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THREE NEW SPECIES OF THE GENUS
MACRORRHYNCHA WINNERTZ IN JAPAN, WITH
REDESCRIPTION OF *M. EZOENSIS* (OKADA)
(DIPTERA: KEROPLATIDAE)

Uesugi, K., 2005. Three new species of the genus *Macrorrhyncha* Winnertz in Japan, with redescription of *M. ezoensis* (Okada) (Diptera: Keroplatidae). – Tijdschrift voor Entomologie 148: 31-38, figs. 1-19. [ISSN 0040-7496]. Published 1 June 2005.

Three new species of the genus *Macrorrhyncha*, *M. circularis*, *M. trilobata* and *M. uncinata*, are described from Japan. *M. ezoensis* (Okada, 1938) is redescribed and illustrations of male and female terminalia are provided for the first time. *M. uncinata* is inferred to be related to *M. rostrata* (Zetterstedt, 1851). A key to the Japanese species is given.

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The genus *Macrorrhyncha* Winnertz, 1846, has been represented by 18 species known from the Holarctic region (Matile 1975, Vockeroth 1980, Bechev 1992, 1997, Wu & Yan 1992, 1993, Chandler 1994, 1995, Zaitzev 1994, Chandler & Blasco-Zumeta 2001). The adult flies have more or less elongated mouthparts and feed at flowers (Hutson et al. 1980, Chandler 2001). In Japan, one species, *M. ezoensis* (Okada, 1938), has been known to occur, though there were no records more recent than Okada (1939). In the present study, *M. ezoensis* is redescribed and the terminalia of both sexes are illustrated for the first time. Three species are newly described, viz. *M. circularis*, *M. trilobata* and *M. uncinata*.

Macrorrhyncha is classified in the *Asindulum-Cloephoromyia* genus group in the Orfeliini (Matile 1978). In this group, the species of *Macrorrhyncha* resemble a part of *Neoplatyura* Malloch, 1928 in general features, although the former are characterized by the elongated mouthparts and gonocoxites that are linked to each other by a ventral bridge, often with dorsal and inner processes. A detailed diagnosis of the genus was given in Matile (1975). All Japanese species treated in this paper agree well with this generic diagnosis except for the presence of setulae on the basis-

ternum dorsally and should be assigned to the genus.

M. uncinata sp. n. is inferred to be related to *M. rostrata* (Zetterstedt, 1851) from the presence of characteristic setae on the gonocoxite. I refrain from commenting on the phylogenetic relationships to other Japanese species as no characters are sufficiently evaluated.

MATERIAL AND METHODS

Specimens collected by Malaise traps with a wet collection head (80% ethanol) were mounted from ethanol following the method of Sabrosky (1966). The terminology mainly follows Söli et al. (2000). The tibial spur formula (length of each spur / maximum thickness of the tibial apex) is given in the following order: Spur of fore tibia : anterior spur of mid tibia : posterior spur of mid tibia : anterior spur of hind tibia : posterior spur of hind tibia. The following abbreviations are used: S1-S8, first to eighth abdominal sternites; T1-T9, first to ninth abdominal tergites; MT, collected by Malaise trap; KU, K. Uesugi. All the specimens used here are deposited in the collection of the Laboratory of Systematic Entomology, Hokkaido University except for some in the Saigusa Collection of Kyushu University Museum (KUM).

Key to the *Macrorrhyncha* species in Japan

This key is for males only. The female is known for only one species: *M. ezoensis*.

1. Dorsal process of gonocoxite with a tuft of setae (fig. 19, dp); inner process thick, with a strong seta apically (fig. 17, ip). T9 shallowly concave posteriorly (fig. 18)*M. uncinata* sp. n.
- Dorsal process of gonocoxite without setae (figs. 3, 7, 15, dp); inner process narrow, with a strong or normal seta apically (figs. 1, 5, 13, ip). T9 deeply concave posteriorly (figs. 2, 6, 14)2
2. Inner processes of gonocoxites long, apices touching each other at middle (fig. 1, ip). Gonostylus cushion-shaped, with a pointed process posterodorsally (fig. 3)*M. circularis* sp. n.
- Inner processes of gonocoxites short, apices widely separated from each other by a distance (figs. 5, 13, ip). Gonostylus divided into two or three lobes posteriorly (figs. 8, 16)3
3. Gonocoxites linked to each other well before bases of gonostyli (fig. 13), with dorsal processes long and pointed apically (fig. 15, dp). Gonostylus divided into three lobes posteriorly (fig. 16) and with a club-shaped process basally (fig. 15, bs)*M. trilobata* sp. n.
- Gonocoxites linked to each other at level of bases of gonostyli (fig. 5), with dorsal processes short and truncated apically (fig. 7, dp). Gonostylus divided into two longitudinal lobes (fig. 8) and without process basally*M. ezoensis* (Okada)

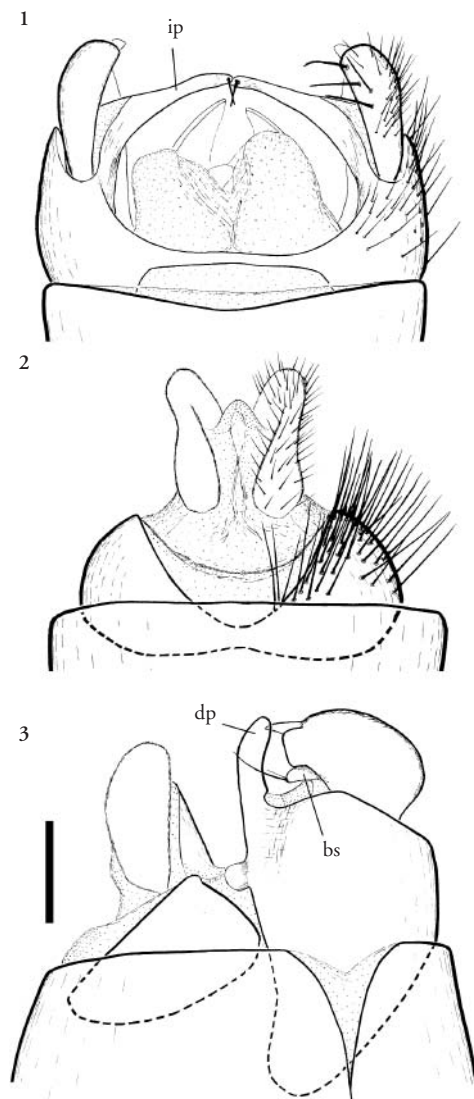
Macrorrhyncha circularis sp. n.
(figs. 1-3)

Holotype ♂: 'Kinetanpe-gawa (Akan-ko), Akan-chō, Hokkaidō, Japan, 13-15.ix.1999 (by MT), T. Ito & N. Minakawa'.

Male. – Head dark brown, pale brown behind eye. Antenna about as long as head and thorax combined; pedicel, scape and basal part of first flagellomere brownish yellow; eighth flagellomere slightly longer than thick. Face yellow. Clypeus and mouthparts brown. Distance from ventral margin of eye to tip of labellum 1.4 times as long as height of eye. Lacinia extending to level of middle of third palpal segment.

Thorax brownish yellow. Basisternum with sparse short setulae dorsally. Mesoscutum, scutellum and mediotergite brown, brownish yellow laterally. One seta discernible just behind base of halter.

Wing pale brown, faintly darkened behind tip of R_2 ; length 3.9 mm. Veins brown. C extending to middle between tips of R_5 and M_1 . Sc faint apically, ending in C slightly before base of R_s . Distance



Figs. 1-3. *Macrorrhyncha circularis* sp. n., male terminalia (holotype). – 1, ventral part; 2, dorsal part; 3, terminalia in lateral view (setae omitted except those on basal process of gonostylus). Abbreviations: bs, basal process of gonostylus; dp, dorsal process of gonocoxite; ip, inner process of gonocoxite. Scale line: 0.1mm.

between tips of R_1 and R_4 1.4 times as long as R_4 . Radiomedial fusion 0.4 times as long as stem of M_1 and M_2 . Setulose on ventral sides of the following veins: radiomedial fusion, basal and apical part of stem of R_4 and R_5 and R_s .

Legs brownish yellow. Anteroapical depression of

fore tibia dark brown. Fore tibia with 0-1 dorsal (d), 1 posterodorsal (pd), 0-1 posterior (p), 1 posteroventral (pv) setae; mid tibia with 3 anteroventral (av), 4 anterior (a), 1 d, 5 pd, 4 p, 4 pv setae; hind tibia with 6 a, 6 anterodorsal (ad), 9 pd, 5-6 p, 4-5 pv setae. Tibial spurs dark brown, formula as follows, 1.2 : 1.7 : 2.1 : 1.6 : 2.5. Fore metatarsus 0.7 times as long as fore tibia.

Abdomen brownish yellow. T1 brown medially. T2-5 each with dark brown band on anterior half; the bands faintly extending to posterior margin medially. Sixth to eighth segments and terminalia entirely dark brown. T9 (fig. 2) rounded laterally and deeply concave posteriorly. Gonocoxites (figs. 1, 3) separated from each other by distance about 1.5 times as long as their maximum width; inner process (fig. 1, ip) about half as wide as basal width of gonostylus, extending at right angle to gonocoxite and slightly curved ventrad with a strong seta apically; the apices of the inner processes touching each other medially; dorsal process (fig. 3, dp) bare, reaching level of apex of gonostylus. Gonostylus (figs. 1, 3) cushion-shaped, slightly thickened apically in ventral view, with three strong setae arranged in a row and with a weaker seta beside the row; a pointed process developed posterodorsally; basal process (fig. 3, bs) small and digitiform, with two setae apically. Aedeagal complex extending to level of junction of fifth and sixth segments.

Female. – Unknown.

Distribution

Japan (Hokkaido).

Remarks

This species is peculiar in having long inner processes on the gonocoxites. Among the species of *Macrorrhyncha*, *M. fanjingana* Wu & Yang, 1992, and *M. luteola* Zaitzev, 1994, have similar long inner processes. However, these two species are easily distinguished from *M. circularis* by the following aspects: inner processes on the gonocoxites less than third as wide as basal width of gonostylus, extending at angle of ca. 45° to gonocoxite and their apices well separated from each other.

Etymology

The specific name refers to the gonocoxites of this species, which form a ring due to the close juxtaposition of the inner processes.

Macrorrhyncha ezoensis (Okada)

(figs. 4-12)

Asindulum ezoensis Okada, 1938: 23; Okada 1939: 297.
Macrorrhyncha ezoensis Matile 1975: 502.



Fig. 4 *Macrorrhyncha ezoensis* (Okada), wing.
Scale line: 1.0mm.

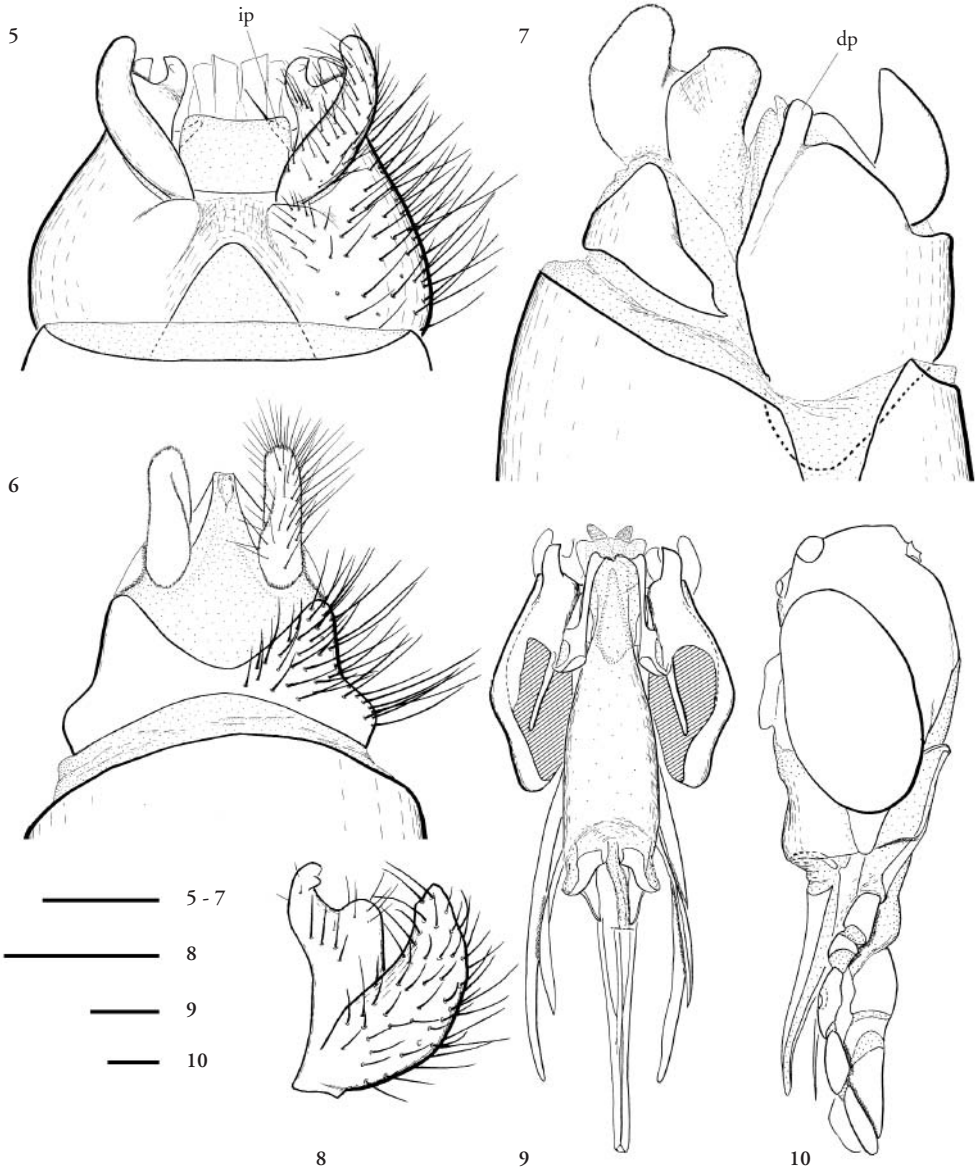
Material examined. – JAPAN: HOKKAIDO: Bifueno-taki (42°43'N, 141°11'E), Chitose, 21.vi.2003, KU, 5♂, 1♀; Hiyamizu-sawa, Sapporo, 17.vi.2003, KU, 1♂; Hyakumatsuzawa, Sapporo, 17.vi.1999, KU, 1♂; idem but 22.vi.1999, KU, 1♂; idem but 29.vi.1999, KU, 1♂; Kannonzawa (42°58'N, 141°15'E), Sapporo, 17.vi.1999, KU, 10♂, 1♀; idem but 19.vi.1999, KU, 3♂, 1♀; 9-26.vi.2002, MT, T. Yoshida, 1♂, 3♀; Kikanko-gawa, Obihiro, 4-7.vii.1995, MT, A. Ohkawa, 1♂; Kozan-cho (42°28'N, 141°02'E), Noboribetsu, 23-30.vi.2002, MT, T. Yoshida, 3♂, 2♀; Maruyama, Sapporo, 18.vi.1918, Matsumura, 1 paratype ♀; idem but 18.vi.1918, Matsumura, 1♂ paratype ♀; idem but 25.vi.1931, I. Okada, 2 paratype ♂, 1 paratype ♀; idem but 25.vi.1935, I. Okada, 2 paratype ♂, 1 paratype ♀; idem but 25.vi.1931, I. Okada, 1♀; Miyanomori, Sapporo, 27.vi.2000, MT, KU, 1♂, 3♀; Onneto, Ashoro, 18.vi.-23.vii.2002, KU, 11♂, 5♀; Shikotsu-ko, Chitose, 23.vi.1999, KU, 6♂, 1♀; Utonai-ko, Tomakomai, 20.vi.1999, KU, 1♀; Soun-kyo, Kamikawa, 7.vii.1935, I. Okada, 1♂. – HONSHU: Kanayama, Sudama, Yamanashi, 3.vi.1975, T. Saigusa, 1♂ (KUM).

Male. – Head (fig. 10) brown to dark brown, yellowish brown behind eye. Antenna dark brown, as long as or a little longer than head and thorax combined; scape, pedicel and base of first flagellomere brownish yellow; eighth flagellomere slightly longer than thick. Face yellowish brown. Distance from ventral margin of eye to tip of labellum 1.1-1.3 times as long as height of eye.

Thorax brownish yellow. Basisternum with sparse short setulae dorsally. Mesoscutum, scutellum and mediotergite brown, brownish yellow laterally. One seta rarely discernible just behind base of halter.

Wing (fig. 4) pale brown, faintly darkened posterior to tip of R_2 ; length 4.0-5.0 mm. Veins brown to dark brown. C extending to middle or slightly more between tips of R_2 and M_1 . Sc faint apically, ending in C before base of R_3 . Distance between tips of R_1 and R_4 1.0-2.2 times as long as R_4 . Radiomedial fusion 0.2-0.6 times as long as stem of M_1 and M_2 . Setulose on ventral sides of the following veins: radiomedial fusion, apical part of stem of R_4 and R_3 , R_5 and occasionally R_6 .

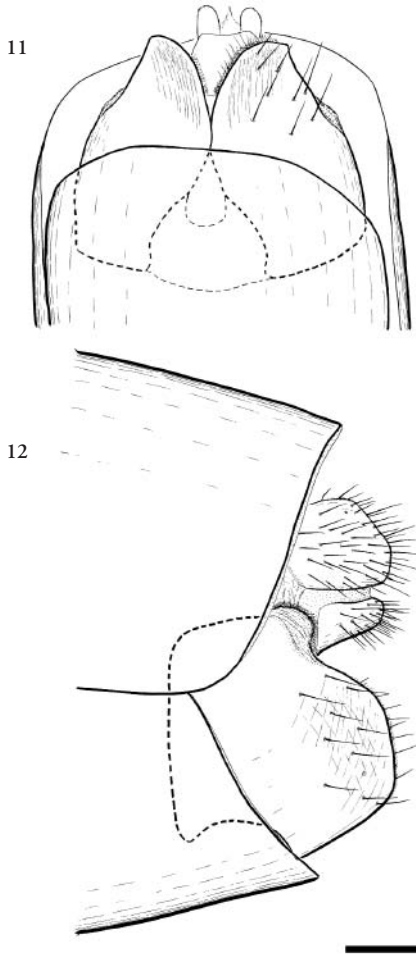
Legs brownish yellow. Anteroapical depression of fore tibia brown to dark brown, occasionally reddish brown. Fore tibia with 0-1 av, 0-1 ad, 0-1 pd, 0-3 pv



Figs. 5-10. *Macrorrhyncha ezoensis* (Okada), male terminalia (1-9) and head (10). – 5, ventral part; 6, dorsal part; 7, terminalia in lateral view (setae omitted); 8, right gonostylus in ventrolateral view; 9, aedeagal complex (setae omitted); 10, head in lateral view (setae omitted). Abbreviations see figs. 1, 3. Scale lines: 0.1mm.

setae; mid tibia with 3-7 av, 5-10 a, 0-3 ad, 2-5 pd, 1-6 p, 3-7 pv setae; hind tibia with 0-2 av, 4-7 a, 3-11 ad, 7-12 pd, 6-14 p, 1-7 pv setae. Tibial spurs dark brown, formula as follows, 1.0-1.2 : 1.7-2.0 : 2.1-2.5 : 1.8-2.2 : 2.5-2.9. Fore metatarsus 0.7-0.8 times as long as fore tibia.

Abdomen brownish yellow. T1-2 dark brown medially. T3-5 with dark brown bands on anterior fifth to third, occasionally broader on T5 and occupying anterior half; the bands extending to posterior margin medially. T6 dark brown with yellowish brown posterolateral areas. Seventh and eighth segments and



Figs. 11-12. *Macrorrhyncha ezoensis* (Okada), female terminalia. – 11, ventral view; 12, lateral view. Scale line: 0.1mm.

terminalia entirely dark brown. T9 (fig. 6) with deeply concave posterior margin. Gonocoxites (figs. 5, 7) about as long as S8, linked to each other at level of bases of gonostyli; inner process (fig. 5, ip) digitiform in ventral view, with a seta apically; dorsal process (fig. 7, dp) bare, apex truncated and not extending beyond ventral lobe of gonostylus. Gonostylus (fig. 8) divided into two longitudinal lobes; ventral lobe curved inward, semicircular with somewhat pointed apex in lateral view; dorsal lobe depressed, distal fourth narrow and curved outward, very weakly bifurcated apically. Aedeagal complex as in figure 9, extending to middle of seventh segment.

Female. – Similar to male; antenna slightly shorter

than head and thorax combined; wing length 3.8-4.9 mm; abdomen brownish yellow, dark brown on anterior corners of T3-5, anterior half to two-thirds of T6, entire seventh segment and terminalia; terminalia as in figures 11-12; S8 sparsely setose, with membranous area dorsally; spermathecae globular and rather sclerotized.

Distribution

Japan (Hokkaido, Honshu). New to Honshu.

Remarks

Seven paratypes of *M. ezoensis* were available in the present study, of which three paratypes have the same label data as the holotype is cited to have. The holotype of this species could not be located in the Okada collection of Systematic Entomology, Hokkaido University.

In lacking the basal process of the gonostylus, *M. ezoensis* resembles *M. guichardi* Chandler, 1994 and *M. veleka* Bechev, 1992, which are inferred to be closely related to each other (Chandler 1994). However, these two species are clearly different from *M. ezoensis* in the structure of gonocoxites, namely that the ventral bridge is narrow and constricted medially and the inner and dorsal processes are absent. In the structure of the gonocoxites, *M. ezoensis* is similar to *M. collarti* (Tollet, 1955) and *M. gorodkovi* Zaitzev, 1994, in which the gonocoxites are linked to each other just before the base of the gonostylus by a somewhat wide bridge. *M. ezoensis* can be distinguished from these two species, and also from all other species of the genus, by the peculiar gonostylus that is divided into two longitudinal lobes of about equal size.

Macrorrhyncha trilobata sp. n.

(figs. 13-16)

Holotype ♂: 'Kanayama, Sudama-chô, Yamanashiken, 12.viii.1975, O. Yata leg.' (KUM).

Male. – Head dark brown, black around ocellar triangle. Antenna about as long as head and thorax combined; scape, pedicel, first flagellomere and ventral side of second flagellomere yellowish brown; seventh flagellomere about as long as thick. Face yellowish brown. Distance from ventral margin of eye to tip of labellum 1.3 times as long as height of eye.

Thorax yellowish brown. Basisternum with sparse short setulae dorsally. Mesoscutum pale laterally. One seta discernible just behind base of right halter.

Wing pale brown, faintly darkened posterior to tip of R_2 ; length 4.1 mm. Veins dark brown. C extending to middle between tips of R_2 and M_1 . Sc faint apically, ending in C at level of base of R_3 . Distance between tips of R_1 and R_4 1.7 times as long as R_4 .

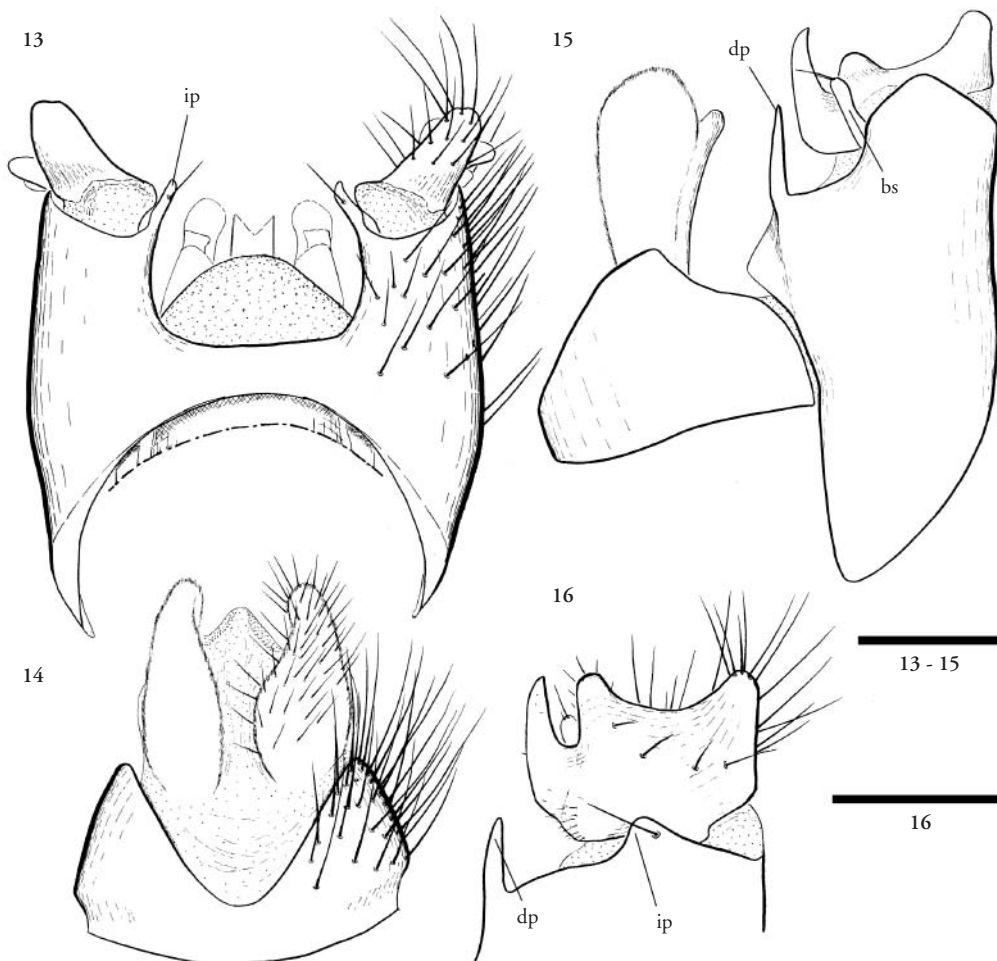


Figure 13-16. *Macrorrhyncha trilobata* sp. n., male terminalia (holotype). – 13, ventral part; 14, dorsal part; 15, terminalia in lateral view (setae omitted except those on basal process gonostylus); 16, right gonostylus in posterolateral view. Abbreviations see figs. 1, 3. Scale lines: 0.1mm.

Radiomedial fusion 0.4 times as long as stem of M_1 and M_2 . Setulose on ventral sides of the following veins: radiomedial fusion, basal and apical part of stem of R_4 and R_5 and R_5 .

Legs yellowish brown. Anteroapical depression of fore tibia brown. Fore tibia with 0-1 av, 0-1 pv setae; mid tibia with 3-4 av, 6-7 a, 4 pd, 5 p, 5 pv setae; hind tibia with 4 av, 9-10 a, 5-7 ad, 9-10 pd, 11-12 p, 9-11 pv setae. Tibial spurs dark brown, formula as follows, 1.1 : 1.5 : 2.0 : 2.0 : 2.7. Fore metatarsus 0.7 times as long as fore tibia.

Abdomen yellowish brown. T6-8 dark brown, S8 brown. Terminalia dark brown except T9 and proctiger brown. T9 (fig. 14) trapezoidal with deeply

concave posterior margin. Gonocoxites (figs. 13, 15) fused to each other by the ventral bridge which is about half as broad as apical width of gonocoxite; inner process (fig. 13, ip) small and with a seta slightly before apex; dorsal process (fig. 15, dp) bare, narrow and pointed apically, extending to level of bases of gonostyli. Gonostylus (fig. 16) with three lobes posteriorly; ventral lobe rounded, with relatively strong setae outside; median lobe rounded and directed outward, with some weak setae; dorsal lobe pointed apically, with a few minute setulae; basal process (fig. 15, bs) club-shaped, with two setae apically. Aedeagal complex extending to sixth segment.

Female. – Unknown.

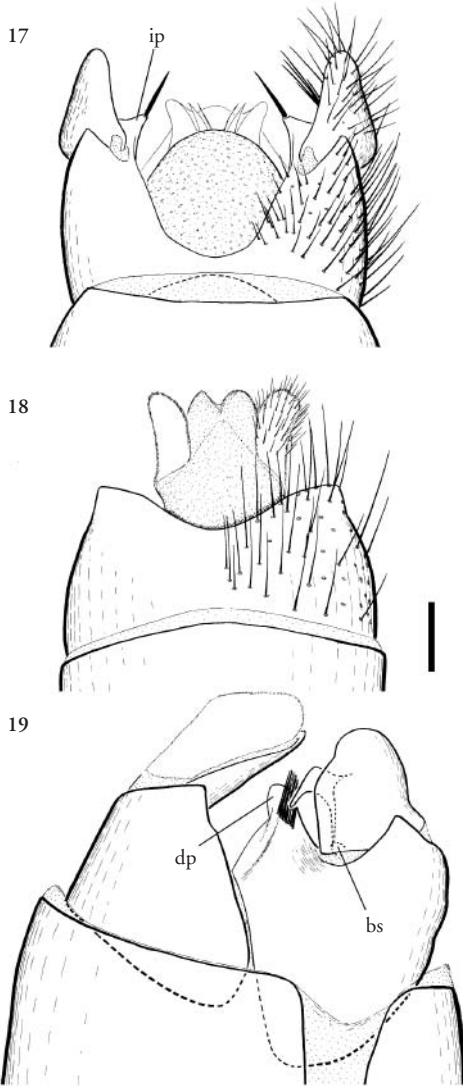


Figure 17-19. *Macrorrhyncha uncinata* sp. n., male terminalia (holotype). – 17, ventral part; 18, dorsal part; 19, terminalia in lateral view (setae omitted except those on dorsal process of gonocoxite). Abbreviations see figs. 1, 3. Scale line: 0.1mm.

Distribution

Japan (Honshu).

Remarks

This species resembles *M. flava* Winnertz, 1846, and *M. ancae* Matile, 1975, in the structure of the gonostylus, which is divided into three lobes posteriorly with the most dorsal lobe narrower and longer

than the other two. However, *M. trilobata* is distinguished from these two species by the processes of the gonocoxites, of which the dorsal ones are narrow and pointed and the inner ones bear a weak seta (in *M. flava* and *M. ancae*, the former are thick and rounded apically and the latter bear a strong seta).

Etymology

The specific name refers to the trilobed gonostylus of the species.

Macrorrhyncha uncinata sp. n.

(figs. 17-19)

Holotype ♂: 'Onnetō, Ashoro-chō, Hokkaidō, Japan, 23.vii.- 30.viii.2002, K. UESUGI leg., by Malaise Trap'

Male. – Head dark brown, yellowish brown behind eye. Ocellar triangle black. Antenna about as long as head and thorax combined; scape, pedicel and basal part of first flagellomere brownish yellow; seventh flagellomere about as long as thick. Face brownish yellow, clypeus brown. Mouthparts dark brown except apex of labellum brownish yellow. Distance from ventral margin of eye to tip of labellum 1.3 times as long as height of eye.

Thorax brownish yellow. Basisternum with rather dense and long setulae dorsally. Mesoscutum, scutellum and mediotergite brown, brownish yellow laterally. One seta discernible behind base of halter.

Wing pale brown, very faintly darkened behind tip of R_3 ; length 5.0 mm. Veins dark brown. C extending to near middle between tips of R_3 and M_1 . Sc traceable even at apex, ending in C at level of base of R_5 . Distance between tips of R_1 and R_4 1.9 times as long as R_4 . Radiomedial fusion 0.6 times as long as stem of M_1 and M_2 . Setulose along entire length on ventral sides of following veins: radiomedial fusion, stem of R_4 and R_5 and R_3 ; the setulae on stem of R_4 and R_5 relatively sparse; R_1 with 11 setulae.

Legs brownish yellow. Anteroapical depression of fore tibia dark brown. Fore tibia with 3 av, 3-5 pv setae; mid tibia with 5-6 av, 7-8 a, 3 ad, 4-5 pd, 4-6 p, 4-7 pv setae; hind tibia with 2-5 av, 9 a, 7-8 ad, 9-10 pd, 9-12 p, 7 pv setae. Tibial spurs dark brown, formula as follows, 1.4 : 2.2 : 2.7 : 2.3 : 3.0. Fore metatarsus 0.7 times as long as fore tibia.

Abdomen brownish yellow. T1-5 faintly darkened medially. T6-8, S8 and terminalia dark brown except brown cercus. T9 (fig. 18) trapezoidal with posterior margin shallowly concave. Gonocoxites (figs. 17, 19) separated from each other by distance as long as apical width of gonocoxite; inner process (fig. 17, ip) triangular in ventral view, with a strong seta apically; dorsal process (fig. 19, dp) thick and extending to

middle of gonostylus and with a tuft of setae at middle. Gonostylus (figs. 17, 19) triangular with rounded apex in ventral view, with a hook-shaped process inside; basal process (fig. 19, bs) small and with two setae apically. Aedeagal complex extending to junction of fourth and fifth abdominal segments, and with strongly sinuate and sclerotized part dorsally.

Female. – Unknown.

Distribution

Japan (Hokkaido).

Remarks

This species is characteristic in having a tuft of setae on the dorsal process of the gonocoxite. Among the other members of *Macrorrhyncha* similar setae are known only in *M. brevisrostris* (Lundström, 1911) and *M. rostrata* (Zetterstedt, 1851) (Matile 1975, Chandler 1992). *M. uncinata* resembles the latter also in having the gonostylus with a process curved anteriorly apically, though the degree of curvature is significantly weaker in *M. rostrata*. Little information on the gonostylus is available for *M. brevisrostris*. These two characters are considered to be apomorphic and to indicate a close relationship between *M. uncinata* and *M. rostrata*. However, *M. rostrata* is easily distinguished by the following aspects: inner process of the gonocoxite narrow and digitiform; gonostylus triangular, gradually narrowed from ventral margin to dorsal margin and with a process curved just before apex.

Etymology

The specific name refers to the hook-shaped internal process of the gonostylus.

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