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Key to the Genera of the Pompilidae Occurring in Japan North of the Ryukyus (Hymenoptera) (Part 1)

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Abstract Keys to the genera of the Pompilidae from Japan north of the Ryukyus are presented in two parts. In this part, three keys are given to 3 subfamilies, 2 genera of the Ceropalinae and 14 genera of the Pepsinae.

Key words: Taxonomy; Pompilidae; keys to genera; Ceropalinae; Pepsinae; Japan.

The taxonomic study of the Japanese Pompilidae is still incomplete. Nearly 100 species were described or recorded (TADAUCHI, 1989), but no revisionary study on all the genera and species occurring in Japan has been completed.

With respect to the key to the genera of the Japanese Pompilidae, only few attempts have so far been made. ISHIKAWA (1962) for the first time proposed that of the tribe Pepsini. Later, HANEDA (1987, 1988) presented the keys to the genera of the Pompilidae occurring in Fukui Prefecture, central Honshu. On the other hand, TSUNEKI (1990) published another generic key of the Pompilidae of the Ryukyus, one of the subtropical regions in Japan. After the publication of these works, the taxonomic interpretation in a few Japanese genera was presented (SHIMIZU, 1994). In this paper, new keys are proposed for the genera of the Pompilidae occurring in Japan north of the Ryukyus as the first of my serial studies on the taxonomy of these wasps.

In this paper, two large subfamilies, the Pepsinae and Pompilinae, are not divided into tribes, as were done by several previous authors. This is because I have not yet been able to clarify the phylogeny of these subfamilies sufficiently, although I admit the monophyly of the Ageniellini BANKS, 1912, and Pompilini (="higher Pompilinae" of SHIMIZU, 1994) within the respective subfamilies (SHIMIZU, 1994).

The Pompilidae have been considered to be one of the most difficult families to classify in Hymenoptera; even at present there are disagreements among researchers on a classification not only at the subfamily or tribe levels but also at the genus level (SHIMIZU, 1994). There seem to remain some problems concerning the limits and definitions of several genera treated in this paper, *e.g.*, *Cyphononyx-Leptodialepis*, *Auplopus-Phanagenia*, *Meragenia-Poecilagenia-Poecilageniella*. I intend to discuss these problems in a separate paper.

At the end of the second part of this paper, a tentative check list is given for convenience sake, although it includes several species which are sunken as synonyms or are not well understood.

The terminology of the wing veins and cells follow DAY (1988). The following abbreviations are used for morphological terms:

SMC: submarginal cell

SGP: subgenital plate

Key to the subfamilies of the Pompilidae occurring in Japan north of the Ryukyus

1 (2) Inner margins of eyes strongly convergent below and distinctly incised above middle, labrum large and entirely exposed below clypeus (Figs. 1, 2); sternum 6 strongly longitudinally folded and produced posteriorly beyond tergum 6 (Figs. 4, 5); sting straight (Fig. 5); (in specimens preserved in dried condition) antenna (♀) not convolute; apicoventral seta on hind tarsomere 5 long and setiform (Fig. 7). (Forewing veins M and CuA_1 almost reaching outer wing margin.) .....Ceropalinae RADOSZKOWSKI, 1888

2 (1) Inner margins of eyes shallowly sinuate, not strongly convergent below, labrum concealed at least partly beneath clypeus (Fig. 3), except in *Paracyphononyx*, which possesses malar space well developed, longer than half the antennal pedicel; sternum 6 never strongly folded nor produced posteriorly beyond tergum 6; sting decurved or upcurved [only *Dipogon* (Fig. 6)]; (in specimens preserved in dried condition) antenna (♀) convolute; apicoventral seta on hind tarsomere 5 blade-like, broad and flattened (Fig. 8).

Figs. 1–3. Head of female, anterior view. —— 1, *Ceropales maculata* (FABRICIUS); 2, *Irenangelus hikosanus* WAHIS; 3, *Auplopus constructor* (SMITH).

Figs. 4–6. Sternum 6 of female metasoma, lateral view. —— 4, *Ceropales maculata*; 5, *Irenangelus hikosanus*; 6, *Dipogon conspersus* (PÉREZ).

Figs. 7–8. Hind tarsomere 5 of female, ventral view. —— 7, *Ceropales taschenbergi* DALLA TORRE; 8, *Platydialepis ryoheii* (ISHIKAWA).

Fig. 9. Metasoma of *Pepsis grossa* FABRICIUS ♀, lateral view.

Figs. 10–12. Hind tibia of female, dorsal view. —— 10, *Hemipepsis* sp.; 11, *Priocnemis irritabilis* SMITH; 12, *Batozonellus maculifrons* (SMITH).

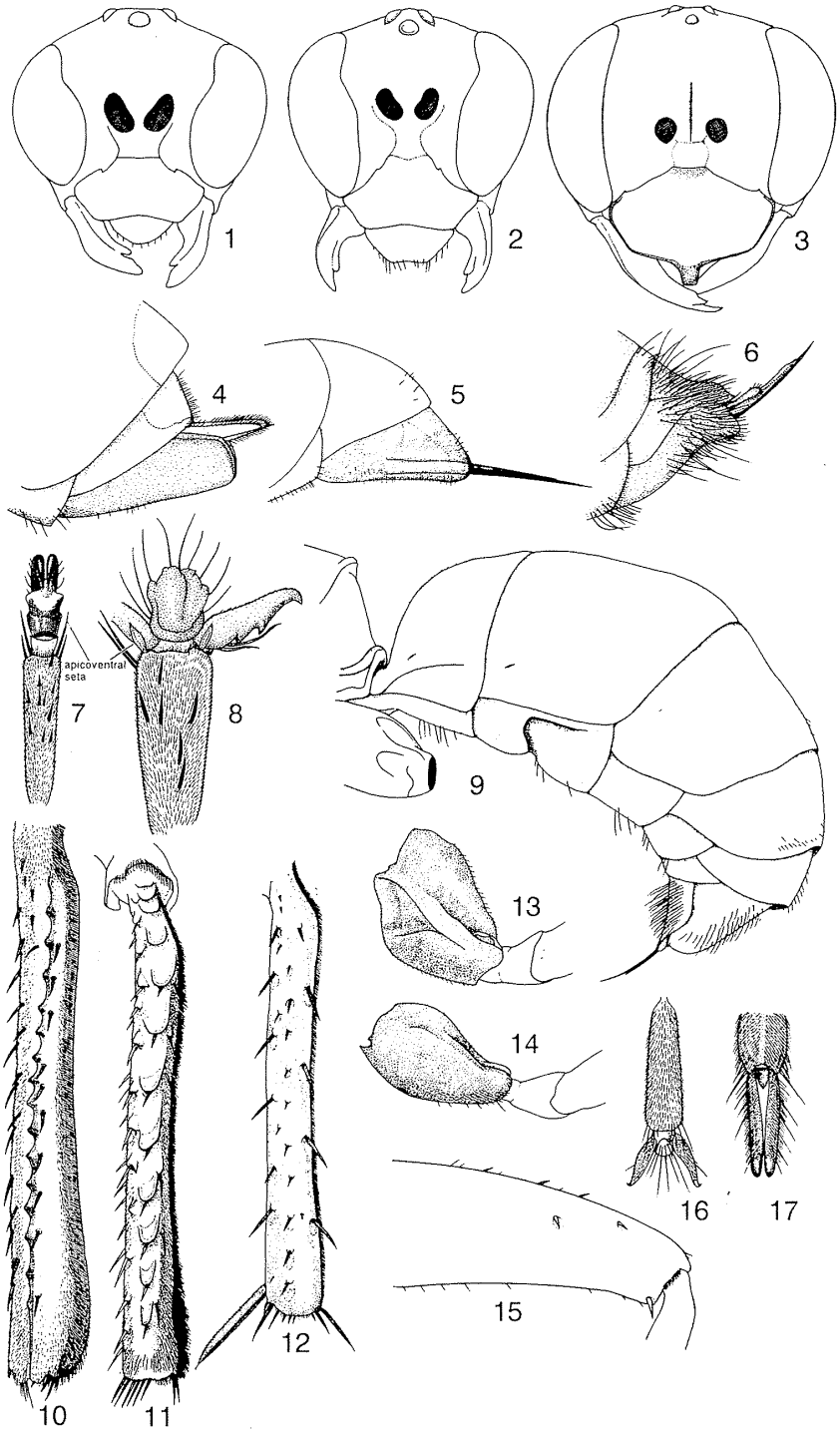
Figs. 13–14. Hind coxa of female, lateral view. —— 13, *Batozonellus maculifrons*; 14, *Auplopus aeginus* (SMITH).

Fig. 15. Hind femur of *Anospilus carbonicolor* (GUSSAKOVSKIJ) ♀, outer view.

Figs. 16–17. Hind pretarsus of female, dorsal view. —— 16, *Irenangelus hikosanus*; 17, *Ceropales bipunctata* SAY.

(1, 2, 4–14, 16, from SHIMIZU, 1994; 3 from ISHIKAWA & SHIMIZU, 1990.)

3 (4) Apical spines of hind tibia of almost equal length, subparallel and not splayed out (Figs. 10, 11); sternum 2 (♀) with a sharp transverse groove (Fig. 9); mid and hind femora without one or several subapi-



Figs. 1–17.

cal small spines or spine-pits; dorsal inner surface of hind coxa (in exact lateral view) smoothly rounded and not much raised (Fig. 14); hind tibia (♀) dorsally often with 1 or 2 rows of scale-like teeth (Fig. 11) or a serrate carina (Fig. 10) .....Pepsinae LEPELETIER, 1845

4 (3) Apical spines of hind tibia of unequal length, irregularly spaced and more or less splayed out (Fig. 12); sternum 2 (♀) without a sharp transverse groove, though sometimes with a shallow, broad, transverse impression; mid and hind femora with one or several subapical small spines or spine-pits (Fig. 15); dorsal inner surface of hind coxa (in exact lateral view) distinctly raised or somewhat lamellate(Fig. 13); hind tibia (♀) dorsally without a row of scale-like teeth nor a serrate carina (Fig. 12) .....Pompilinae LATREILLE, 1805

Key to the genera of the Ceropalinae occurring in Japan north of the Ryukyus

1 (2) Hind tarsal claws normal, divergent (Fig. 16) with a tooth; metasoma slender, somewhat compressed laterally and much narrower than mesosoma; notauli abnormally developed, almost attaining posterior margin of scutum (in some Neotropical species notauli absent or very weakly indicated; EVANS, 1969); head and mesosoma smooth (in some Neotropical species head distinctly punctate; EVANS, 1969) and polished; sternum 6 subtriangular in profile (Fig. 5); marginal cell large, pointed apically and less than 0.3× its own length from wing apex .....*Irenangelus* SCHULZ, 1906

2 (1) Hind tarsal claws subparallel (Figs. 7, 17), rectangularly bent at apex, without a tooth; metasoma about as broad as mesosoma; notauli present at only basal one-third of scutum; head and thorax with distinct dense punctures, propodeum transversely or reticulately rugose; sternum 6 spout-like, imitating an ovipositor (Fig. 4); marginal cell about half its own length from wing apex.....
.....*Ceropales* LATREILLE, 1796

Key to the genera of the Pepsinae occurring in Japan north of the Ryukyus

♀♀

1(22) Hind tibia dorsally with a serrate carina (Fig. 10) or a row of scale-like teeth (Fig. 11) or only short spines; tergum 1 with a lateral crease (Figs. 9, 18) and usually not petiolate [i.e., basal portion of tergum 1, in dorsal view, convex (Fig. 20) or at most parallel-sided]. [Most species of *Clistoderes* (*Paraclistoderes*) and *Dipogon* possess a petio-

late tergum 1.]

2 (3) Hind tibia dorsally with a serrate carina and a row of spines on each side of this carina (Fig. 10); tarsal claws with two or more teeth (not counting apical point as a tooth) (Fig. 22); orbicula more than 0.6× as wide as tarsomere 5, its apical margin with more than 14, very strong, subparallel setae, which are decurved at tip, of almost equal length, and shorter than orbicula (Fig. 25); marginal cell very long and parallel-sided; SMC2 very oblique at base and extending basad to stigma, so that it is at least 0.7× as long as SMC1; discal cell 1 basally with a fenestra, i.e., a subcircular hyaline area enclosing a darker spot. (SMC2 receiving crossvein 1m-cu near apex.) ....*Hemipepsis* DAHLBOM, 1844

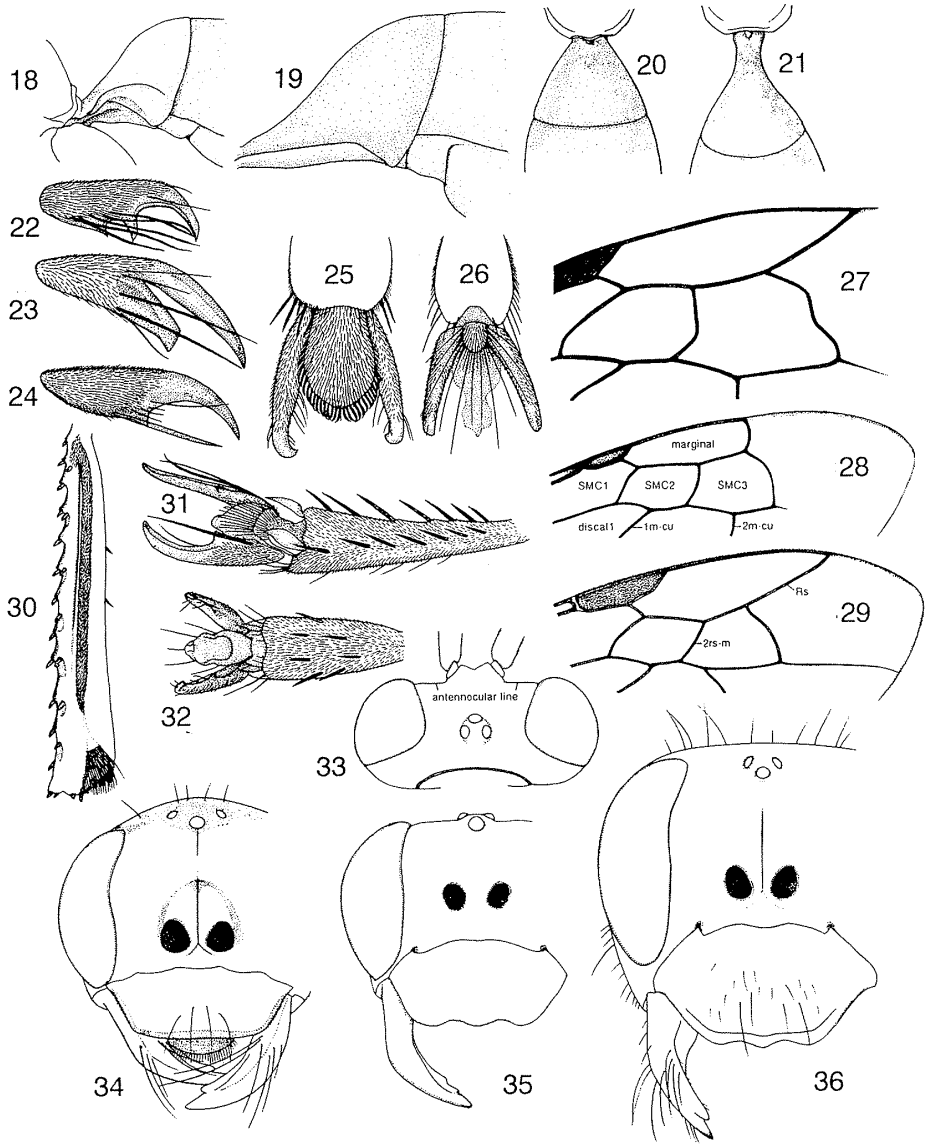
3 (2) Hind tibia dorsally with a row of scale-like teeth, each one overhanging a short spine (Fig. 11), or with only short spines; tarsal claws unidentate (Fig. 24) or bifid (Fig. 23), except in *Platydialepis* which often possesses bidentate tarsal claws; orbicula less than 0.6× as wide as tarsomere 5, its apical margin with at most 13, radiating, almost straight, weak setae, which are of unequal length: the median setae longer than the lateral ones, and much longer than orbicula (Fig. 26); marginal cell lanceolate or subtriangular and not parallel-sided; SMC2 not very oblique at base nor extending basad to stigma, so that it is much less than 0.7× as long as SMC1 (Figs. 27–29); discal cell 1 basally without a fenestra, except in *Platydialepis*, which possesses an obscure hyaline area.

4 (5) Marginal cell broadly rounded at apex and usually about its own length from outer wing margin (Fig. 28); brush on inner side of hind tibia with a subapical constriction or interruption (Fig. 30); under side of tarsomere 5 always with a pair of lateral rows of spines ....*Cryptocheilus* PANZER, 1806

5 (4) Marginal cell much less than its own length from outer wing margin, its apex pointed or at most blunt only for a short distance (Figs. 27, 29); brush on inner side of hind tibia without a subapical constriction nor interruption; under side of tarsomere 5 variable.

6 (9) Last 3 segments of maxillary palpus shorter than 3rd segment, which is the longest; tarsomere 5 ventrally always with a pair of lateral rows of spines (Fig. 31); SMC2 receiving crossvein 1m-cu near apex (at most apical 0.3).

7 (8) Inner margins of eyes convergent above and below, vertex (in anterior view) convex between tops of eyes (Fig. 34); pronotum depressed definitely along posterior margin and shallowly along midline, with shoulder very much swollen; SMC3 about its own length from outer



Figs. 18–21. First tergum of female metasoma (18–19, lateral view; 20–21, dorsal view). —— 18, *Dipogon conspersus*; 19, *Ageniella coronata* BANKS; 20, *Caliadurgus ussuriensis* (GUSSAKOVSKIJ); 21, *Auplopus kyotensis* (YASUMATSU).

Figs. 22–24. Hind tarsal claw of female. —— 22, *Hemipepsis* sp.; 23, *Cyphononyx dorsalis* (LEPELETIER); 24, *Leptodialepis nicevillei* (BINGHAM).

Figs. 25–26. Hind pretarsus of female, dorsal view. —— 25, *Hemipepsis fervida* (SMITH); 26, *Caliadurgus ussuriensis*.

Figs. 27–29. Forewing of female. —— 27, *Priocnemis irritabilis*; 28, *Cryptocheilus maruyamai* ISHIKAWA; 29, *Dipogon conspersus*.

Fig. 30. Hind tibia of *Cryptocheilus variabilis* (ROSSIUS) ♀, inner face.

Figs. 31–32. Hind tarsomere 5 of female (31, ventrolateral view; 32, ventral view). —— 31, *Leptodialepis nicevillei*; 32, *Priocnemis japonica* GUSSAKOVSKIJ.

Figs. 33–36. Head of female (33, dorsal view; others, anterior view). —— 33, 35, *Platydialepis ryoheii*; 34, *Cyphononyx dorsalis*; 36, *Leptodialepis sugiharai* (UCHIDA).

(18–22, 25, 27, 30–32, from SHIMIZU, 1994.)

wing margin; all tarsal claws bifid (Fig. 23) ....*Cyphononyx* DAHLBOM, 1845, *sensu* HAUPT, 1939, 1950

8 (7) Inner margins of eyes convergent above, parallel or divergent below, vertex (in anterior view) usually scarcely convex between tops of eyes, or nearly straight (Fig. 36); pronotum at most slightly depressed along posterior margin or along midline, with shoulder not very much swollen; SMC3 less than its own length from outer wing margin; all tarsal claws unidentate (Fig. 24)..... .....*Leptodialepis* HAUPT, 1929

9 (6) Last 3 segments of maxillary palpus thinner and longer than 3rd segment, and 4th longest; tarsomere 5 ventrally with a few small spines arising irregularly at both median and lateral portions (Fig. 32) or rather regularly in a median row or without spines; SMC2 usually receiving crossvein 1m-cu at apical 0.4 or more (Figs. 27–29).

10(11) Discal cell 1 basally with an obscure hyaline area; tarsal claws bidentate (some Oriental species possess unidentate or tridentate claws; HAUPT, 1941.); clypeus large, its apical margin arcuately emarginate on each side of midline and slightly roundly produced at both median and lateral portions, so that it is bisinuate (Fig. 35); hindwing crossvein cu-a originating distad to (occasionally at) point of separation of vein M+CuA. [Vertex (in anterior view) scarcely convex between tops of eyes, except for ocellar area (Fig. 35); frons (in dorsal view) almost flat, antennocular line transversely straight (Fig. 33).] .....*Platydialepis* HAUPT, 1941

11(10) Discal cell 1 basally without a hyaline area; tarsal claws unidentate; anterior margin of clypeus transverse, at most slightly concave or convex; hindwing crossvein cu-a originating basad to (rarely at) point of separation of vein M+CuA.

12(13) Maxillary cardo with a fascicle of very long, stout, curved setae (Fig. 37); hind tibia smooth, with only short spines dorsally; mandible bidentate. [Forewing vein Rs strongly bent at meeting with crossvein 2rs-m and from this point running straightly upward (Fig. 29); tergum 1 usually petiolate; sting upcurved (Fig. 6).] ....*Dipogon* FOX, 1897

13(12) Maxillary cardo without a fascicle of long, stout, curved setae; hind tibia with a dorsal row of scale-like teeth (Fig. 11); mandible unidentate.

14(15) Pronotum with a very short dorsal face and anterior, well-differentiated, vertical smooth face; fore tibia with a single, very stout, curved spine at dorsal apex; forewing crossvein cu-a originating at point of separation of vein M+CuA or distad to this point by less

than 0.3 of its length. (Inner side of hind tibia with a longitudinal sharp groove along upper margin of brush.) .... *Caliadurgus* PATE, 1946

15(14) Pronotum without an anterior, well-differentiated, vertical smooth face; fore tibia without a very stout, curved spine at dorsal apex; forewing crossvein cu-a originating distad to point of separation of vein M+CuA by more than 0.6 of its length.

16(17) Inner side of hind tibia with a longitudinal sharp groove along upper margin of brush; propodeum almost impunctate and smooth, at most minutely tessellate; sternum 2 with a transverse groove very fine, almost inconspicuous medially.... *Eopompilus* GUSSAKOVSKIJ, 1933

17(16) A longitudinal groove along upper margin of hind tibial brush, if any, obscure or not very sharp; propodeum shagreened, punctate, or transversely or reticulately rugose; sternum 2 with a strong transverse groove.

18(19) SMC3 shorter than SMC2 on Rs; cuneoli broad and sometimes meeting medially, their posterior margins forming an almost straight line (Fig. 40) ..... *Priocnemis* SCHIØDTE, 1837

19(18) SMC3 longer than SMC2 on Rs; cuneoli narrow, wedge-shaped and broadly separated medially (Fig. 41).

20(21) Antenna strikingly slender, 3rd segment more than 6× as long as

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Figs. 37–38. Head of female, lateral view. —— 37, *Dipogon conspersus*; 38, *Auplopus carbonarius* (SCOPOLI).

Fig. 39. Hind pretarsus of *Ctenopriocnemis filicornis* ISHIKAWA ♀, lateral view.

Figs. 40–41. Cuneoli and scutellum of female. —— 40, *Priocnemis japonica*; 41, *Ctenopriocnemis filicornis.*

Figs. 42–43. Antenna of female. —— 42, *Poecilagenia* sp.; 43, *Auplopus alishanus* ISHIKAWA.

Figs. 44–45. Tergum 6 of female metasoma, dorsolateral view. —— 44, *Poecilagenia sculpturata* (KOHL); 45, *Auplopus carbonarius.*

Figs. 46–47. Forewing of female. —— 46, *Machaerothrix tsushimensis* YASUMATSU; 47, *Auplopus kyotensis.*

Figs. 48–51. First tergum of male metasoma, dorsal view. —— 48, *Caliadurgus ussuriensis*; 49, *Ctenopriocnemis filicornis*; 50, *Machaerothrix tsushimensis*; 51, *Auplopus kyotensis.*

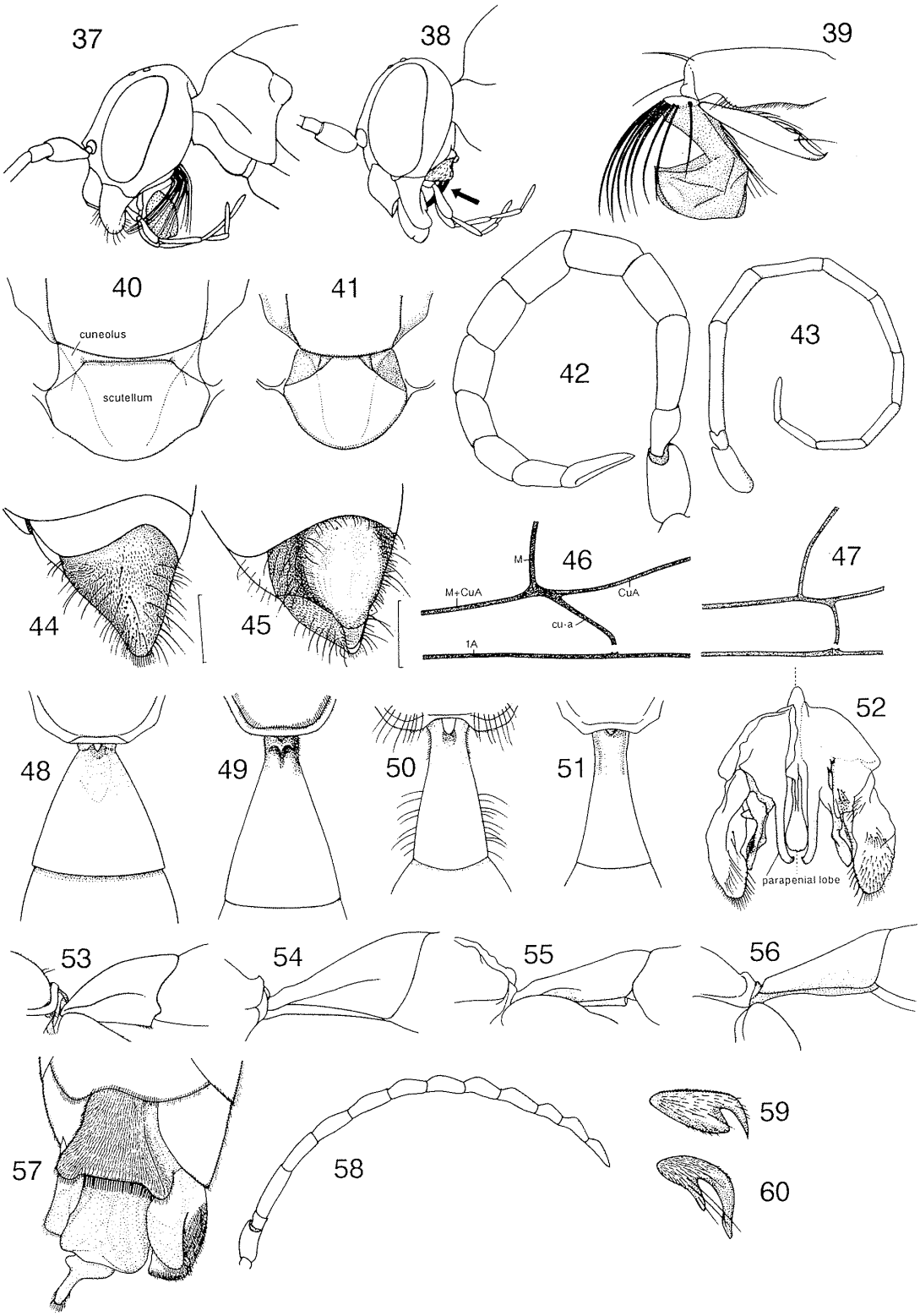
Fig. 52. Male genitalia of *Auplopus constructor.*

Figs. 53–56. First tergum of male metasoma, lateral view. —— 53, *Caliadurgus ussuriensis*; 54, *Ctenopriocnemis filicornis*; 55, *Machaerothrix tsushimensis*; 56, *Auplopus kyotensis.*

Fig. 57. Apical metasomal segments of *Eopompilus internalis* (MATSUMURA) ♂, ventrolateral view.

Fig. 58. Antenna of *Eopompilus internalis* ♂.

Figs. 59–60. Fore tarsal claw of *Platydialepis ryoheii* ♂. —— 59, inner claw; 60, outer claw. (37–38 from SHIMIZU, 1983; 42–43, 58, from SHIMIZU, 1994; 44–45 from SHIMIZU, 1986; 52 from ISHIKAWA & SHIMIZU, 1990.)



Figs. 37–60.

thickness; orbicular pecten consisting of about 10, comparatively strong, very long setae, which are distinctly decurved; arolium abnormally large, its apex sometimes beyond tip of tarsal claw (Fig. 39); mid tibia dorsally almost devoid of spines; dorsal surface of each scale-like tooth on hind tibia hairless and strongly polished; propodeum without a sublateral longitudinal impression from spiracle toward apex ..... *Ctenopriocnemis* ISHIKAWA, 1962

21(20) Antenna not strikingly slender, 3rd segment less than 6× as long as thickness; orbicular pecten consisting of about 6, weak setae which are not very long or scarcely decurved; arolium normal; mid tibia dorsally with several, sparse, short spines; dorsal surface of each scale-like tooth on hind tibia hairy and not polished; propodeum with a distinct sublateral longitudinal impression from spiracle towards apex (subgenus *Clistoderes*), or this impression weak (subgenus *Paraclistoderes*) ..... *Clistoderes* BANKS, 1934

22(1) Hind tibia dorsally smooth, at most with sparse, weak spines; tergum 1 petiolate (i.e., the tergum distinctly narrowed just behind point of articulation with propodeum) (Fig. 21) and without a lateral crease (Fig. 19) (some species of *Auplopus* possess a lateral crease). (Prementum with a few to many, very long, curved setae.)

23(24) Propodeum coarsely and strongly sculptured and reticulate-rugose; antenna short, thickest at middle (at 5th to 7th segments), and 3rd segment usually less than 3.2× as long as thickness (Fig. 42); tergum 6 without a pygidial area (Fig. 44); anterior margin of clypeus transverse, at most slightly concave or convex. (Prementum without a longitudinal ridge or hump medially.) .... *Poecilagenia* HAUPT, 1927

24(23) Propodeum shagreened, densely punctate or finely transversely rugose (some Oriental species of *Auplopus* possess propodeum strongly reticulate-rugose.); antenna thin and long, not thickest at middle, 3rd segment at least 4× as long as thickness (Fig. 43); tergum 6 with a pygidial area, i.e., its median area well defined by loss of pubescence or setae, more or less flattened or concave, and usually smooth and polished (Fig. 45); anterior margin of clypeus produced medially into a triangular lobe. [Prementum with a ridge or hump medially, where long stout setae arise (Fig. 38).]

25(26) Postnotum very short, at most 0.2× as long as metanotum; frons and vertex densely clothed with conspicuous, brownish-red, short pubescence; frons and vertex with several, very long, erect, brownish-black, ensiform setae; eye narrow, about 0.5× as broad as half the frons; forewing crossvein cu-a very oblique to vein 1A (Fig. 46) ..

.....*Machaerothrix* HAUPT, 1938

26(25) Postnotum at least 0.3× as long as metanotum; frons and vertex with inconspicuous, very fine pubescence and several, normal, fine, erect setae; eye at least 0.6× as broad as half the frons; forewing crossvein cu-a not very oblique to vein 1A (Fig. 47) .....
.....*Auplopus* SPINOLA, 1841

Key to the genera of the Pepsinae occurring in Japan north of the Ryukyus

♂♂*

1(20) Basal portion of tergum 1 (in dorsal view) usually not narrowed and more or less convex-sided (Fig. 48) or occasionally narrowed and parallel-sided (Fig. 49), with a lateral crease attaining distal half of the tergum (Figs. 53, 54); metasoma about as long as and as broad as mesosoma.

2 (3) Tarsal claws with two or more teeth (not counting apical point as a tooth); orbicula more than 0.6× as wide as tarsomere 5 and its apical margin with more than 14 subparallel setae, which are decurved at tip, of almost equal length, and shorter than orbicula; marginal cell very long and parallel-sided; SMC2 very oblique at base and extending basad to stigma, so that it is at least 0.7× as long as SMC1; discal cell 1 basally with a fenestra, i.e., a subcircular hyaline area enclosing a darker spot; antenna thick and long .....
.....*Hemipepsis* DAHLBOM, 1844

3 (2) Tarsal claws unidentate, bifid or edentate; orbicula less than 0.6× as wide as tarsomere 5, its apical margin with at most 13, radiating, almost straight weak setae, which are of unequal length: the median setae longer than the lateral ones and much longer than orbicula; marginal cell lanceolate or subtriangular and not parallel-sided; SMC 2 not very oblique at base nor extending basad to stigma, so that it is much less than 0.7× as long as SMC1 (Figs. 27–29); discal cell 1 without a fenestra; antenna slender, gradually attenuate toward apex.

4 (5) Marginal cell broadly rounded at apex and usually about its own length from outer wing margin (Fig. 28); brush on inner side of hind tibia with a subapical constriction or interruption (Fig. 30) .....
.....*Cryptocheilus* PANZER, 1806

5 (4) Marginal cell much less than its own length from outer wing margin, its apex pointed or at most blunt only for a short distance (Figs. 27, 29); brush on inner side of hind tibia without a subapical constriction nor

* The males of *Clistoderes* are not yet known to me.

interruption.

6 (9) Sternum 2 with a strong transverse groove; last 3 segments of maxillary palpus shorter than 3rd segment, which is the longest; under side of tarsomere 5 always with a pair of lateral rows of spines.

7 (8) Pronotum depressed definitely along posterior margin and shallowly along midline, with shoulder very much swollen; SMC3 about its own length or more from outer wing margin ....*Cyphononyx* DAHLBOM, 1845, *sensu* HAUPT, 1939, 1950

8 (7) Pronotum at most slightly depressed along posterior margin or along midline, with shoulder not very much swollen; SMC3 less than its own length from outer wing margin ....*Leptodialepis* HAUPT, 1929

9 (6) A transverse groove on sternum 2 weak, if any; last 3 segments of maxillary palpus longer than 3rd segment, and 4th longest; under side of tarsomere 5 with a few small spines arising irregularly at both median and lateral portions or rather regularly in a median row or without spines.

10(11) Clypeus large, its apical margin usually arcuately emarginate on each side of midline and slightly roundly produced at both median and lateral portions, so that it is bisinuate; hindwing crossvein cu-a originating distad to (occasionally at) point of separation of vein M +CuA; tarsal claws modified: fore tarsal claws, in particular, usually strongly curved and bifid; their inner claw with a broad inner ray which is rounded apically (Fig. 59), and outer claw with an acute inner ray (Fig. 60); mid and hind tarsal claws with a basal tooth .. ..*Platydialepis* HAUPT, 1941

11(10) Anterior margin of clypeus transverse, at most slightly concave or convex; hindwing crossvein cu-a originating basad to (rarely at) point of separation of vein M+CuA; fore tarsal claws not modified, symmetrical.

12(13) At least the whole clypeus and most of mandible yellow or ivory white; antennal segments from 4th produced on lower side and concave on upper side, giving antenna a crenulate profile (Fig. 58); apical margin of sternum 6 emarginate, densely fringed with a row of horizontal, fine spines of equal length (Fig. 57). [Inner side of hind tibia with a longitudinal sharp groove along upper margin of brush; SGP (sternum 8) narrow and small, and wedge-shaped distally (Fig. 57); tarsal claws with an indistinct blunt basal tooth.] ....*Eopompilus* GUSSAKOVSKIJ, 1933

13(12) Clypeus usually black, never yellow or ivory white; antennal flagellum crenulate or not; apical margin of sternum 6 not fringed with a row of horizontal, fine spines.

14(15) Mandible short, stout and bidentate, or if unidentate, the tooth is as stout as, or stouter than apical point; antennal flagellum crenulate, or if not; SGP is very narrow and needle-like, produced posteriorly beyond tergum 7, or foliated and longitudinally folded or carinate. [Forewing vein Rs strongly bent at meeting with crossvein 2rs-m and from this point running straightly upward (Fig. 29).] ..... *Dipogon* FOX, 1897

15(14) Mandible unidentate; antennal flagellum not crenulate; SGP flattened or at most convex transversely, not needle-like.

16(17) Inner side of hind tibia with a longitudinal sharp groove along upper margin of brush; mid and hind spurs whitish; hind tarsal claw with an indistinct blunt basal tooth ..... *Caliadurgus* PATE, 1946

17(16) A longitudinal groove along upper margin of hind tibial brush, if any, obscure or not very sharp; mid and hind spurs brownish or blackish; hind tarsal claw usually with a tooth near middle or apex.

18(19) Antenna not attaining apical margin of tergum 2; cuneoli broad and sometimes meeting medially, their posterior margins forming an almost straight line (Fig. 40); basal portion of tergum 1 (in dorsal view) more or less convex, or parallel-sided only for a short distance ..... *Priocnemis* SCHIØDTE, 1837

19(18) Antenna very long and slender, attaining apical margin of tergum 2; cuneoli narrow, wedge-shaped and broadly separated medially (Fig. 41); basal portion of tergum 1 (in dorsal view) narrowed and parallel-sided (Fig. 49) ..... *Ctenopriocnemis* ISHIKAWA, 1962

20 (1) Basal portion of tergum 1 narrowed, petiolate (i.e., the tergum narrowed just behind point of articulation with propodeum) (Figs. 50, 51) or parallel-sided, without a lateral crease (Fig. 56), or if present, usually it does not attain distal half of the tergum (Fig. 55); metasoma usually small, shorter and narrower than mesosoma. [Parapenial lobe of genitalia slender, decurved at apex (Fig. 52); propodeum coarsely reticulate-rugose, or SMC3 much longer than SMC2.]

21(22) Antenna short, 3rd segment less than 2.5× as long as thickness; propodeum coarsely and strongly sculptured and reticulate-rugose.. ..... *Poecilagenia* HAUPT, 1927

22(21) Antenna thin and long, 3rd segment more than 3× as long as thickness; propodeum coarsely and strongly sculptured and reticulate-rugose, or densely minutely punctate, at most with fine transverse rugae.

23(24) Propodeum coarsely and strongly sculptured and reticulate-rugose; forewing crossvein cu-a very oblique to vein 1A (Fig. 46) .... *Machaerothrix* HAUPT, 1938

24(23) Propodeum densely minutely punctate, at most with fine transverse rugae; forewing crossvein cu-a not very oblique to vein 1A (Fig. 47) ..... *Auplopus* SPINOLA, 1841

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