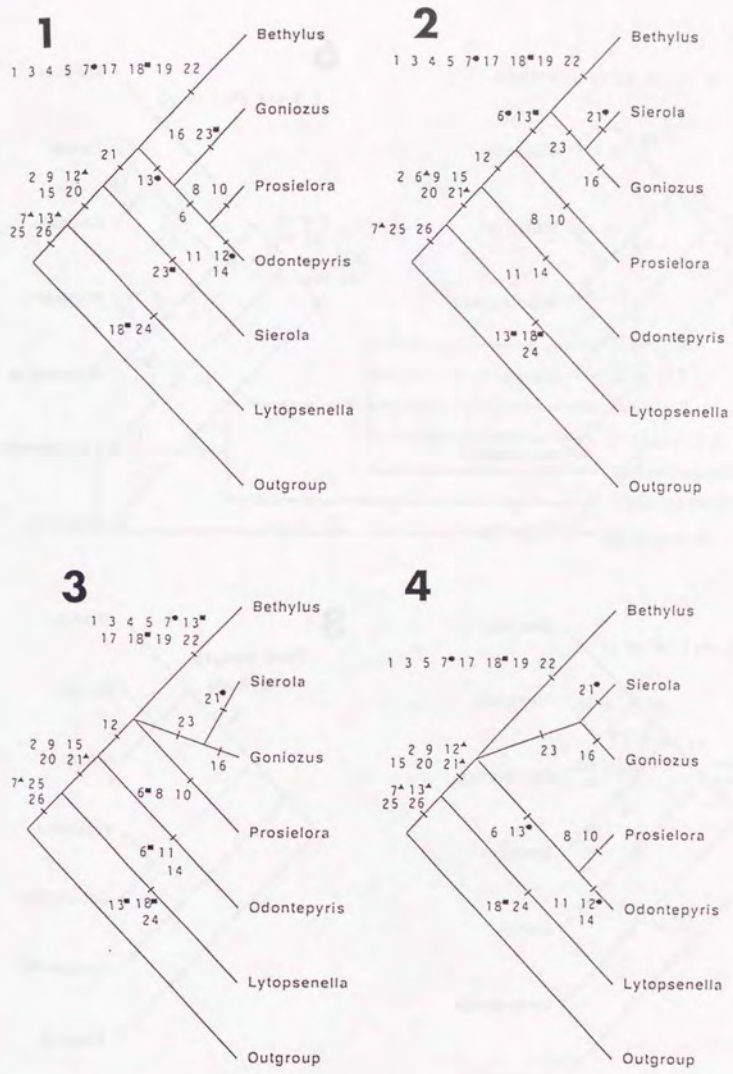
Figs. 103-109. Anoxus boops Thomson and Bethylus sp. from Japan.
103-105. Anoxus boops; 106-107, 109, Bethylus sp.
103, 106, head, frontal view; 104, median lobe of clypeus; 105, 107, head, lateral view; 108, 109, forewing.



Figs. 110-112. Eupsenella diemensis Dudd.

110, head, frontal view; 111, forewing ; 112, hindleg.

a



b

Fig. 113-a, -b. Most persimonious cladograms resulting from the cladistic analysis of the genera of Bethylinae.

■: convergence elsewhere on tree. ▲: showing later reversal.

●: reversal of previous change. Tree 8 has a zero length internode by ACCTRAN

c

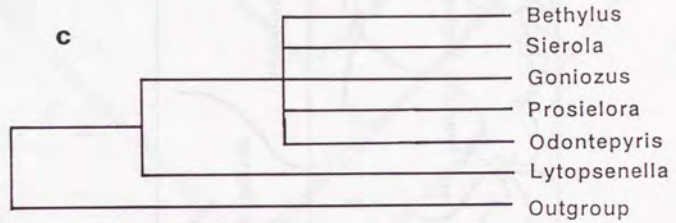


Fig. 113-c. Strict consensus cladogram calculated from the 7 equally most parsimonious cladograms.

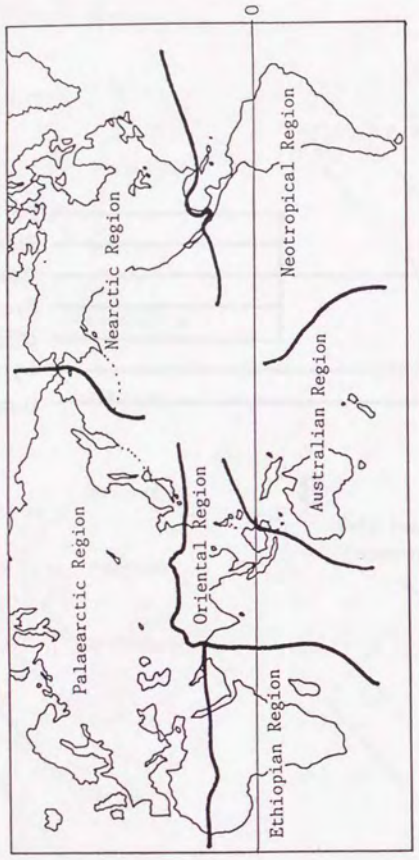


Fig. 114. Zoogeographical regions.

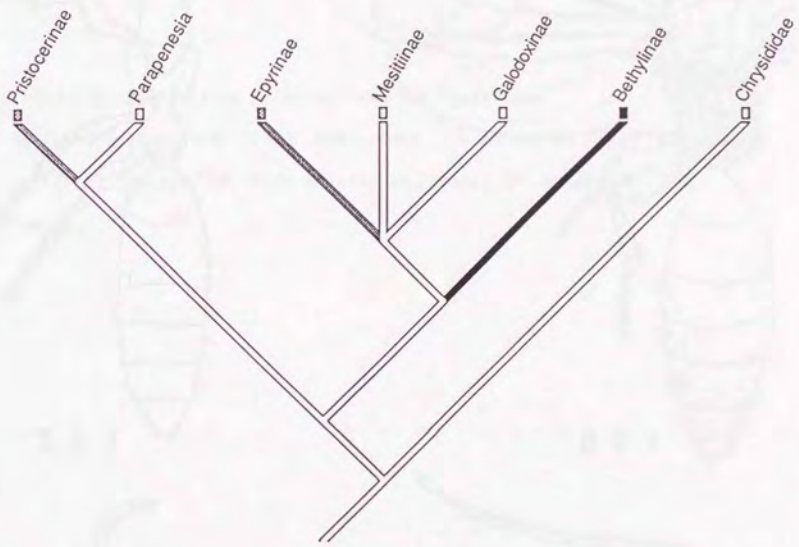
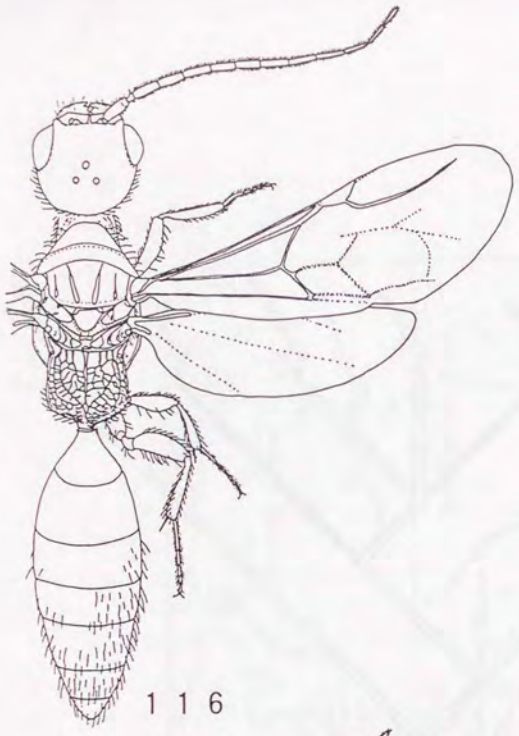


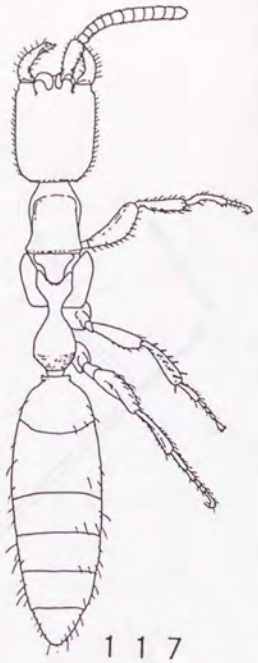
Fig. 115. Relationships between proposed phylogeny and hosts.

Host: ▒, coleopteran larva; ■, lepidopteran larva.

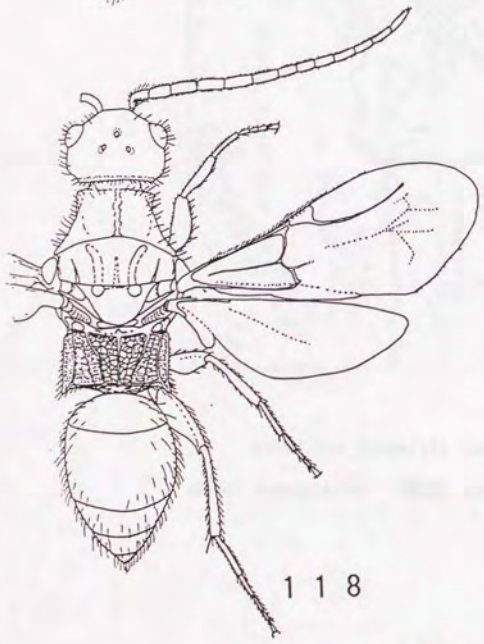
□, unknown.



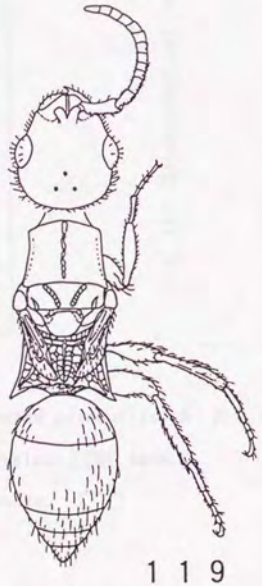
116



117



118



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Figs. 116-119. Subfamilies Pristocerinae and Mesitiinae.

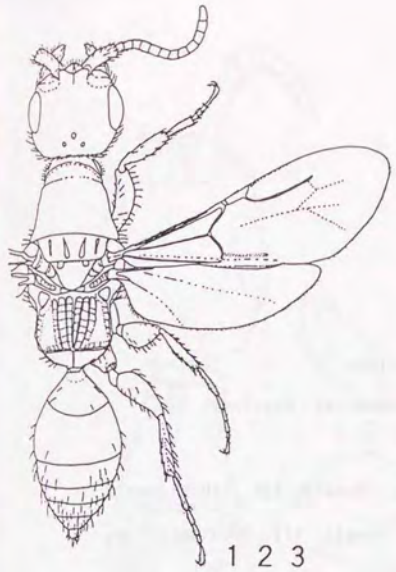
27-28, Pristocerinae; 29-30, Mesitiinae. 27, Acrepyris japonica, male; 28, ditto, female; 29, Heterocoelia sp., male; 30, Heterocoelia sp., female.

120

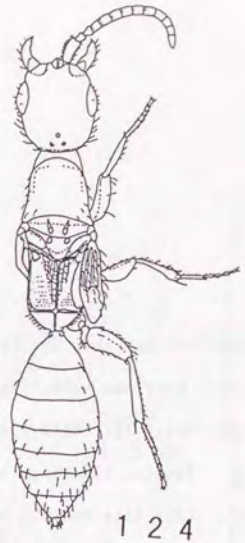
121

122

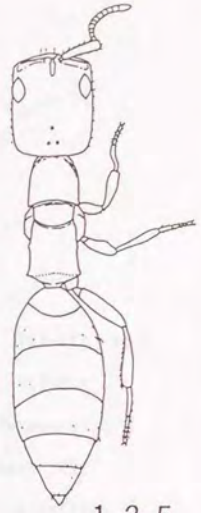
Figs. 120-122. Parapenesiinae new subfamily, Parapenesia unicolor Kieffer, female. 120, profile, dorsal view; 121, antenna; 122, right mandible.



123



124



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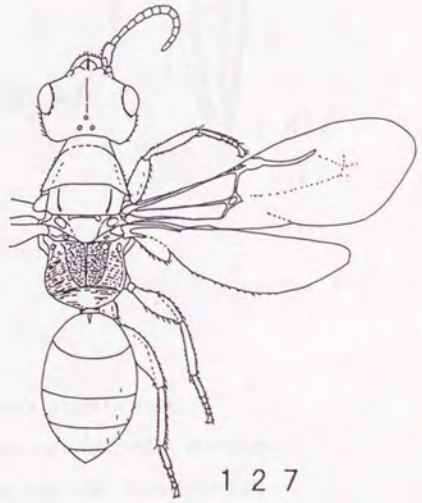
126

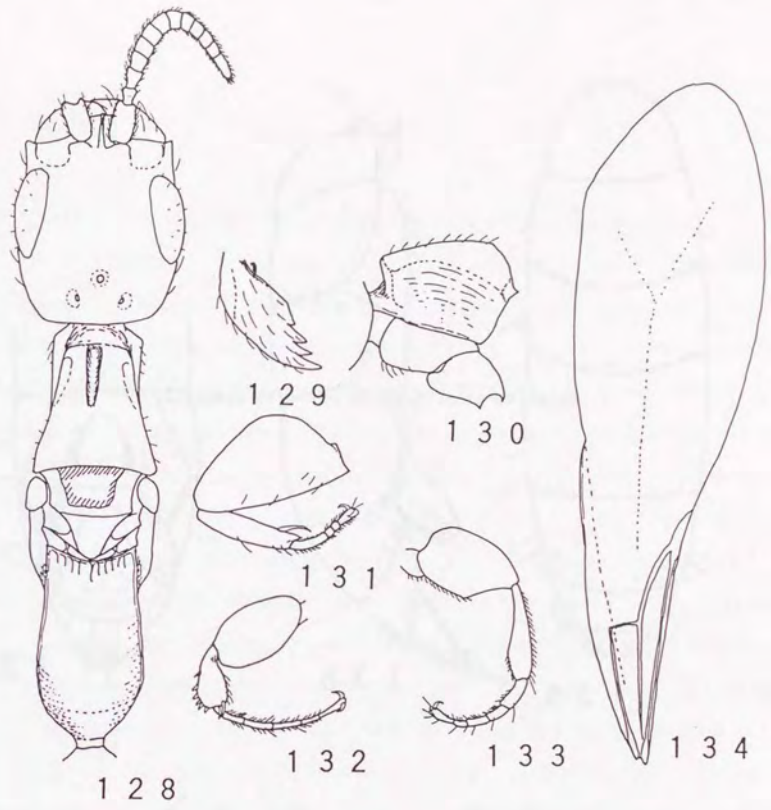


127

Figs. 123-127. Subfamilies Epyrinae and Bethylinae.

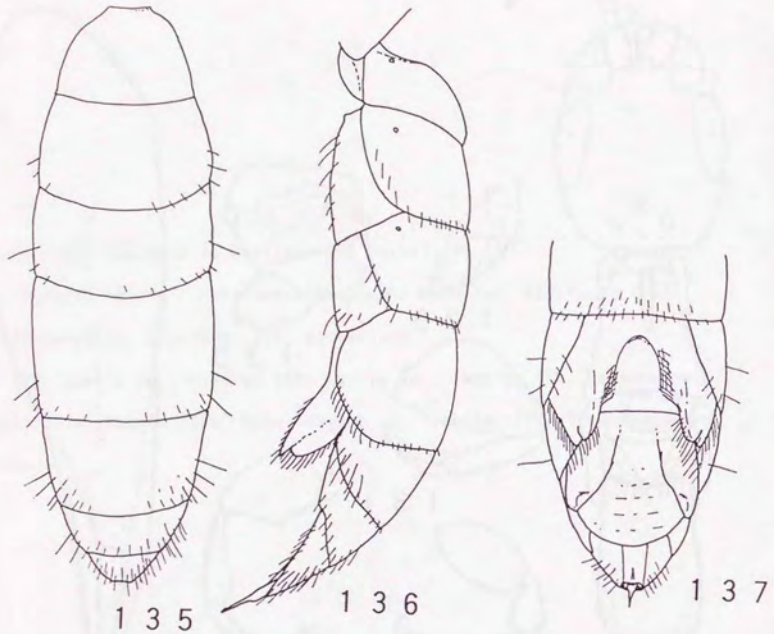
123-124, Epyrini, Epyrinae; 125, Cephalonomiini, Epyrinae; 126, Sclerodermini, Epyrinae; 127, Bethylinae.

123, Epyris sp., female; 124, Epyris sp., female; 125, Cephalonomia gallicola, female; 125, Sclerodermus sp., female; 127, Odontepyris sp., female.



Figs. 128-134. Subfamily Galodoxinae, Galodoxia trquata Nagy.

128, head and alitrunk, dorsal view; 129, mandible; 130, pronotum, lateral view; 131, fore leg; 132, middle leg; 133, hind leg; 134, forewing.



Figs. 135-137. Subfamily Galodoxinae, Galodoxa trquata Nagy.
135, gaster, dorsal view; 136, ditto, lateral view; 137, ditto, ventral view.

Part II. Taxonomic Revision of Bethylidae of Japan

Abstract. The Japanese species of Bethylidae are revised, and 70 species of 16 genera in 4 subfamilies are treated.

The Japanese genera here recognized are Acrepyris, Apenesia, Pseudisobrachium and Dissomphalus belonging to the subfamily Pristocerinae, Epyris, Holepyris, Laelius, Allobethylus, Sclerodermus, Cephalonomia and Plastanoxus belonging to the subfamily Epyrinae, Heterocoelia belonging to the subfamily Mesitiinae, and Bethylus, Odontepyris, Goniozus and Sierola belonging to the subfamily Bethylinae.

Sixty-one species are described as new to science. Sclerodermus nipponicus Yuasa, 1930, is synonymized with S. harmandi (Buysson, 1902) which is transferred from genus Dissomphalus to Sclerodermus. Epyris sauteri (Enderlein, 1912), originally described from Taiwan from the male, is synonymized with Epyris apicalis Walker, 1874. However, the name, apicalis, is preoccupied by E. apicalis (Motschulsky, 1863), then a replace new name, E. formosus is proposed. Laelius microneurus (Kieffer, 1906) and Goniozus floridanus (Ashmead, 1887) (= G. platynotae Ashmead, 1893) are excluded from the Japanese fauna.

A historical review of the study is also provided.

Contents of Part II

Introduction

The purpose of the present part is to revise the bethylid fauna of Japan, together with the detailed information on their distribution and biology.

Historical review

Up to the present 13 species of 8 genera in 3 subfamilies, of which 3 species belong to Pristocerinae, 8 to Epyrinae, and 2 to Bethylinae, have been known from Japan (Table 22). Historical review of the study in Japan is presented below for each subfamily .

I. Subfamily Pristocerinae

In 1903 Buysson firstly described Dissomphalus harmandi (=Sclerodermus harmandi; present paper) from Tokyo as a member of subfamily Pristocerinae. But Kieffer (1914) annotated that it did not belong to the genus Dissomphalus, although he did not indicate its exact generic position. In 1955 Yasumatsu described Pristocera japonica, P. minuta, and ishigakiensis, the last being as a subspecies of P. japonica. In the same paper he proposed a new subgenus, Neopristocera, which was later synonymized with Acrepyris by Evans (1963).

Uchida (1932) erroneously reported the male of Pristocera japonica as

Pristocera harmandi, and Sugihara (1938) also erroneously recorded P. japonica (=P. harmandi; present paper) from Tosa (=Kochi Pref.).

As for biology, Yoshida & Machida (1960) and Ishihara (1963) reporded a host species, Melanotus sp. (Coleoptera), of Pristocera japonica.

II. Subfamily Epyrinae

In 1874 Walker described Epyris crassicornis and E. apicalis (=E. formosus; present study) in separate papers. However, the type of E. crassicornis was lost (Morley, 1913), and the description of the species is so simple and superficial that I could not find the "true" crassicornis among Japanese Epyris species. Epyris atamiensis was described by Ashmead (1904) from Atami, Shizuoka Pref., but was later transferred to genus Holepyris by Kieffer (1908).

Yuasa (1930) described Sclerodermus nipponicus (=S. harmandi, present paper) from Tokyo. Many cases of injuries to human in houses have been reported in this species (Yuasa & Ogami, 1930; Yuasa, 1932; Uemura, 1935; Asahina, 1953; Ito & Shimogama, 1962; Ariga, 1959; Kawashima, 1959; Higuma, 1966, Oda et al., 1981). A case of silkworm larvae being attacked and killed by the wasp is also reported (Azuma et al., 1964). There are biological studies of this species by Okada & Ido (1966), Azuma et al. (1964). Scleroderma sp. or Scleroderma sp. reported by Okada (1960), Okada & Ido (1965), Ido & Takagaki (1968, 1969), Ido (1967), and Oda et al. (1981) may be conspecific with S. nipponicus (=S. harmandi).

In 1941 Iwata recorded Allepyris microneurus (=Laelius yamatonis, present study) from Hyogo for the first time. A. microneurus was originally described from France, and has not been found in Japan. Ecological study of this species was carried out by Iwata (1941, 1979, 1983) and Yamada (1942, 1955).

The first record of the genus Cephalonomia from Japan was made by Nawa (1913), although he did not identify his specimens to species. Later, Tachikawa reported Cephalonomia tarsalis and C. gallicola in 1966 and 1976 respectively. The latter species is well known as a serious sanitary injurious pest. A lot of injuries by the wasp sting have been reported after Tachikawa's record (Ito, 1976, 1980; Shimada et at., 1976; Sakai & Nishida, 1978; Yamamoto et al., 1979; Matsuura, 1981; Hori, 1981; Takenokuma, 1981; Okutani, 1980, 1983, 1984a, b, 1987, 1988; Hatsushika, 1991). For biological studies of the species, see Sakai & Nishida (1978), Ito (1980), Momoi & Tanioka (1982) and Yamazaki (1982).

Recently Terayama & Tachikawa (1987) described a new species, Plastanoxus amamiensis, which is conspecific with Plastanoxus sp. recorded by Tachikawa & Oda (1977) from Amami-oshima I., southwestern Japan.

III. Subfamily Bethylidae

In 1902 Nawa reported Goniozus platynotae from Gifu. However, a new species, Goniozus japonicus, was described by Ashmead (1904) based on Nawa's material. Yasumatsu (1933) added a description of male of this species and Watanabe (1940) made a redescription for the female. Ecological notes were

given by Iwata (1949, 1963, 1980), Kishitani (1961, 1962), Tachikawa (1965), and Yukinari (1976 a, b, 1977, 1979, 1980a, b, c, 1981, 1984a, b). Moreover, "Hamaki-yadoribachi" mentioned by Kiguma (1899) and Nawa (1906) may be G. japonicus judging from the figures in their papers. Kuwayama (1967) recorded Goniozus sp. from Kunashiri I., Kurile (Chishima) Is. However, the exact location of the specimen is unknown to me.

Haussler (1940) recorded Goniozus sp. and Perisierola sp. from Kanagawa Pref. and Wakayama Pref. respectively as parasites of a leaf-eating microlepidopteran, Grapholitha molesta. Although the genus Perisierola was synonymized with Goniozus (Evans, 1964, 1978), Haussler's Perisierola sp. seems to be different at least from Goniozus japonicus.

Table 22. A list of the previously known species of Bethylidae from Japan.

Subfamily Pristocerinae
Pristocera (Acrepyris) japonica Yasumatsu, 1955
Pristocera (Acrepyris) japonica ishigakiensis Yasumatsu, 1955
Pristocera (Acrepyris) minuta Yasumatsu, 1955
Dissomphalus harmandi Buysson, 1903
Subfamily Epyrinae
Epyris crassicornis Walker, 1874
Epyris apicalis Walker, 1874
Holepyris atamiensis (Ashmead, 1904)
Sclerodermus nipponicus Yuasa, 1930
Laelius microneurus (Kieffer, 1906)
Cephalonomia tarsalis (Ashmead, 1893)
Cephalonomia gallicola (Ashmead, 1887)
Plastanoxus amamiensis Terayama & Tachikawa, 1987
Subfamily Bethylinae
Goniozus japonicus Ashmead, 1904
Goniozus floridanus (Ashmead, 1887) (=G. platynotae Ashmead, 1893)

Materials and Methods

The present study is mainly based upon my collection, collections of the Entomological Laboratory of Kyushu University, Entomological Institute of Hokkaido University, National Institute of Agro-Environmental Science and National Science Museum, and Kusigemati collection in Kagoshima University. I have also examined many specimens preserved in many institutions and private collections.

Most of the types were examined. The following institutions were kindly loaned me types : Natural History Museum, London, U.K.; Bernice P. Bishop Museum, Honolulu, U.S.A.; Deutsches Entomologisches Institut, Berlin, Germany; Entomological Laboratory, Ehime University, Matsuyama, Japan; Entomological Laboratory, Kyushu University, Fukuoka, Japan; Museum National d'Histoire Naturelle, Paris, France; National Institute of Agro-Environmental Science, Tsukuba, Japan; Osaka Museum of Natural History, Japan; United States National Museum, Washington D.C., U.S.A.; Zoologisches Museum an der Humdoldt-Universitat zu Berlin, Berlin, Germany.

The names of institutions and collections mentioned in the present paper are abbreviated as follows:

ASB: Academia Sinica, Beijing, China

BFRI: Research Institute of Forestry, Beijing, China

BMNH: Natural History Museum, London, U.K.

BPBM: Bernice P. Bishop Museum, Honolulu, U.S.A.

CNC: Biosystematics Research Centre (Canadian National Collection), Ottawa, Canada

EUM: Entomological Laboratory, Ehime University, Matsuyama, Japan

HNM: Hungarian Natural History Museum, Budapest, Hungary

HUS: Entomological Institute, Hokkaido University, Sapporo, Japan

KU-K: Kusigemati collection, Entomological Laboratory, Kagoshima University, Kagoshima, Japan

KUF: Entomological Laboratory, Kyushu University, Fukuoka, Japan

MCSN: Museo Civico di Storia Naturale, Genova, Italy

MHN: Museum d'Histoire Naturelle, Geneve, Switzerland

MNHN: Museum National d'Histoire Naturelle, Paris, France

MU-Y: Yamagishi collection, Entomological Laboratory, Meijyo University, Nagoya, Japan

NASM: National Science Museum, Tokyo, Japan

NHMC: Natural History Museum and Institute, Chiba, Japan

NIAES: National Institute of Agro-Environmental Science, Tsukuba, Japan

OMNH: Osaka Museum of Natural History, Osaka, Japan

SMNH: Swedish Museum of Natural History, Stockholm, Sweden.

TE: Terayama collection, Department of Biology, Faculty of Arts and Sciences, University of Tokyo, Tokyo, Japan

USNM: United States National Museum, Washington D. C., U.S.A.

ZMHU: Zoologisches Museum an der Humdoldt-Universitat zu Berlin, Berlin, Germany

The present study covers the Japanese mainlands and its adjacent islands extending over 3,000 km from northeast to southwest (Figs. 138 & 139). The mainlands comprise 4 large islands, Hokkaido, Honshu, Shikoku and Kyushu. Hokkaido, northeastern part, is mostly covered with cool temperate deciduous woods or boreal evergreen coniferous forests in potential vegitation and belongs to the Palaearctic region, while the Ryukyu Islands, southwestern part, are mostly covered with subtropical evergreen broad-leaved forests and belong to the Oriental region.

The names of islands or island groups given in taxonomic keys are abbreviated as follows:

Hok: Hokkaido

Hon: Honshu

Shi: Shikoku

Kyu: Kyushu

Ryu: Ryukyus

Yaku: Yakushima Island

Amami: Amami Islands

Okinawa: Okinawa Islands

Sakishima: Sakishima Islands

Ogasawara: Ogasawara Islands

General morphology

Consult the general morphology in the part I.

Systematics

Family Bethylidae

This family is included in the Chrysidoidea by the following characteristics: 1) modificated head capsele associated with prognathy; 2) clypeus with longitudinal median carina; 3) anteriorly broadened metasternum; 4) hindwing vein C absent excepted extreme base and vein S + R + S very short (Carpenter, 1986; Brothers & Carpenter, 1993). Phylogenetic analysis has suggested that the sister group of Bethylidae is Sclebytidae (Brothers, 1975), or Chrysididae (Carpenter, 1986). The most recent analysis (Brothers & Carpenter, 1993) more definitely indicates that Chrysisidae is the sister group.

Four of the 6 subfamilies, namely Pristocerinae, Epyrinae, Mesitiinae and Bethylinae, have been found from Japan. In Asia including Japan, the taxonomic study of this family have not been advanced, and only a few species are recorded from its adjacent region, namely, 5 species from Taiwan, 4 from China, 1 from Korea (doubtful record), and 1 from the Mariana Islands. No reliable record has been known from the Far East Russia (Terayama, 1993, 1994).

I present keys to the Japanese subfamilies, genera and specis of Bethylidae for the first time.

Key to subfamilies of Japanese Bethylidae

1. Propodeum with distinct spines at dorsal posterolateral corners; 2nd gastral segment large, accounting for considerably more than half the length of the gaster in dorsal view (Figs. 416, 418) ·····
·····Mesitiinae [known from the single genus Heterocoelia Dahlbom]

- Propodeum without spine at dorsal posterolateral corners; 2nd gastral segment much smaller, accounting for much less than half the length of the gaster in dorsal view ·····2

2. Metanotum of males well developed, scutellum and propodeum not nearly in contact medially, metanotum with a small fovea at middle; females completely apterous, with the eyes small to absent, eye hight at most 0.25 x head width (Fig. 160)·····Pristocerinae

- Metanotum much reduced in both sexes, scutellum in contact with the propodeum medially or nearly so, metanotum without fovea medially; females alate, brachypterous, or apterous (Figs. 245, 246, 404); eyes large, its height at least least 0.3 x head width ·····3

3. Basal vein simple, not giving rise to a vein or stub (Fig. 245); claws weakly to moderately curved; frons without median longitudinal carina or polished streak extending from clypeus·····Epyrinae

- Basal vein giving rise to a vein (Figs. 423, 431, 433); claws strongly

curved; frons usually with longitudinal median carina or polished streak extending a short distance from clypeus·····Bethylinae

Key to genera of Japanese Pristocerinae

1. Male; fully winged, tegula present·····2
- Female; completely apterous, tegula absent·····5

(Male)

2. Second gastral tergite with a pair of spots, pits or depressions (Fig. 229)·····Dissomphalus Ashmead
- Second gastral tergite without modification·····3
3. Anterior border of clypeus trapezoidal and truncate apically (Fig. 235); eyes densely covered with long hairs; genitalia with the parameres deeply divided into two lobes (Fig. 238)·····Pseudisobrachium Kieffer
- Clypeus not trapezoidal nor truncate apically; eyes glabrous or only scattered with short hairs; genitalia with parameres not deeply divided into two lobes·····4
4. Basal tooth of mandibles turened inward apically (Figs. 163, 177); median lobe of clypeus depressed near the antennal insertions; cuspis simple, not divided nor setose; paramere consisting of 3 valves·····Acrepyris Kieffer
- Basal tooth of mandible simple (Figs. 201, 207, 210), not turned inward

apically; median lobe of clypeus not depressed near the antennal insertions; cuspis divided into a simple dorsal and a setose ventral arm; paramere simple, not consisting of 3 valves····Apenesia Westwood

(Female)

5. Mesopleura very small in dorsal view; propodeum nearly parallel-sided, at most weakly constricted (Fig. 231)·····Dissomphalus Ashmead
- Mesopleura strongly developed in dorsal view; propodeum with a distinct constriction at the spiracles (Figs. 160, 221)·····6
6. Propodeum strongly constricted at its anterior end, where it dears a pair of small processes which embrace the apex of the elongate mesonotum (Figs. 240, 242)·····Pseudisobrachium Kieffer
- Propodeum not constricted at anterior end, broadly in contact with the mesonotum ·····7
7. Propodeal constriction strong, maximum width of propodeum at least twice width at constriction (Fig. 160)·····Acrepyris Kieffer
- Propodeal constriction less strong, maximum width of propodeum less than twice width at constriction (Fig. 221)·····Apenesia Westwood

Key to genera of Japanese Epyrinae

1. Head elongate, length more than 1.5 x width (Fig. 366); mandibles elongate, sickle-shaped (Fig. 367)·····Allobethylus Kieffer

- Head length less than 1.4 x as width; mandibles more or less triangular·····2

2. Antennae with 12 segments; maxillary palpi with 3-5, labial with 1-2 segments; small species, less than 2.5 mm in total body length ·····3

- Antennae with 13 segments; maxillary palpi with 5-6, labial with 2-3 segments·····4

3. Radial vein present (Figs. 393, 402); both sexes fully winged ····· ·····Plastanoxus Waterston

- Radial vein absent (Fig. 405); both sexes often without wings ····· ·····Cephalonomia Westwood

4. Anterior border of clypeus more or less projecting medially; both sexes with wings (one brachypterous speceis is present) and ocelli; forewings with radial vein·····5

- Anterior border of clypeus truncate; winged and apterous types present in female, apterous type lacking ocelli; forewings without radial vein (Figs. 380, 386)·····Sclerodermus Latreille

5. Radial vein short, shorter than the length of the basal vein (Fig. 153) ·····Laelius Ashmead

- Radial vein long, distinctly longer than the length of the basal vein (Figs. 149, 151)·····6

6. Clypeus with three prominent lobes (Figs. 329, 336); notauli weak and incomplete or lacking·····Holoepyris Kieffer

- Clypeus with only the median lobe well developed, lateral lobes absent or very much shorter than median lobe; notauli well developed····· ·····Epyris Westwood

Key to genera of Japanese Bethylinae

1. Antennae with 12 segments; basal vein forming almost a right angle, its basal part appearing as a continuation of the median vein (Fig. 145) ·····Bethylus Latreille

- Antennae with 13 segments; basal vein not forming a right angle·····2

2. Propodeum with a median carina and a pair of basal pits (Fig. 431)···· ·····Odontepyris

- Propodeum without median carina and basal pits·····3

3. Radial vein curved upward and joining metacarpus vein to form a closed marginal cell (Fig. 148)·····Sierola Cameron

- Radial vein not reaching the anterior wing margin, marginal cell open (Figs. 144, 145) ·····Goniozus Foerster

Subfamily Pristocerinae

Pristocerinae Dalla Torre, 1897.

Type genus: Pristocera Klug, 1808.

Pristoceriini; Kieffer, 1914. [As a tribe.]

Pristocerinae; Berland, 1928. [Raised to subfamily ststus.]

Afgoioginae Argaman, 1988. [See the part I in this paper.]

Type genus: Afgoiogfa Argaman, 1988.

Japanese name: Mukashi-arigatabachi-aka.

This subfamily comprises 20 genera, of which 11 are restricted to the Ethiopian region, and is known as parasites of Coleopteran larvae. All species in this wasp group show strong sexual dimorphism; males have wings, while females are completely apterous. It is distinguished from the other subfamilies by the following combination of characteristics.

Male:

1. Anterior portion of propleura elongate.
2. Metanotum developed.
3. Anterior border of metanotum with a small emargination or fovea.
4. Posterolateral corners of propodeum without spine.
5. Pterostigma present at a distance of 1/2 or more from the base of forewings.

6. Basal vein simple, without a cubitus.
7. Claws weakly to moderately curved.

Female:

1. Eyes small, at most consisting of 50 facets.
2. Pronotum longer than wide.
3. Mesonotum small, metanotum reduced.
4. Tegula absent.
5. Propodeum elongate, longer than wide.

In Japan, 17 species in 4 genera are recorded.

Genus Acrepyris Kieffer

Acrepyris Kieffer, 1905. In Andre, Spec. Hymen. Eur. Alger., 9: 249.

Acrepyris; Evans, 1963. Bull. Mus. Comp. Zool., 129: 241. [As subgenus of Pristocera.]

Acrepyris; Terayama, 1994. Part I of the present pater [Gen. rev.]

Neopristocera Yasumatsu, 1955. Jour. Fac. Agri. Kyushu Univ., 10: 248. [Synonymized by Evans, 1963.]

Japanese name: Mukashi-arigatabachi-zoku.

After Evans (1963), Acrepyris has been treated as a subgenus of the genus Pristocera. However, the present study suggests that Acrepyris deserves well of generic rank. This genus is separated from Pristocera in males by the following characteristics: 1. Antennae long, extending to the posterior border of propodeum (not reaching the anterior border of propodeum in Pristocera), 2. Antennal flagellum without long erect hairs (with long erect hairs on each segment in Pristocera), 3. Subgenital plate simple, not deeply divided (deeply divided into two separate lobes in Pristocera), 4. Aedoeagus of genitalia consisting of 3 valves (simple in Pristocera). Genus Acrepyris is distributed in the Holarctic, Neotropical and Oriental regions, while Pristocera in the Ethiopian and Oriental regions (few in the Palaearctic region).

Diagnosis. Medium to large sized species with the following combination of characteristics.

Male:

1. PF = 6, 3.
2. Mandibles with 4 or 5 teeth, tip of basal tooth turned inward.
3. Anterior border of clypeus truncate.
4. Mesoscutum with the notauli complete or nearly so.
5. Propodeum short, basal triangular area with a shallow depression or set off by a carina.
6. Subgenital plate simple with a basal stalk.
7. Aedoeagus of genitalia consisting of 3 valves.

8. Discoidal vein at least weakly indicated, and the discoidal cell fully outlined in many species.

Female:

1. PF = 6, 3.
2. Eyes consisting of 15 to 50 facets.
3. Propodeum strongly constricted just behind the spiracles, its maximum width less than 2.0 x its minumum width dorsally.
4. Mesopleura prominent dorsally.
5. Middle tibiae spinose.

Key to the Japanese Species of Acrepyris

(Male)

1. Punctures on head small, shallow and sparce (Fig. 174); sublateral areas of propodeal disc smooth and shining, without rugae (Fig. 176); smaller species, head length less than 1.00 mm .... A. minuta (Yasumatsu) [Hok, Hon, Shi, Kyu, Ryu]

- Punctures of head large and dense (Figs. 167, 173); sublateral areas of propodeal disc with numerous transverse rugae (Fig. 159); larger species, head length more than 1.20 mm 2

2. Pronotal disc semicircular, its anterolateral borders not forming an angle in dorsal view (Fig. 172) ..... A. ryukyuensis sp. nov. [Ryu]

- Pronotal disc trapezoidal, anterolateral borders forming a blunt angle (Figs. 170, 171) 3

3. Anterior border of clypeus incised at middle (Fig. 161); mandibles with 4 teeth (Fig. 162); paramere of genitalia with 2 angles posteriorly (Figs. 166) ..... A. japonica (Yasumatsu) [Hon, Shi, Kyu, Yaku]

- Anterior border of clypeus straight, not incised (Fig. 164); mandibles with 5 teeth (Fig. 163); paramere of genitalia simple, with a single angle in posteriormost part (Fig. 166) ..... A. ishigakiensis (Yasumatsu)[Sakishima]

Acrepyris ishigakiensis comb. et stat. nov.

(Figs. 163-164, 168-169, 171)

Pristocera japonica ishigakiensis Yasumatsu, 1955. Jour. Fac. Agr. Kyushu Univ., 10: 245.

Japanese name: Yaeyama-mukashi-arigatabachi.

Redescription of holotype. Male. HL 1.25 mm; HW 1.28 mm; WF 0.75 mm; LA 2.40 mm; LPD 0.80 mm; WPD 0.80 mm; FWL 4.55 mm; TL 6.6 mm.

Head and alitrunk black; gaster dark testaceous; mandibles, antennae, and legs testaceous.

Head as long as broad, with weakly concave posterior border in frontal view; WF 0.59 x HW, 1.36 x HE; frons and vertex with strong punctures which

are ca. 0.05-0.07 mm in diameters. Mabdibles with 5 teeth; apical tooth most developed. Clypeus with a very broad V-shaped emargination. Antennae elongate with first 5 segments in a ratio of about 8:2.5:8:7:7 in length; 2nd segment almost as long as broad; 3rd segment 3.5 x as long as broad. Compound eyes 0.55 mm in maximum diameter. Ocelli in a compact triangle, OOL 1.15 x WOT, POL:AOL=2:1, DAO ca. 0.13 mm.

Pronotum short, trapezoidal in dorsal view; the surface of the disc with strong punctures. Mesonotum wholly covered with punctures; notauli strong and complete; scutellum spacelly puncutate. Propodeal disc as long as broad; medial carina extending to the posterior end of disc, submedian carinae indistinct; sublateral area with irregularly transverse rugae.

Gaster smooth and shining. Genitalia as in Figs. 168-169.

Material examined: holotype (male), Kainan, Ishigaki-jima I., Ryukyu Is., 8.II.1953, T. Shiraki leg. [KUF]; 2m, Kanbire-taki, Iriomote-jima I., Okinawa Pref., 23.VIII.1978, T. Nambu leg.; 1m, Komi, Iriomote-jima I., Okinawa Pref., 21.VIII.1978, T. Nambu leg.; 6m, same locality, 3.VII.1988, K. Kusigemati leg.; 12m, Kanpira, Iriomote-jima I., Okinawa Pref., 1.VII.1988, K. Kusigemati leg.; 1m, Uehara, Iriomote-jima I., Okinawa Pref., 5.VII.1982, K. Kusigemati leg.; 8m, Mt. Omoto-dake, Ishigaki-jima I., Okinawa Pref., 29.VI.1988, K. Kusigemati leg.

Distribution. Ryukyus (Ishigaki-jima I., Iriomote-jima I.).

Remarks. Yasumatsu (1955) described this species as a subspecies of P. japonica. This species is distinguished from japonica by 5 teethed mandibles,

strong punctures on mesonotum, indistinct submedian carinae of propodeum, and shape of male genitalia.

Acrepyris japonica (Yasumatsu) comb. nov.

(Figs. 159-162, 165-167, 170)

Pristocera japonica Yasumatsu, 1955. Jour. Fac. Agr., Kyushu Univ., 10: 240.

Pristocera harmandi: Uchida, 1932. Insect World, 36: 155. [Misidenification.]

Pristocera harmandi: Sugihara, 1938. Kansai Konchu Zasshi, 5: 39. [Missidentification.]

Pristocera harmandi: Yasumatsu, 1939. Ins. Jap. Illus. Icon. Col. Nat. Depicta, Tokyo: 355. [Misidentification.]

Japanese name: Mukashi-arigatabachi. [Arumando-munabosobachi, Uchida, 1926; Aruman-munabosobachi, Yasumatsu, 1939; Kometsuki-arigatabachi, Ishihara, 1963].

Redescription of holotype. Male. HL 1.65 mm; HW 1.70 mm; WF 1.10 mm; LT 3.30 mm; LPD 1.25 mm; WPD 1.00 mm; FWL 6.00 mm; TL 8.9 mm.

Head and alitrunk black; gaster, legs and anterior half of mandibles dark castaneous; antennae almost black.

Head as long as broad, with convex posterior border in frontal view; frons with large punctures which are ca. 0.05 mm in diameters, punctures on vertex slightly smaller and sparser than those on frons; WF 0.65 x WH, 1.47 x

HE. Mandibles with 4 teeth, apical tooth larger than the others. Clypeus with a very broad V-shaped emargination. Antennae elongate, with numerous short erect hairs; first five segments in a ratio of about 12:2:7:7:8 in length; 2nd segment broader than long; 3rd segment 2.3 x as long as broad. Compound eyes 0.75 mm in maximum diameter. Front angle of ocellar triangle more than a right angle, POL: AOL= 9:5; OOL 1.35 x WOT; DAO ca. 0.08 mm.

Pronotum short, trapezoidal in dorsal view, the surface of disc with dense punctures. Mesoscutum and scutum wholly covered with punctures; notauli strong and complete. Propodeal disc about 1.25 x as long as broad; median carina connected at posterior, median and submedian areas with irregular strong transverse rugae. sublateral areas with irregular transverse rugae.

Gaster smooth and shining.

Redescription of a paratype female. HL 1.45 mm; HW 1.15 mm; LA 2.25 mm; TL 7.0 mm.

Body castaneous; gaster slightly lighter than head and alitrunk; mandibles, antennal funicles and legs reddish brown; antennal scapes castaneous.

Head rectangular, 1.26 x as long as width, with parallel sides and convex posterior bordar in frontal view; frons smooth and scatterd with punctures. Mandibles with 4 teeth; apical tooth most developed. Clypeus with a broad V-shaped emargination. First five segments of antennae in a ratio of about 22:5:5:5:5; scape robust, broadest at anterior end; 2nd segment almost as long as broad; 3rd to 12th segments each broader than long; apical segment 1.28 x

as long as broad. Eyes small, consisting of about 12 facets, 0.08 mm in maximum diameter, situated near anterior end of head.

Pronotal disc almost as long as broad, surface smooth with scatterd punctures. Mesonotum 0.64 x as long as broad. Mesopleuron smooth with punctures. Propodeum 1.72 x as long as its maximum width ; maximum width 2.27 x minimum width; disc shining, with about 13 punctures; declivity and lateral faces reticulate.

Gaster smooth, scattered with shallow punctures.

Variation. The male varies in head length from 1.15 mm to 1.85 mm; head width from 1.15 mm to 2.00 mm. The punctures on head and alitrunk fewer in small individuals and gaster somewhat brownish in some individuals. Available females vary in head length from 1.10 mm to 1.25 mm, head width 0.80 mm to 1.00 mm.

Male genitalia as in Figs. 166 and 167.

Types examined. Holotype: male, Fukuoka, 15.III.1930, K. Yasumatsu [KUF]. Paratypes: 1f, Mashiko-machi, Kozuke (Tochigi Pref.), 8.III.1950, E. Tanaka leg. [KUF]; 1m, same locality, E. Tanaka leg. [KUF]; 1m, Wakasugi-yama, Chikuzen (Fukuoka Pref.), 3.V.1942, Esaki, Fujino, Yasumatsu, Hori, Hashimoto & Cho leg [KUF]; 1m, Hikosan, Bungo (Ohita Pref.), 10-11.V.1942, I. Fukushima & S. Ito leg. [KUF]; 1m, Sefuri-yama, Chikuzen (Fukuoka Pref.), 28.VI.1940, T. Shirozu leg. [KUF]; 1m, Kashiwabara, Tamba (Kyoto Pref.), 26.V.1951, Y. Yamamoto leg. [KUF]; 2m, Wakasugi-yama, Chikuzen (Fukuoka Pref.), 28-29.V.1930, Hori, Hashimoto & Choh leg. [KUF]; 1m, Ropponmatsu, Fukuoka Pref.,

1.V.1946, T. Shirozu leg. [KUF]; 2m, Tsukumishima, Bungo (Ohita Pref.), 22-23.V.1930, S. Hashimoto leg. [KUF]; 2m, Inunaki-toge, Chikuzen (Fukuoka Pref.), 7. VI. 1931, Esaki, Hori & Yasumatsu leg. [KUF]; 1m, same locality, 11.V.1935, K. Yasumatsu leg. [KUF]; 1m, Miyanoura, Yakushima I., Kagoshima Pref., 25.IV.1954, Y. Kurosawa leg. [KUF]; 1m, Ambo, Yakushima I., Kagoshima Pref., 23.IV.1929, Takeuchi leg. [KUF]; 1m, same locality, 13.V.1955, Easki, Yasumatsu & Hirashima leg. [KUF]; 1m, Korasan, Chikugo (Fukuoka Pref.), 26.V.1935, Esaki, Yasumatsu, Kawahara, Nomura, Hashimoto & Fujino leg. [KUF]; 1m, Tachibana-yama, Chikuzen (Fukuoka Pref.), 21.IV.1951, Y. Hirashima leg. [KUF]; 1m, Amami, Osaka Pref., 22.V.1938, [KUF]; 1m, Magari-fuchi, Chikuzen (Fukuoka Pref.), 4.V.1930, K. Yasumatsu leg. [KUF].

Other material examined. 1m, Rifucho, Miyagi Pref., 3.VI.1974, K. Goukon leg.; 1m, Mt. Wakasugi-yama near Fukuoka, Fukuoka Pref., 12.V.1959, K. Morimoto & T. Saigusa leg.; 1m, Cape Sata, Kagoshima Pref., 28-31.VIII.1951, S. Miyamoto leg.; 1m, Sata (Osumi), Magome-Hetsuka, Kagoshima Pref., 24.V.1952, Esaki & Hirashima leg. ; 1m, Mt. Hikosan, Bungo (Fukuoka Pref.), 10-11.V.1942, I. Fukushima & S. Ito leg.; 2m, same locality, 13.V.1955, Esaki, Yasumatsu & Hirashima leg.; 5m, Shiroyama, Toyama-shi, Toyama Pref., 29.V.1992, N. Negoro leg.; 26m, Kurino-machi, Kagoshima Pref., 26.V.1986, K. Kusigemati leg.; 2m, Mt. Kaimon-dake, Kagoshima Pref., 29.IV.1966, K. Kusigemati leg; 3m, Chiran-machi, Kagoshima Pref., 25.IV.1966, K. Kusigemati leg.; 1m, Kaimon-cho, Kagoshima Pref. 28.IV.1966, K. Kusigemati leg; 6m, Mt. Kurino-dake, Kagoshima Pref., K. Kusigemati leg.; 2m, Ryuugamizu, Kagoshima-

shi, Kagoshima Pref., 29.IV.1966, K. Kusigemati leg.; 1m, Bouno-misaki, Kagoshima Pref., 27.IV.1966, K. Kusigemati leg.; 17 m, Mt. Osuzu-yama, Tonou-machi, Miyazaki Pref., 22.V.1966, K. Kusigemati leg.; 9m, Kitamoroagata-gun, 23.V.1966, K. Kusigemati leg.; 1m, Mt. Osuzu, Miyazaki Pref., 22.V.1966, A. Tanaka leg; 2m, Toso, Kagoshima Pref., 10.IX.1970, K. Kusigemati leg.; 1m, same locality, 22.IV.1970, K. Kusigemati leg.; 5m, Iwakuni, Yamaguchi Pref., 18.V.1928, K. Sato leg.; 1m, Meguro, Tokyo, 8.V.1934, K. Sato leg.; 6m, Obuse, Nagano Pref., 4.VI.1932, K. Sato leg.; 1m, Yokohama, Kanagawa Pref., VIII.1942, K. Sato leg.; 2m, same locality, 10.V.1959, K. Sato leg.; 1m, same locality, 26.V.1933, K. Sato leg.; 1m, same locality, 3.V.1957, K. Sato leg.; 1m, Mt. Takao, Tokyo, 28.IV.1930, K. Sato leg.; 2m, Hiyoshi, Yokohama, Kanagawa Pref., 15.V.1936, K. Sato leg.; 1m, Shinohara-cho, Yokohama, Kanagawa Pref., 19.V.1941, K. Sato leg.; 1m, same locality, 1.VI.1941, K. Sato leg.; 1m, same locality, 17.V.1942, K. Sato leg.; 1m, Akatsuka, Tokyo, 6.V.1928, K. Sato leg.; 1m, Kozukue, Yokohama, Kanagawa Pref., 29.IV.1955, K. Sato leg.; 1m, Kanagawa Pref., 18.V.1957, K. Sato leg.; 2m, Miyanoura, Yakushima I., Kagoshima Pref., 5-6.IV.1971, K. Yamagishi leg.; 1m, Uradani, kitashidara, Aichi Pref., 7.VII.1972, H. Yamada leg.; 1m, Takagi-cho, Kasugai-shi, Aichi Pref., 16.V.1966, S. Ohkusa leg.; 3m, Miura, Kanagawa Pref., 1.V.1974, H. Miura leg.; 1m, Jokoji, Seto, Aichi Pref., 10.V.1969, H. Yamada leg.; 3m, Yagoto, Nagoya, Aichi Pref., 22.V.1970, S. Ohkusa leg.; 1m, same locality, 24.V.1972, S. Ueda leg.; 1m, same locality, 19.V.1970, H. Yamada leg.; 1m, Wakuri, Ichinomiya, Aichi Pref., 9.V.1971, S. Ohkusa leg.; 2m, same locality,

26.IV.1973, S. Ueda leg.; 1m, same locality, 9.V.1973, Y. Arita leg.; 1m, Mt. Sanage, Toyota, Aichi Pref., 21.V.1972, S. Ueda leg.; 1m, Aira-cho, Kimotsuki-gun, Kagoshima Pref., 1-V-1980, H. Nagase leg.; 2m, Kamakura, Kanagawa Pref., 19.V.1950, H. Nagasa leg.; 1m, same locality, 1.VI.1950, H. Nagase leg.; 3m, Kikuna, Yokohama, Kanagawa Pref., 17.V.1934, K. Sato leg.; 1m, Kamikawa, Saitama Pref., 23.VIII.1984, T. Namubu leg.; 1m, Tsurugashima, Saitama Pref., 28.V.1986, T. Nambu leg.; 1m, Kamiozoegawa, Fuji, Saga Pref., 5.VI.1973, K. Yamagishi leg.; 1m, Ikeda, Osaka Pref., 3.V.1932, K. Iwata leg.; 1m, Kinuta, Tokyo, 12.V.1963, Y. Kurosawa leg.; 1m, Jokoji, Seto, Aichi Pref., 10.V.1969, H. Yamada leg.; 1m, same locality, 13.V.1970, T. Okadome leg.; 1m, same locality, 24.V.1970, H. Yamada leg.; 1m1f, Utsunomiya-shi, 15.V.1978, T. Kumazawa leg.; 1m, same locality, 30.V.1984, T. Kumazawa leg.; 1m, same locality, 4.V.1979, T. Kumazawa leg.; 1m, same locality, 10.V.1982, T. Kumazawa leg.; 2m, Yanagawa, Ohtsuki-shi, Yamanashi Pref., 32.V.1975, H. Suda leg.; 1m, Shisui, Inba-gun, Chiba Pref., 17.V.1976, H. Suda leg.; 1m, same locality, 8.V.1975, H. Suda leg.; 2m, Mt. Kano-zan & Mather-bokujyo, Chiba Pref., 16.V.1968, H. Suda leg.; 1m, Kobotoke-toge, Hachioji-shi, Tokyo, 23.IV.1964, H. Suda leg.; 1m, Shimizukogen, Noda-shi, Chiba Pref., 14.V.1973, H. Suda leg.; 1m, Mt. Tanzawa, Hatano-shi, Kanagawa Pref., 28.V.1968, H. Suda leg.; 2m, Tomiyama, Chiba Pref., 12.V.1966, T. & H. Suda leg.; 1m, Ohya, Sakura-shi, Chiba Pref., 14.V.1973, H. Suda leg.; 1m, Iida, Sakura-shi, Chiba Pref., 20.V.1971, H. Suda leg.; 1m, Mt. Mitsuishi, Kimitsu, Chiba Pref., 14.V.1970, H. Suda leg.; 1m, Hatsushima, Atami-shi, Shizuoka Pref., 4.VI.1970,

H. Suda leg.; 2m, Usui, Sakura-shi, Chiba Pref., 14.V.1975, H. Suda leg.; 1m, Dounji, Makioka, Higashi-yamanashi, Yamanashi Pref., 24.V. 1976, H. Suda leg.; 1m, Toso, Kagoshima Pref., 22.IV.1970; 1m, Sakura-jima, Kagoshima Pref., 16.VI.1973, K. Onara leg.; 1m, Mt. Eboshi-dake, Kagoshima Pref., 8.V.1970; 1m, Shimota, Kagoshima Pref., 25.V.1969, K. Kusigemati leg.; 1m, Okuno, Ito-shi, Shizuoka Pref., 23-24.V.1989, M.N. & M. T. leg.; 1m, Kumamoto Pref., 24.IV.1967, M. Suwa leg.; 1m, Mt. Ohira-yama, Tochigi-shi, Tochigi Pref., 10.VI.1982, M. Terayama leg.; 1m, Imaichi-shi, Tochigi Pref., 27.V.1935, H. Yuasa leg.; 1m, Iwatsuki-shi, Saitama Pref., 23.VII.1964, Y. Yoshikawa leg.; 1m, same locality, 1.IX.1964, Y. Yoshikawa leg.; 1m, same locality, 29.VII.1971, Y. Yoshikawa leg.; 1m, Ohmiya-shi, Saitama Pref., 18.V.1965, Y. Yoshikawa leg.; 1m, Atsugi-shi, Kanagawa Pref., 12.V.1970, Y. Yoshikawa leg.; 1m, Mt. Kaimon-dake, Kagoshima Pref., 19.VII.1970, Y. Yoshikawa leg.; 1m, Ikuta, Kawasaki-shi, Kanagawa Pre., 5.V.1971, S. Katsuya leg.; 2m, same locality, 2.V.1972, Y. Yoshikawa leg.; 1m, same locality, 9.V.1972, S. Katsuya leg.; 2m, same locality, 6.VI.1972, Y. Yoshikawa leg.; 1m, Kawamata, Chichibu, Saitama Pref., 21.V.1972, S. Tachikawa leg.; 1m, Shiki, Saitama Pref., 22.V.1972, T. Saito leg.; 2m, Ogose, Saitama Pref., 29.IV.1983, T. Nambu leg.; 1m, Nagakubo, Ogano-machi, Saitama Pref., 31.VIII.1988, A. Shimizu leg.; 1m, Ishidokyuku, Kitamoto, Saitama Pref., 12.V.1991, T. Nambu leg.; 1m, Monomi-toge, Higashi-Tanzawa, Kanagawa Pref., 10.VI.1972, K. Dobashi leg.; 2m, Mt. Takatori, Kobe, Hyogo Pref., 13.V.1978; 1m, same locality, 9.V.1978; 7m, same locality, 20.V.1978; 26m, same locality, 24.V.1978; 6m, same locality,

26.V.1978; 5m, same locality, 5.VI.1978; 6m, same locality, 6.VI.1978; 1m, same locality, 7.VI.1978; 1m, same locality, 10.VI.1978, 1m, same locality, 17.VI.1978; 1m, Fuchu, Tokyo, 30.V.1936, T. Ishii leg.; 1m, Kusono-cho, Santou-gun, Shizuoka Pref., 5.V.1962, J. Minamikawa leg.; 1m, Kodaira-shi, Tokyo, 5.IX.1966, J. Minamikawa leg.; 1m, Bou-mura, Tochigi Pref., 26.V.1935, H. Yuasa leg.; 1m, Hatsudai, Tokyo, 24.V.1936, N. Kumazawa leg.; 1m, Mt. Takao, Tokyo, 6.VI.1965, J. Minamikawa leg.; 1m, Kodaira-shi, Tokyo, 6.V.1969, N. Shimizu leg.; 1m, Baji-koen, Setagaya-ku, Tokyo, 9.VIII.1967, S. Katsuya leg.; 1m, Tama-kyuryo, Kanagawa Pref., 15.IX.1976, A. Yoshitani leg.; 1m, same locality, 28.V.1980, A. Yoshitani leg.; 1m, same locality, 5.VI.1979, A. Yoshitani leg.; 1m, Mizonokuchi, Kanagawa Pref., 5.V.1930; 1m, Asagaya, Tokyo, 12.V.1930; 2m, same locality, 13.V.1930; 2m, Mt. Kiyosumi, Chiba Pref., 21.V.1973, Y. Yoshikawa leg.; 1m, Inagi-shi, Tokyo, 10.V.1965, S. Katsuya leg.; 1f, same locality, 23.V.1967, S. Katsuya leg.; 1m, same locality, 7.VI.1974, S. Katsuya leg.; 2m, same locality, 16.V.1967, S. Katsuya leg.; 2m, Shinoi, Tochigi Pref., 10.V.1939, H. Yuasa leg.; 2m, Terayama, Kagoshima Pref., 1.V.1970, K. Kusigemati leg., 1m, Nishiogikubo, Tokyo, 19.V.1940, M. Kanai leg.; 7m, Mt. Kirishima-zan, Kirishima-machi, Kagoshima Pref., 27.V.1966, K. Kusigemati leg.; 1m, Kodaira, Tokyo, 6.V.1969, N. Shimizu leg.; 1m, same locality, 11.IX.1968, J. Minamikawa leg.; 1f, Nishi-ogikubo, Tokyo, 10.V.1940, M. Kawai leg.; 1m, Hattori, 8.V.1914, N. Tozawa leg.; 1m, same locality, 16.V.1917, N. Tozawa leg.; 1m, Minomo, Osaka Pref., 22.V.1921, N. Tozawa leg., 2m, Terayama Park, Kagoshima-shi, Kagoshima Pref., 10.V.1967, A.

Tanaka leg.; 2m, Nishi-ogikubo, Tokyo, 15.V.1938, M. Kawai leg.; 1m, same locality, 18.IV.1937, M. Kawai leg.; 1m, Kodama-machi, Saitama Pref., 6.V.1968, T. Nambu leg.; 1m, same locality, 6.VI.1970, T. Nambu leg.; 1m, same locality, 9.VI.1971, T. Nambu leg.; 1m, same locality, 17.V.1972, T. Nambu leg.; 1m, Yorii-machi, Saitama Pref., 29.IV.1972, T. Nambu leg.; 1m, same locality, 5.V.1975, T. Nambu leg.; 1m, same locality, 30.v.1976, T. Nambu leg.; 1m, Ikego, Zu-shi, Kanagawa Pref., 27.V.1983, M. Nishimura & T. Niisato leg.; 5m, Mt. Eboshi-dake, Kagoshima Pref., 4.V.1969, K. Kusigemati leg.; 1m, same locality, 15.V.1970, K. Kusigemati leg.; 1m, Suson-toge, Suntou-gun, Shizuoka-Pref., 5.V.1964, J. Minamikawa leg.; 1m, Kaseda, Kagoshima Pref., 8.V.1974, K. Kusigemati leg.; 1m, Nanai, Tochigi Pref., 20.V.1935, H. Yuasa leg.; 1m, Mt. Yufu, Ohita Pref., 16.V.1967, H. Takizawa leg.; 1m, Nakakawane, Shizuoka Pref., 15.VI.1958, J. Minamikawa leg.; 1m, Susomo-cho, Shizuoka Pref., 5.V.1962, J. Minamikawa leg., 1m, Sata-misaki, Kagoshima Pref., 18.V.1966, K. Kusigemati leg.; 1m, Miyanoura, Yakushima is., Kagoshima Pref., 4.VI.1975, K. Kusigemati leg.; 1m, same locality, 5-6.IV.1971, K. Yamagishi leg.; 1m, Onoaoda, Yakushima is., Kagoshima Pref., 11.X.1973, K. Kusigemati leg.; 2m, Mt. Hiko-san, Fukuoka Pref., 3.V.1983, M. Abe leg.; 1m, same lcality, 3.V.1983, K. Ohara leg.; 1m, Otsuki, Yamanashi Pref., 6.VI.1930, T. Ishii leg.; 1m, Ikuta, Kawasaki-shi, Kanagawa Pref., 25.VI.1980, M. Terayama leg.; 1m, Tannzawa, Kanagawa Pref., 21.VI.1979, M. Terayama leg.; 1m, Kanaya, Shizuoka Pref., 1.VII.1948, J. Minamikawa leg., 1m, same locality, 8.X.1947, J. Minamikawa leg.; 1m, same locality, 20.V.1952, J. Minamikawa leg.; 1m, same

locality, 8.V.1951, J. Minamikawa leg.; 1m, same locality, 12.V.1953, J. Minamikawa leg.; 1m, Takeoka, Kagoshima-shi, Kagoshima Pref., 19.V.1963, K. Kusigemati leg.; 2m, Ise-jingu, Mie Pref., 22.V.1972, A. Nagatomi leg.; 1m, same locality, 23.V.1972, A. Nagatomi leg.; 1m, Toso, Kagoshima-shi, Kagoshima Pref., 29.IV.1970; 1m, same locality, 8.V.1963, K. Hashimoto leg.; 1m. Mt.Osuzu, Miyazaki Pref., 22.V.1966, A. Tanaka leg.; 1m, same locality, 21.V.1966; 1m, Sekiro-san, Tokyo, 9.VI.1957, S. Katsuya leg.; 1m, Shiroyama, Kagoshima-shi, Kagoshima Pref., 27.VII.1971, K. Matsumoto leg.; 1m, Takekuma-yama, Kagoshima Pref., 27.VIII.1970, K. Kusigemati leg.; 1m, Eboshidake, Taniyama-shi, Kagoshima Pref., 19.V.1963, K. Hashimoto leg.; 1m, same locality, 15.VI.1963, K. Hashimoto leg.; 1m,, Mizonokuchi, Kawasaki-shi, Kanagawa Pref., 5.V.1955, S. Katsuya leg.; 1m, Ikuta, Kawasaki-shi, Kanagawa Pref., 6.VI.1972, Y. Yoshikawa leg.; 1m, Shakujii, Tokyo, 18.IX.1972, H. Kobayashi leg.; 1m, Engyo-ji, Kochi-shi, Kochi Pref., 22.V.1933, Y. Sugihara leg.

Distribution. Honshu, Shikoku, Kyushu, Yakushima I.

Host. Melanotus sp. (Coleoptera; Elateridae)(Yoshida & Machida, 1960; Ishihara, 1963).

Remarks. This species is most abundant from Kyushu to Kanto district in Honshu, but rare in Tohoku district, northern part of Honshu, and unrecorded in Hokkaido. Pristocera harmandi from Tosa (=Kochi Pref.) by Sugihara (1938) was this species (the specimen used by Sugihara was examined in the HUS collection).

Acrepyris minuta (Yasumatsu) comb. nov.

(Figs. 174-182)

Pristocera minuta Yasumatsu, 1955. Jour. Agr. Kyushu Univ., 10: 246.

Japanese name: Tsuya-mukashi-arigatabachi.

Redescription of holotype. HL 0.95 mm; HW 0.95 mm; WF 0.53 mm; LA mm; LPD 0.60 mm; WPD 0.55 mm; FWL 3.75 mm;TL 4.9 mm.

Body black; gaster somewhat brownish; mandibles, antennae, and legs brown.

Head as long as broad, with concave posterior border, posterolateral corners not forming an angle in frontal view; WF 0.56 x HW, 1.18 x HE; frons and vertex smooth and shining, scattered with shallow punctures. Mandibles with 4 teeth. Anterior borded of clypeus almost straight. Antennae with numerous short erect hairs; first 5 segments in a ratio of about 13:4:10:10:9 in length; 2nd segment as long as wide; 3rd segment 2.9 x as long as wide. Eyes 0.45 mm in maximum diameter. Front angle of ocellar triangle acute, POL:AOL=5:6, OOL 1.67 x WOT, DAO ca. 0.08 mm.

Pronotum trapezoidal, lateral borders straight in dorsal view. Pronotum, mesonotum smooth and shining with shallow scattered punctures; notauli complete. Propodeal disc almost as long as broad, median carina not connected to transverse carina; median and submedian areas reticulated, sublateral area smooth and shining, without rugae.

Gaster smooth and shining. Paramere of genitalia as in Fig. 179.

Variation. Males vary in head length from 0.70 mm to 1.13 mm, in head width from 0.70 mm to 1.10 mm; punctures on head smaller and denser in small individuals. Material from Yaeyama Is. has less smooth sublateral areas on propodeal disc.

Material examined. Holotype (male), Sobozan, Bungo (Ohita Pref.), 8.IX.1933, K. Yasumatsu leg. [KUF], (covered with mold.); 1m (paratype), Hikosan, Buzen (Fukuoka Pref.), 4.X.1948, K. Yasumatsu leg.[KUF]; 1m (paratype), same locality, 18.X.1944, K. Yasumatsu leg.[KUF]; 1m (paratype), Kashiwabara, Tanba (Kyoto Pref.), 18.X.1950, M. Y. leg. [KUF]; 1m, Sapporo, Hokkaodo, 15.VI.1949, Y. Nishijima leg.; 1m, Hiroshima, Hokkaido, 10.IX.1965, M. Suwa leg.; 2m, Yamagata-shi, Yamagata Pref., 2.X.1968, S. Katsuya leg.; 1m, Mt. Haguro-san, Yamagata Pref., 3.IX.1966, K. Kusigemati leg.; 1m, Iwatsuki-shi, Saitama Pref., 29.VIII.1971, Y. Yoshikawa leg.; 2m, same locality, 14.VIII.1971, Y. Yoshikawa leg.; 2m, same locality, 29.VIII.1971, Y. Yoshikawa leg.; 2m, same locality, 30.VIII.1971, Y. Yoshikawa leg.; 1m, Urawa, Saitama Pref., 2.VIII.1965, Y. Yoshikawa leg.; 1m, Ikuta, Kawasaki-shi, Kanagawa Pref., 21.X.1971, Y. Yoshikawa leg.; 1m, Yorii, Saitama Pref., 8.IX.1974, T. Nambu leg.; 2m, Kyoto Pref., 23.VIII.1961, H. Takada leg; 6m, Terayama, Kagoshima Pref., 28.VIII.1970, K. Kusigemati leg.; 1m, same locality, 30.VIII.1970, K. Kusigemati leg.; 1m, Jyusantsukabaru, Kagoshima Pref., 19.VII.1974, K. Kusigemati leg.; 1m, Koseta, Yakushima I., Kagoshima Pref., 12.IX.1973, K. Kusigemati leg.; 1m, same locality, 15.X.1973, K. Kusigemati

leg.; 5m, Kamiozoegawa, Fuji, Saga Pref., 25.X.1973, K. Yamagishi leg.; 3m, same locality, 10.VIII.1973, K. Yamagishi leg.; 1m, Cape Sata, Kagoshima Pref., 28-31.VIII.1951, S. Miyamoto leg.; 1m, Hatsuno, Amami-oshima I., Kagoshima Pref., 11.XI.1962, Y. Miyatake leg.; 3m, Mt. Omoto-dake, Ishigaki-jima I., Okinawa Pref., 29.VI.1988, K. Kusigemati leg.; 2m, Kampira, Iriomote-jima I., Okinawa Pref., 1.VII.1988, K. Kusigemati leg.

Korea: 1m, Mt. Sudo-san, Kyongsang puk-do, 300 m alt., 25.VIII.1990, K. Yamagishi leg.

Distribution. Japan (Hokkaido, Honshu, Kyushu, Ryukyu Is.), Korea (new record).

Remarks. This is a widely distributed species from Hokkaido to the Ryukyus, but rare in northen parts. It is the only species known from Hokkaido in this subfamily.

Acrepyris ryukyuensis sp. nov.

(Figs. 172-173)

Japanese name: Katamaru-mukashi-arigatabachi.

Description of holotype. Male. HL 1.95 mm; HW 1.85 mm; WF 1.20 mm; LA 3.25 mm; LPD 1.15 mm; WPD 1.40 mm; FWL 6.10 mm.

Body black; mandibles, antennae, and legs blackish brown.

Head round, almost as long as wide; posterolateral borders not forming

angle; WF 0.65 x HW, 1.41 x HE; frons coarsely punctate; occipit less strongly punctate than frons. Mandibles with 4 teeth. Anterior border of clypeus truncated. First 5 antennal segments in a ratio of about 12:3:8:7:6.5 in length; scape 3.1 x as long as wide; 2nd segment slightly wider than long; 3rd segment 2.7 x as long as wide. Eyes 0.85 mm in maximum diameter. Ocelli in a commpact triangle, median ocellus lying at the level of posterior margin of eyes; OOL 1.23 x WOT, DAO 0.13 mm.

Anterior border of pronotal disc round, not forming an angle; surface with strongly punctate; in lateral view, anterodorsal border overhanging.

Mesoscutum with strong punctures; notauli complete; scutellum with punctures. Propodeal disc broadest at posterior 1/4, 0.82 x as long as wide; median carina reaching posterior end of the disc; median and submedian areas reticurate; sublateral area with transverse rugae.

Holotype. Male, Shimoji, Miyako-jima I., Ryukyu Is., Okinawa Pref., 7.III.1953, T. Shiraki leg. (gaster lacking) [NIAES].

Distributin. Ryukyus. (Miyako-jima I.).

Genus Apenesia Westwood

Apenesia Westwood, 1874. Thesaurus Ent. Oxoniensis, 170.

Aeluroides Tullgren, 1904. Ark. Zool., 1: 428. [Synonymized by Kieffer, 1914.]

Propristocera Kieffer, 1905. In Andre, Spec. Hymen. Eur. Alger., 9: 247. [Synonymized by Evans, 1963]

Cleistepyris Kieffer, 1910. Ann. Soc. Ent. France, 79: 48. [Synonymized by Evans, 1963.]

Dipristocera Kieffer, 1914. Das Tierreich, 41: 471. [Synonymized by Evans, 1963.]

Neopristocera Benoit, 1957. Explor. Parc Nat Albert., Miss. De Witte, 88:44. [Synonymized by Evans, 1953; generic name preoccupied by Yasumatsu, 1955.]

Japanese name: Emi-arigatabachi-zoku.

Diagnosis. Medium to small species following combination of characteristics.

Male:

1. PF = 6-5, 3.
2. Mandibles with 1-5 teeth.

3. Anterior border of clypeus produced, variable in shape, but never forming a trapezoid.
4. Eyes glabrous, or with short erect hairs.
5. Pronotal disc of variable shape, with or without carina.
6. Notauli complete or nearly so.
7. Genitalia with cuspis divided into a simpe dorsal and a setose ventral arm.

Female:

1. PF = 4, 3-2.
2. Eyes small, each with 1 to about 14 facets.
3. Propodeum weakly to fairly strongly constricted at or near the spiracles; its maximum width 1.2-1.8 x its minimum width.
4. Mesopleura prominent dorsally.
5. Middle tibiae spinose above.

In Japan, 8 species are recorded.

Key to the Japanese Species of Apenesia

(Male)

1. Anterior border of pronotal disc carinate·····A. bishamon sp. nov. [Ryu]

- Pronotal disc without carina·····2

2. Mandibles with apical tooth alone·····3

- Mandibles with 4 or 5 teeth·····5

3. Head coarsely microreticulate·····4

- Head smooth and shining·····A. kusigematii sp. nov. [Ryu]

4. Propodeum without basal triangular area; head and alitrunk dark brown
·····A. tengu sp. nov. [Hon]

- Propodeum with distinct basal triangular area; head and alitrunk black·····A. okinawensis sp. nov. [Ryu]

5. Dorsum of mesonotum mostly smooth, with only few shallow punctures; mandibles with 4 teeth; thorax testaceous and propodeum black·····
····· A. elegans sp. nov. [Hon, Ryu]

- Dorsum of mesonotum moderately punctate; mandibles with 5 teeth; alitrunk uniformly black·····A. daikoku sp. nov. [Ryu]

(Female)

1. Mesonotum broader, 0.75 x as long as wide, with scattered punctures ···
·····A. kaguyahima sp. nov. [Hon]

- Mesonotum narrow, 0.58 x as long as wide, smooth and inpunctate·····
·····A. otohime sp. nov. [Amami]

Table 23. Some characters in Japanese Apenesia (Male).

	Hairs on eyes	No. of mandibular teeth	carina of pronotum	shape of clypeus	surface of head
A. elegans	+	4	-	R	s
A. daikoku	+	5	-	R	m
A. okinawensis	-	1	-	P	m
A. tengu	-	1	-	P	s
A. bishamon	-	4-5	+	P	s
A. kushigemachii	-	1	-	P	s

R; round, P; produced, s; smooth, m; microreticulate.

Apenesia daikoku sp. nov.

(Figs. 196-198)

Japanese name. Daikoku-emi-arigatabachi.

Holotype. Male. HL 1.00 mm; HW 1.00 mm; WF 0.63 mm; LA 2.00 mm; LP 0.78 mm; WPD 0.63 mm; FWL 3.4 mm; TL 5.5 mm.

Head and alitrunk black; gaster brown with reddish tinge; mandibles and legs yellow; antennae brown.

Head as long as wide, smooth and shining; punctures shallow, separated by 1-1.5 x their own diameters. Mandibles with 5 teeth. Anterior border of clypeus broadly rounded; median portion very weakly angulate. First 5 segments of antennae in a ratio of about 9:2:6.5:6:5.5 in length. Eyes without hairs; LE 0.43 mm; WF 1.47 x LE. Ocelli forming a regular triangle; POL:AOL= 1:1; OOL 1.4 x WOT.

Pro- and mesonotal discs smooth and shining, moderately punctate; punctures on the mesonotal disc larger than those on pronotal disc. Propodeum 1.24 x as long as wide, sides of anterior 2/3 parallel; basal triangular area small, reticulate as in Fig. 195; posterior half of disc microreticulate.

Gaster sessile, smooth and subopaque.

Metacarpus vein of forewings 0.25 mm in length; discoidal vein very feebly recognizable, interstitial with median vein.

Holotype. Male, Komi, Iriomote-jima I., Okinawa Pref., 3.VII.1988, K. Kusigemati leg. [NIAES].

Paratypes. 1m, Uehara, Iriomote-jima I., Okinawa Pref., 5.VII.1982, K. Kusigemati leg. [KU-K]; 1m, Mt. Omoto-dake, Ishigaki-jima I., Okinawa Pref., 29.IV.1988, K. Kusigemati leg. [TE].

Distribution. Ryukyus (Ishigaki-jima I., Iriomote-jima I.).

Apenesia elegans sp. nov.

(Figs. 190-192, 196-198, 216-220)

Japanese name. Bekkou-emi-arigatabachi.

Holotype. Male. HL 0.73 mm; HW 0.70 mm; WF 0.45 mm; LA 1.40 mm; LP 0.60 mm; WPD 0.44 mm; FWL 2.7 mm; TL 4.0 mm.

Head black; pro- and mesonotum testaceous except for pronotal collar yellow; propodeum dark brown; 1st and 2nd segments, and anterior potion of 3rd

segment of gaster brown, remainder dark brown; mandibles and antennae yellow to brown; legs yellow.

Head 1.04 x as long as wide, posterolateral borders rounded in frontal view; surface smooth with scattered punctures which are separated by about 2 x their own diameters. Mandibles with 4 acute teeth. Anterior border of clypeus broadly rounded, with a minute median angulation. First 5 segments of antennae in a ratio of about 8:2:5:4.5:4.5 in length; scape with almost parallel sides; 2nd segment slightly longer than wide; 3rd segment 2.6 x as long as wide. Eyes with scatterd short erect hairs; EL 0.30 mm; WF 1.5 x EL. Ocelli forming a regular triangle; POL:AOL =1:1; OOL 1.31 x WOT.

Pro- and mesonotal disc smooth and shining, with only a few punctures. Propodeum 1.36 x as long as wide, broadest at middle in dorsal view; median carina strong; median area smooth with transverse rugae; sublateral areas and declivity strongly reticulate.

Gaster sessile, rather smooth and subopaque.

Metacarpus vein of forewings 0.28 mm in length; discoidal vein arising sligtly down on transverse median vein.

Variation. In Okinawan material, the median clypeal carina does not reach the anterior clypeal border, and sublateral areas of propodeum are less microreticulate and much smoother.

Holotype. Male, Iwatsuki-shi, Saitama Pref., 27.VIII.1971, Y. Yoshikawa leg. [NIAES].

Paratypes. 5m, same data as holotype [NIAES, NSMN, SMNH, TE]; 2m, Itabashi-ku, Tokyo, 10.IX.1985, T. Niisato leg. [TE]; 1m, Okinoerabu-jima I., Ryukyus, Kagoshima Pref., 31.VII-2.VIII.1969, H. Makihara leg. [KU-K]; 1m, Nishinakama, Amami, Ryukyus, Kagoshima Pref., 26-28.VII.1969, H. Makihara leg. [KU-K]; 3m, 10-11.X.1988, Kunigami-son, Okinawa-jima I., Okinawa Pref., K. Konishi leg. [NIAES].

Distribution. Honshu, Ryukyus (Tokara Is., Amami Is., Okinawa Is.).

Apenesia kusigematii sp. nov.

(Figs. 199-204)

Japanese name. Ryukyu-emi-arigatabachi.

Holotype. Male. HL 1.00 mm; HW 0.95 mm; WF 0.55 mm; LA 1.85 mm; LPD 0.50 mm; WPD 0.70 mm; FWL 3.4 mm; TL 5.4 mm.

Body black; mandibles and antennae brown; legs yellow.

Head 1.05 x as long as wide; surface subopaque, moderately punctate; punctures distinct, separated by 0.5-1.0 x their own diameter. Mandibles elongate, only with an acute apical tooth. Anterior border of clypeus triangular, well

produced medialy. First 5 segments of antennae in a ratio of about 14:4:8:8:7 in length; 2nd segment 1.3 x as long as wide; 3rd segment 2.7 x as long as wide. Eyes without hairs; EL 0.48mm; WF 1.15 x EL. Ocelli forming a regular triangle; DAO 0.10 mm; OOL 1.18 x WOT.

Pronotal disc smooth and shining, with relatively large distinct punctures. Mesoscutum smooth and shining, with relatively large distinct punctures except for the median area without punctures. Scutellar disc mostly smooth and shining. Propodeum 0.71 x as long as wide; median carina reaching the transverse carina; sublateral carinae and transverse carina present; basal triangular area depressed, with 7-8 pairs of oblique rugae; sublateral areas with rather irregularly transverse rugulae.

Gaster sessile, smooth and shining. Subgenital plate as shown in Fig. 202; genitalia as in Figs. 203 and 304.

Metacarpus vein of forewings short, 0.38 x length of pterostigma; discoidal vein arising well down on transverse median vein.

Variation. Males vary in head length from 0.80 mm to 1.25 mm, and in head width from 0.75 mm to 1.13 mm.

Holotype. Male, Kanpira, Iriomote-jima I., Okinawa Pref., 1.VII.1988, K. Kusigemati leg. [NIAES].

Paratypes. 11m, the same data as holotype [NIAES, NSMN, MCSN, BMNH, USNM, KU-K, TE]; 2m, Komi, Iriomote-jima I., 3.VII. 1988, K. Kusigemati leg. [TE]; 3m, Uehara, Iriomote-jima I., 5.VII.1982, K. Kusigemati leg. [KU-K]; 6m, Mt. Omoto-dake, Ishigaki-jima I., 29.VI.1988, K. Kusigemati leg. [TE]; 1m, Iriomote-jima I., 9.1.1953, T. Shiraki leg. [NIAES]; 1m, Sonai, Yonakuni-jima I., 25-29.VIII.1969, H. Makihara leg. [KU-K]; 1m, Mt. Otowa-dake, Nakijin, Okinawa is., 23.X.1990, M. Hayashi leg.,[NIAES]; 2m, Kunigami-son, Okinawa I., 10-11.X.1988, K. Konishi leg. [NIAES]; 1m, Hatsuno, Amami-oshima I., Kagoshima Pref., 11.XI.1962, Y. Miyatake leg. [KUF]; 1m, Amami-oshima I., Kagoshima Pref., 16.III.1964, H. Takada leg. [HUS].

Distribution. Ryukyus.

Apenesia tengu sp. nov.

(Figs. 209-210)

Japanese name. Tengu-arigatabachi.

Holotype. HL 0.68 mm; HW 0.63 mm; WF 0.41 mm; LA 1.13 mm; LP 0.35 mm; WPD 0.38 mm; FWL 2.4 mm; TL 2.9 mm.

Body castaneous; head and tip of gaster darker; mandibles, antennae and legs yellow.

Head 1.08 x as long as wide, weakly microreticulate and impunctate. Mandibles with the apical tooth only. Clypeus produced, forming nearly a right angle medially. First 5 segments of antennae in a ratio of about 9:3:4:4:4 in length; 2nd segment longer than wide; 3rd to 5th segments each 2.0 x as long as wide. Eyes without hair, 0.30 mm in length; WF 1.37 x EL. Ocelli forming rather compact triangle; OOL 1.67 x WOT.

Pronotal disc 0.43 x as long as wide, smooth and shining; anterior half with relatively large punctures. Mesonotum smooth and shining; median area of mesoscutum and scutellar disc mostly impunctate. Propodeum short, 0.92 x as long as wide; median carina delicate; basal triangle microreticulate and weakly reticulate; sublateral areas microreticulate with rugosity; declivity with transverse rugulae.

Gaster smooth and shining.

Metacarpus vein of forewings short, 0.24 x length of stigma; discoidal vein arising well down on transverse median vein.

Holotype. Male, Yamagata Pref., 2.X.1968, S. Katsuya leg. [NIAES].

Distribution. Honshu.

Apenesia bishamon sp. nov.

(Figs. 211-220)

Japanese name. Katasuji-emi-arigatabachi.

Holotype. Male. HL 1.05 mm; HW 0.96 mm; FW 0.58 mm; LA 1.63 mm; LPD 0.65 mm; WPD 0.58 mm; FWL 3.0 mm; TL 4.6 mm.

Head and alitrunk black; gaster brown with a reddish tinge; 1st gastral tergite with a large blackish brown spot at middle; apical portion blackish brown; mandibles and antennae reddish brown; legs brown with a reddish tinge.

Head round, 1.09 x as long as wide, with convex posterior border; anteroposterior borders rounded, not forming an angle in frontal view; surface smooth and shining with small, shallow and widely separated punctures. Mandibles with 4 acute teeth. Clypeus produced, forming an obtuse angle. First 5 segments of antennae in a ratio of about 12:2:8:8:7.5 in length; scape short, broadest at the middle, 2.4 x as long as wide; 2nd segment wide, 1.75 x as wide as long; 3rd segment 2.7 x as long as wide. Eyes without hair, 0.45 mm in length; FW 1.29 x EL. Ocellar triangle rather compact, POL : AOL = 1:1; OOL 1.33 x WOT.

Pronotal disc flat and trapezoidal, 0.47 x as long as wide; transverse carina present at anterior and lateral corners, surface smooth and shining; seen from lateral side; anterodorsal border of pronotum obtusely angulate; anterior border straight. Mesonotum smooth and shining with a few shallow small punctures. Propodeal disc 1.12 x as long as wide, with almost parallel, very weakly convex sides; transverse carina strong; median carina present on basal 4/5 of disc; sublateral carina present on posterior half of disc; basal triangle with strongly reticulate; surface smooth and shining; sublateral areas with rather irregular oblique rugae; lateral areas with transverse rugae; declivity smooth and shining, with 6 transverse rugae.

Gaster sessile, smooth and shining.

Metacarpus vein of forewings long, 0.63 mm in length, 1.79 x as long as length of stigma; discoidal vein interstitial with median vein.

Holotype. Male, Mt. Omoto-dake, Ishigaki-jima I., Okinawa Pref., 29.VI.1988, K. Kusigemati leg. [NIAES].

Paratypes. 1m, same data as holotype [KU-K]; 1m, Yona, Okinawa-jima I., 9-13, VIII.1969, H. Makihara leg. [TE]; 2m, Nishinakama, Amami-oshima I., Kagoshima Pref., 26-28.VII.1969, H. Makihara leg. [TE]; 2m, 10-11.X.1988, Okinawa-jima I., Okinawa Pref., K. Konishi leg. [NIAES].

Distribution. Ryukyus.

Apenesia okinawensis sp. nov.

(Figs. 186-189)

Japanese name. Okinawa-emi-arigatabachi.

Holotype. Male. HL 0.98 mm; HW 0.93 mm; FW 0.54 mm; LA 1.63 mm; LPD 0.39 mm; WPD 0.60 mm; FWL 2.8 mm; TL 3.7 mm.

Body black; clypeus dark reddish brown; mandibles, antennae, and legs reddish brown.

Head almost as long as wide, with weakly convex posterior border and dully angulated posterolateral borders in frontal view; surface strongly microreticulate with relatively large punctures; punctures separated by 0.5-1 x their own diameters. Mandibles with the apical tooth only. Clypeus produced medialy, forming an obtuse angle. First 5 segments of antennae in a ratio of about 12:4:6.5:6:6 in length; 2nd segment slightly longer than wide; 3rd segment 2.6 x as long as wide. Eyes without hairs, 0.45 mm in length; FW 1.2 x EL. Ocelli relatively large, in a regular triangle; DAO 0.09 mm; OOL 1.1 x WOT.

Pronotal disc trapezoidal, 0.44 x as long as wide; anterior half with large irregular punctutes densely; posterior half smooth and shining, without punctures. Mesonotum smooth and shining with only a few shallow small punctures. Propodeal disc short, 0.65 x as long as wide, with weakly convex sides in dorsal view; lateral and transverse carinae present; median carina reaching the transverse carina; basal triangle coarsely reticulate; sublateral

areas with transverse rugae.

Gaster sessile, relatively flat in profile, smooth and shining.

Metacarpus vein of forewings short, 0.33 x length of stigma; stigma large and wide, 2.4 x as long as wide; discodial vein arising well down on transverse median vein.

Variation. Material varies in head length from 0.72 to 1.00 mm, and punctures of head and pronotum weaker in small individuals.

Holotype. Male, Mt. Omoto-dake, Ishigaki-jima I., Okinawa Pref., 29.VI.1988, K. Kusigemati leg. [NIAES].

Paratypes. 1m, the same data as holotype [KU-K]; 1m, Ushikumori, Shirahama, Iriomote-jima I., Okinawa Pref., 3.XI.1963, H. Hasegawa leg. [NIAES]; 1m, Ura, Kunigami-son, Okinawa Is., Okinawa Pref., 3.X.1991, M. Hiratate leg. [NIAES]; 1m, same locality, 4.X.1991, M. Hiratate leg. [NIAES].

Distribution. Ryukyus.

Apenesia kaguyahime sp. nov.

(Figs. 221-224)

Japanese name. Kaguya-arigatabachi.

Holotype. Female. HL 0.75 mm; HW 0.58 mm; LA 1.45 mm; LP 0.64 mm; WPD 0.34 mm; TL 4.1 mm.

Head dark testaceous; alitrunk reddish brown; gaster brown except for 1st

and 2nd segments darker; mandibles, antennae, and legs yellow.

Head elongate and rectangular, with almost parallel sides and straight occipital border in frontal view; surfece weakly microreticulate and moderately punctate, punctures distinct, separated by 1.5-3 x their own diameter. Mandibles with 4 teeth; distalmost smallest and rather obscure. Anterior portion of clypeus trapezoidal, broadly truncate apically. First 5 segments of antennae in a ratio of about 14:2:3:2.5:2.5 in length; 2nd to 12th segments each wider than long; apical segment 1.6 x as long as wide, shorter than two preceding segments together. Eyes 0.05 mm in diameter, consisting of 8 facets, and situated laterally at about 0.85 x the distance from occipital corner to anterior cephalic corner.

Pronotal disc as long as wide, with parallel sides and broadly convex anterior border in dorsal view; surface weakly microreticulate with scattered punctures; median portion impunctate. Mesonotum broad, 0.75 x as long as wide; weakly microreticulate with scattered punctures. Propodeum 1.88 x as long as wide, maximum width 1.35 x minimum width; surface rather shining faintly microreticulate with only 7-8 shallow punctures on each side; declivity microreticulate with rugosity.

Gaster smooth and shining, 0.70 mm in maximum dorsal width.

Variation. Available specimens vary in head length from 0.70 to 0.75 mm, and in head width from 0.53 to 0.58 mm, and the color of head in some specimens is reddish brown.

Holotype. Female, Toga-jima I., Owase-shi, Mie Pref. (taken by Berlese

funnel), 13.V.1988 [NIAES].

Paratypes. 2f, same data as holotype [MCSM, SMNH]; 1f, Oyama-cho, Yokkaichi-shi, Mie Pref., 7.XII.1989, A. Amagasu leg. [TE]; 1f, Yokkaichi-shi, Mie Pref., 28.IV.1988, Ichihashi & Amagasu leg. [NIAES]: 1f, same locality, 15.V.1987, H. Yokozeki leg. [NIAES]; 1f, same locality (taken by Berlese funnel), 12.X.1987, A. Amagasu leg. [NASM]; 1f, same locality (taken by Berlese funnel), 20.IX.1988, A. Kawazoe leg. [TE]; 1f, same locality (taken by Berlese funnel), 24.IV.1987, Ichihashi & Amagasu leg. [TE]; 1f, Hichina, Nawari-shi, Mie Pref. (taken by Berlese funnel), 14.V.1989, A. Amagasu leg. [TE]; 1f, Yazawa, Akasaka-machi, Okayama Pref. (taken by Berlese funnel), 6.IV.1986 [TE]; 1f, Ishidojyuku, Kitamoto-shi, Saitama Pref., 26.V.1990, T. Nambu leg. [CNC].

Distribution. Honshu.

Remarks. It is highly probable that A. kaguyahime solely described from the female and A. elegans from the male are conspecific. However, I treat them as a separate species until exact male-female relation is cofirmed by direct observation. Many of individuals were taken by Berlese funnels.

Apenesia otohime sp. nov.

(Figs. 225)

Japanese name. Otohime-arigatabachi.

Holotype. Female. HL 0.75 mm; HW 0.53 mm; LA 1.30 mm; LP 0.69 mm; WPD 0.34 mm; TL 3.9 mm.

Head castaneous; alitrunk reddish brown; gaster yellowish brown except for anterior half of 1st and 2nd tergites reddish brown; mandibles, antennae, and legs yellow.

Head elongate, 1.42 x as long as wide, with parallel sides and straight occipital border; surface microreticulate with punctures; punctures shallow but rather distinct, sparated by about 1.5-2.5 x their own diameter. Mandibles with 4 teeth; distal two teeth long and acute; basalmost smallest and blunt. Median lobe of clypeus roundly produced, with a minute median angulation. First 5 segments of antennae in a ratio of about 13:2.3:2.5:2.5:2.8 in length; 2nd to 12th segments each wider than long; apical segment 1.9 x as long as wide, shorter than two preceding segments together. Eyes 0.08 mm in diameter, consisting of about 13 facets, situated laterally at about 0.88 x distance from occipital corner to anterior cephalic corner.

Pronotal disc 1.21 x as long as wide, with parallel sides and broadly convex anterior border in dorsal view; surface microreticulate with scattered punctures; median portion impunctate. Mesonotum narrow, 0.58 x as long as wide, microreticulate and impunctate. Propodeum 2.03 x as long as wide; maximum width 1.30 x minumum width; disc microreticulate, impunctate medially.

Gaster smooth and shining, 0.65 mm in dorsal maxuimum width.

Holotype. Female, Higashi-nakama, Amami-oshima I., Kagoshima Pref., 29.V.1963, Y. Arita & N. Ohbayashi leg. [NIAES].

Distribution. Ryukyus. (Amami-oshima I.).

Remarks. Known only from the type.

Genus Dissomphalus Ashmead

Dissomphalus Ashmead, 1893. Bull. U.S. Nat. Mus., 45: 41.

Ecitopria Wasmann, 1899. Zoologica, 11: 55. [Synonymizesd by Evans, 1955.]

Dissemphalus: Ashmead, 1902. Classification of the fossorial, predaceous and parasitic wasps, or the superfamily Vespioidea, 9: 271. [Luspus.]

Thanmatepyris Kieffer, 1910. Ann. Soc. Ent. France, 79: 47. [Synonymized by Evans, 1964.]

Glenobethylus Kieffer, 1910. Ann. Soc. Ent. France, 79: 50. [Synonymized by Evans, 1964.]

Parectiopria Ogloblin, 1930. Rev. Soc. Ent. Argentina, 3:15. [Synonymized by Evans, 1964.]

Japanese name: Fushinaga-arigatabachi-zoku.

Diagnosis. Small wasps with the following combination of characteristics.

Male:

1. PF = 5, 3.
2. Head squamiform; HL less than 1.2 x HW.
3. Mandibles with 2-4 teeth.
4. Clypeus without a well-defined median lobe.
5. Eyes with erect hairs or glabrous.
6. Pronotum short.
7. Notauli thin and linear, sometimes incomplete.

8. Outer margin of fore wings round.
9. Gaster oval in dorsal view; second tergite bearing 1 or 2 pairs of spots, depressions, pits, tufts of setae, or tubercle.

Female:

1. PF = 1-2, 1-2.
2. Eyes with 1-25 facets.
3. Mesonotum short; its posterior border transverse.
4. Propodeal disc with almost parallel sides, at most slightly constricted at the spiracles at most.
5. Mesopleura only weakly produced laterally.
6. Middle tibiae with or without spines above.

Dissomphalus kyushuensis sp. nov.

(Fig. 230)

Japanese name: Fushinaga-arigatabachi.

Holotype. Male. HL 0.49 mm; HW 0.45 mm; FW 0.30 mm; LA 0.83 mm; DPL 0.23 mm; DPW 0.30 mm; FWL 1.70 mm; TL 1.9 mm.

Head and alitrunk black, gaster blackish brown; antennae dark brown, legs brown.

Head 1.09 x as long as wide; with gently convex posterior border, microreticulate. Anterior border of clypeus with 3 lobes; lateral lobes

rounded; median lobe angulated. First 5 segments of antennae in a ratio of about 8:2.8:3:3:2.5 in length; 2nd segment 1.56 x as long as wide; 3rd and 4th segments each 1.67 x as long as wide. Eyes with hairs which are ca. 0.02 mm in length, 0.18 mm in maximum diameter; FW 1.67 x LE. Ocellar triangle obtuse; POL:AOL = 2:1.7; OOL 1.6 x WOT.

Pro- and mesonotum microreticulate. Propodeal disc 0.77 x as long as wide, with parallel sides and straight posterior border; median carina reaching posterior border of disc; lateral and transverse carinae distinct; basal triangular area reticulate; sublateral areas smooth and shining.

Gaster smooth and shining; 1st gastral tergite petiolate; constriction of 2nd gastral tergite as in Fig. 229.

Holotype. Male, Kamiozoegawa, Fuji, Saga Pref., 28.IV.1973, K. Yamagishi leg. [KUF].

Paratype. 1m, Yakushima I., Kagoshima Pref., 2.VI.1965, H. Tanaka leg. [HUS].

Dissomphalus minutulus sp. nov.

(Figs. 231-233)

Japanese name: Hime-fushinaga-arigatabachi.

Holotype. Female. HL 0.35 mm; HW 0.28 mm; LA 0.53 mm; LP 0.28 mm; WPD 0.14 mm; TL 1.5 mm.

Color yellow, with brownish tinge; antennae and legs pale yellow.

Head 1.25 x as long as wide, with almost straight, and weakly convex sides and shallowly concave posterior border, weakly microreticulate. Mandibles with 2 sharp tooth. Anterior border of clypeus trapezoidal. Antennae with 13 segments; scape 3.5 x as long as wide; 2nd segment as long as wide; 3rd 0.55 x as long as wide; 4th to 12th each wider than long; apical segment 1.5 x as long as wide. Eyes consisting of 4 facets.

Pronotal disc 0.86 x sa long as wide, weakly microreticulate. Mesonotum 0.5 x as long as wide. Propodeum 2.0 x as long as wide; lateral borders almost parallel, weakly narrowing toward anteriormost; maximum width 1.07 x minimum width; surface weakly microreticulate; reticulation weaker than that on the pronotum.

Gaster petiolate, 0.85 mm in maximum width dorsally, smooth and shining.

Holotype. Female, Shirahama, Iriomote-jima I., Okinawa Pref., 22.III.1975, K. Onoyama leg. [NIAES; right antenna mounted on a slide].

Distribution. Ryukyus. (Iriomote-jima I.)

Genus Pseudisobrachium Kieffer

Pseudisobrachium Kieffer, 1904. Ann. Mus. Civ. Stor. Nat. Genova, 41: 368.

Monepyris Kieffer, 1905. Ann. Soc. Sci. Bruxeles, 29: 101. [Synonymized by Kieffer, 1906.]

Xestobethylus Cameron, 1909. Trans. Amer. Ent. Soc., 35: 450. [Synonymized by Evans, 1973.]

Plutobethylus Kieffer, 1910. Ann. Soc. Ent. France, 79: 51. [Synonymized by Evans, 1961.]

Lyssepyris Kieffer, 1913. Boll. Lab. Zool. Portici, 7: 108. [Synonymized by Evans, 1961.]

Xantepyris Kieffer, 1913. Boll. Lab. Zool. Portici, 7: 108. [Synonymized by Evans, 1961.]

Xanthepyris: Kieffer, 1914. Das Tierreich, 41: 424. [Unjustified emendation.]

Parisobrachium Kieffer, 1914. Das Tierreich, 41: 424. [Synonymized by Evans, 1961.]

Edapholigon Ogloblin, 1963. Rev. Soc. Ent. Argentina, 26: 133. [As a subgenus; Synonymized by Evans, 1978.]

Sclerochroa: Argaman, 1989. Rev. Suisse Zool., 96: 11. [See Gorth & Moczar, 1990.]

Japanese name: Kubire-arigatabachi-zoku.

Diagnosis. Medium to small wasps with the following combination of characteristics.

Male:

1. PF = 6,3.
2. Mandibles with 3-5 teeth.
3. Anterior border of clypeus strongly produced, trapezoidal.
4. Eyes densely covered with relatively long hairs (with few exceptions).

5. Notauli complete, incomplete, or even absent.

6. Genitalia with the parameres deeply divided into two separate arms.

7. Inner margin of base of volsella with a vannus.

Female:

1. PF = 5,3.

2. Eyes with a single facet or absent.

3. Propodeum gradually narrowed anteriorly to a pair of small points.

4. Mesopleura large, bulging laterally.

5. Middle tibiae with spines above.

Key to the Japanese species of Pseudisobrachium

(female)

1. Eyes absent; larger species; HL 0.60 mm, HW 0.50 mmm ·····
·····P. nambui sp. nov. [Hon]

- Eyes present, consistindg of a single ommatidium; smaller species;
HL 0.48 mm; HW 0.35 mm ·····P. onoyamai sp. nov. [Sakishima]

Pseudisobrachium ryukyunum sp. nov.

(Figs. 235-240)

Japanese name: Ryukyu-kubire-arigatabachi.

Holotype. Male. HL 0.88 mm; HW 0.83 mm; FW 0.58 mm; WA 1.68 mm; LP 0.68 mm; WPD 0.50 mm; FWL 2.65 mm; TL 4.5 mm.

Body black; gaster dark reddish brown; mandibles and antennae reddish brown; legs yellow.

Head rectangular, 1.06 x as long as wide, with almost straight posterior border, and strongly microreticulate with scatterd shallow punctures. Mandibles with 5 teeth; apical tooth projecting; distal 3 minute. Anterior border of clypeus trapezoidal with median carina. First 5 segments of antennae in a ratio of about 14:3:9:7:7; 2nd segment wider than long; 3rd 2.0 x as long as wide; 4th 1.4 x as long as wide. Eyes 0.38 mm in maximum diameter; FW 1.52 x HE. Ocellar triangle equilateral; anterior ocellus 0.08 mm in diameter; OOL 1.44 x WOT.

Pro- and mesonotum strongly microreticulate. Propodeum 1.36 x as long as wide, with parallel sides in dorsal view. Median carina reaching 0.7 x from anteriormost part of propodeum. Subumedian carinae absent; sublateral areas with transverse striae.

Gaster smooth and shining. Subgnenital plate shown as in Fig. 237, genitalia as in Fig. 239.

Holotype. Male, Nago-shi, Okinawa-jima I., Okinawa Pref., 12.X.1988., K.

konishi leg. [NIAES].

Paratypes. 1m, Ura, Kunigami, Okinawa-jima I., Okinawa Pref., 3.X.1991, M. Hiratate leg. [NIAES]; 1m, Shin-mura, Amami-oshima I., Kagoshima Pref., 9.XI.1962, Y. Miyatake leg. [KUF].

Distribution. Ryukyus.

Pseudoisobrachium nambui sp nov.

(Figs. 241-242)

Japanese name: Nanbu-kubire-arigatabachi.

Holotype. Female. HL 0.60 mm; HW 0.50 mm; WA 0.98 mm; LP 0.35 mm; WPD 0.30 mm; TL 2.9 mm.

Body brown; gaster yellowish; tip of mandibles dark brown.

Head rectangular, 1.2 x as long as wide, with pallarel sides and straight posterior border; posterolateral border rounded in frontal view; surface weakly microreticulate and opaque with shallow punctures. Mandibles with 2 strong teeth. Anterior border of clypeus trapezoidal. Antennae with 12 segments; scape 4.0 x as long as maximum width; 2nd to 11th antennal segments each wider than long; apical segment 1.7 x as long as wide. Eyes absent.

Disc of pronotum 0.30 mm in width, as long as wide, weakly microreticulate. Mesonotum triangular, with round corners, 0.9 x as long as wide, weakly microreticulate. Propodeum 1.17 x as long as wide; maximum width

of disc 2.5 x as minimum width; surface very weakly microreticulate. Mesopleura microreticulate with shallow punctures.

Gaster smooth and shining; maximum width 0.58 mm seen from above. Middle tibiae setose.

Holotype. Female, Ogose, Saitama Pref., 18.VI.1979, T. Nambu leg. [NIAES].

Remarks. This unique specimen was collected by a Berlese funnel.

Pseudoisobrachium onoyamai sp. nov.

(Figs. 243-244)

Japanese name: Onoyama-kubire-arigatabachi.

Holotype. Female. HL 0.48 mm; HW 0.35 mm; WA 0.80 mm; LP 0.28 mm; WPD 0.23 mm; TL 2.6 mm.

Body brown, with yellowish gaster; antennae and legs yellow; mandibles yellow with the tip brown.

Head rectangular, 1.37 x as long as wide, with pallarel sedes and straight posterior border; posterolateral border rounded in frontal view; surface weakly microreticulate with shallow punctures. Mandibles with 2 strong teeth; masticatory margin dully angulate near middle. Anterior border of clypeus trapezoidal, weakly concave medially. Antennae with 12 segments; scape 4.0 x as long as its maximum wide; 2nd to 11th antennal segments each wider than long; apical segment 1.4 x as long as wide. Eyes minute, consisting of only a