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## MYCETOPHILIDAE OF TAIWAN (Diptera) I. SUBFAMILY KEROPLATINAE \*

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I had a good opportunity to visit Taiwan in April 1965 as a member of the 1965 Expedition under the Japan-U. S. Co-operative Science Program. In this paper will be described four new species of *Macrocera* collected by Mr. T. Saigusa and myself, and recorded two additional species in the collection of the Entomological Laboratory, National Taiwan University, Taipei.

Before going further I express my cordial thanks to Dr. S. Asahina, a principal investigator of this program, of the National Institute of Health and Prof. K. Yasumatsu of Kyushu University for their kindness in giving me the chance to join the survey to Taiwan, and to Prof. S. T. Yie and other gentlemen of the National Taiwan University and Mr. T. Saigusa of Kyushu University for their kind help in material.

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### 1. *Macrocera arcuata* sp. nov. (Fig. 1)

*Male*: Almost entirely yellow. Head with brown patch between ocelli; eye with dense hairs. Antenna 16-segmented, distal nine flagellar segments very slightly tinged with brown, three to three and one-third times as long as length of body, with flagellar segments in proportion of 16 : 18 : 21 : 23 : 29 : 33 : 32 : 34 : 37 : 38 : 37 : 34 : 22 : 18, basal five segments sparsely setose on ventral side. Palpus and proboscis very slightly brown-tinged, the former with segments in proportion of 2.5 : 2 : 2 : 2.8, first segment with two long setae at ventral apex, second and third segments each with one long seta near ventral base and several short setae on dorsoapical part, the fourth rather densely setose at apex.

Mesonotum shining, with two pairs of blackish longitudinal stripes and three pairs of spots which are variable in size, lateral pair scantily connected with posterolateral spots; dorso-centrals minute, lateral setae long; scutellum bare; ventral parts of mesopleuron, sternopleuron and mediotergite slightly tinged with brown. Wing 5.0-5.4 mm, hyaline, very faintly tinged with yellow but pale brown on tip, macrotrichia spread only on marginal area of wing between tips of  $R_{2+3}$  and  $M_{3+4}$ , costa ending before basal one-third between tips of  $R_{4+5}$  and  $M_{1+2}$ , Sc long, ending at level of apical end of cell R,  $R_1$  strongly broadened terminally, petiole of M one-seventh as long as length of  $M_{1+2}$ ; halter yellow. Legs yellow, all tarsi brown-tinged; fore metatarsus three-fourths or only a little shorter than length of tibia;

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\* Contribution from Lab. Ent., Kyoto Pref. Univ., Kyoto, no. 111.

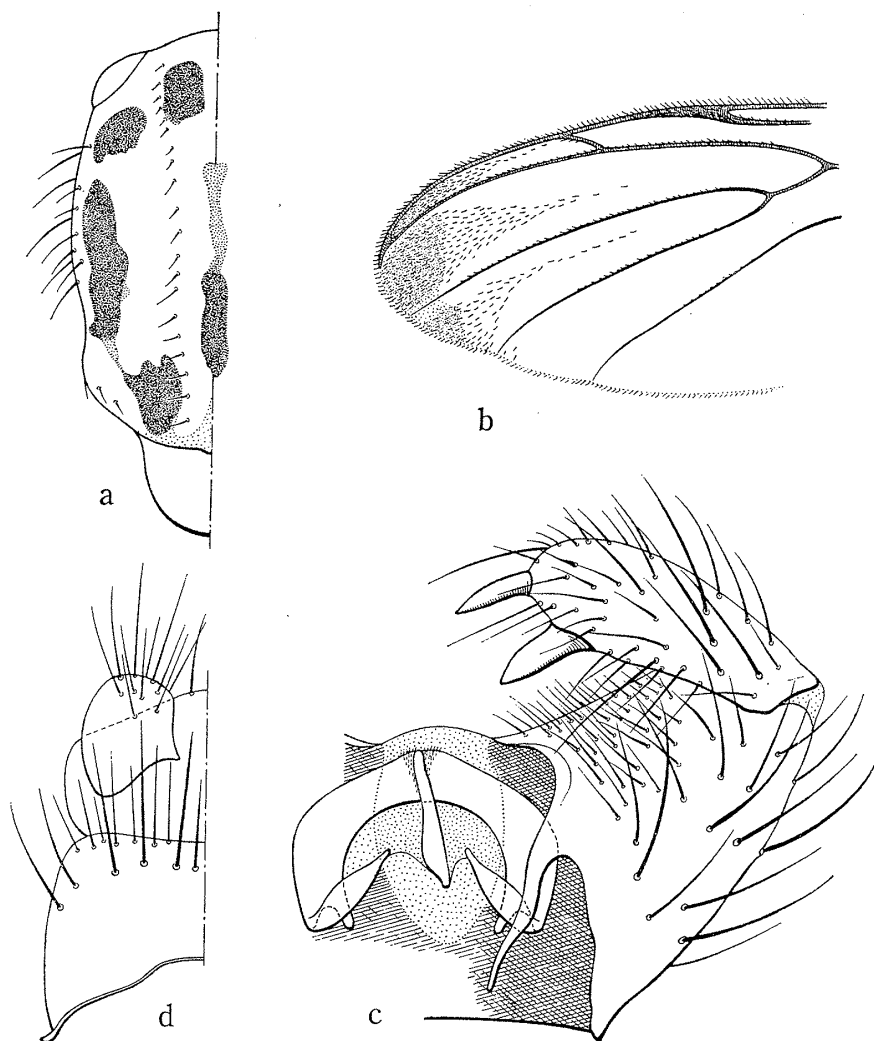


Fig. 1. *Macrocera arcuata* n. sp. a, half of mesonotum and scutellum, ♂; b, tip of wing, ♂; c, ♂ terminalia, epandrium, paramere and aedeagus, ventral view; d, half of hypandrium, ventral view.

basal four segments of fore tarsus, basal half of second segment of middle tarsus, and third and fourth segments of middle and hind tarsi densely furnished with white hairs ventrally.

Abdomen with sixth and seventh tergites brownish; terminalia yellow, epandrium with deep suboval cleft on posterior margin, extending beyond middle of epandrial length; dististylus long, bearing two long black spines, ventral one stronger; hypandrium with two rows of marginal setae. Paramere well sclerotized, dorsal arch setulose on tip; aedeagus narrow, 150  $\mu$  long.

Length: Body 3.9–4.6 mm.

*Female*: Differs from the male in following points: distal two segments of palps

us entirely yellow; mesonotum with stripes broader, lateral one connecting with anterior and posterior spots by narrow band, scutellum brownish anteromesally; wing with apical cloud extending one-eighth as long as length of wing, macrotrichia spread more densely on marginal area of wing between tips of  $R_{2+3}$  and  $Cu_2$ ; tarsi without white hair; abdominal tergites brown, with posterior margins of second to fifth tergites broadly yellow but linearly on the seventh; sternites pale brown, with posterior margins of second to seventh broadly yellow; ovipositor yellow. Length of wing 5 mm, of body 4.2 mm.

**DISTRIBUTION:** Taiwan.

Holotype ♂, allotype ♀, Ali Shan Mts., Chiai Hsien, Taiwan, Apr. 9, 1965, T. Saigusa, in coll. National Science Museum, Tokyo. Paratype ♂, same data as holotype; left antenna and wing, right palpus and terminalia mounted on a slide; deposited in Lab. Ent., Kyoto Pref. Univ., Kyoto.

The coloration of the body relates this species to *M. ferruginea* Brunetti, known only from a single female, from which it can be distinguished by the distinct stripes on lateral sides of the mesonotum, yellow posterior margins of the abdominal tergites and smaller size.

## 2. *Macrocera breviceps* sp. nov. (Fig. 2)

*Female:* Head brown but face, fronto-clypeus and gena yellow, vertex shiny. Antenna 16-segmented, scape, pedicel and first flagellar segment yellow, other flagellar segments pale brown, a little longer than length of body, flagellar segments in proportion of 12 : 11 : 12 : 13 : 11.5 : 11 : 10 : 9.5 : 9 : 8.5 : 7.5 : 8 : 8.5 : 10, terminal segment swollen in oval form on apical one-fifth, basal three segments sparsely setose on ventral side. Palpus yellow, with segments in proportion of 4 : 5 : 4 : 6, first segment ventrally with two long setae at base and one at middle, the second with one long seta at middle of ventral part and eight short setae on dorsal apex, the third with two long ventral setae at middle and eight short setae dorsoapically, the fourth with one long seta on ventroproximal one-third and many short setae on dorsoapical half.

Thorax with mesonotum shining dark brown, scutellum brown, with caudal margin yellow, pleura yellow, very slightly tinged with brown, mediotergite rather dis-

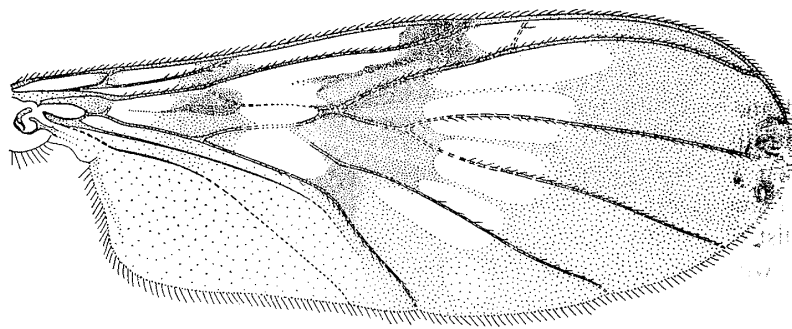


Fig. 2. Wing of *Macrocera breviceps* n. sp., ♀.

tinctly brown-tinged on dorsal median part; dorso-centrals short, lateral setae long, scutellum with two pairs of marginal setulae. Wing 3.55 mm in length, with two brown stripes and pale brown apical cloud, posteriorly connecting with pale brown caudal margin, without macrotrichia, costa ending slightly beyond middle between tips of  $R_{4+5}$  and  $M_{1+2}$ , Sc short, ending before basal one-fourth length of Rs,  $R_1$  not distinctly swollen apically,  $R_{2+3}$  scanty visible, petiole of M about one-sixth of  $M_{1+2}$ ; halter yellow, with knob brown. Legs yellow, proximal parts of all coxae slightly brown-tinged, all tarsi pale brown; fore metatarsus about one-half length of tibia.

Abdomen with tergites dark brown, anterior five tergites with caudal margins broadly yellow, sixth and seventh tergites blackish; sternites brownish yellow, becoming darker posteriorly; ovipositor yellow.

Length: Body 3.5 mm.

DISTRIBUTION: Taiwan.

Holotype ♀, Chuchi, 120 m, Chiai Hsien, Taiwan, Apr. 13, 1965, M. Sasakawa, in coll. Nat. Sci. Mus., Tokyo: right antenna, palpus and wing mounted on a slide.

This species closely resembles *M. egregia* de Meijere of Sumatra and Borneo and *M. nitens* Malloch of Samoa, but can be easily separated by its paler head and thorax, and by having very short subcosta.

### 3. *Macrocera coxata* sp. nov. (Fig. 3)

*Male*: Head brownish black; eye sparsely covered with minute hairs. Antenna 16-segmented, brown except for yellow pedicel, first and second flagellar segments and each joint, nearly thrice as long as length of body, with flagellar segments in proportion of 16 : 19 : 24 : 28 : 32 : 33 : 37 : 40 : 46 : 51 : 55 : 43 : 14 : 13, basal seven segments ventrally each with about eight pairs of setae, eighth to twelfth segments with about four pairs of setae on ventroapical part respectively, last two segments slender and each with three or four pairs of ventral setae. Palpus with first segment

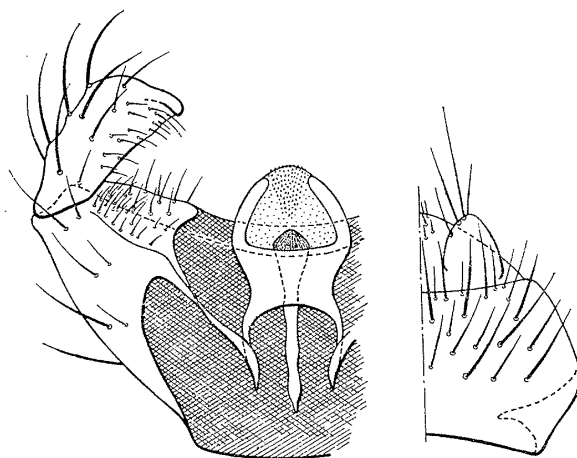


Fig. 3. Male terminalia of *Macrocera coxata* n. sp., ventral view.

brown but others yellow, four segments in proportion of 3 : 4 : 4 : 7.5, first segment with seven long setae dorsoapically, the second with four long setae at middle of dorsal side and several setae on ventroapical part, the third with two pairs of long setae dorsally and many setae ventrally, the fourth somewhat swollen apically, slightly brown-tinged on apical half and sparsely setose.

Thorax strongly shining black; mesonotum without distinct seta, scutellum with several setulae along caudal margin. Wing 4.8 mm long, almost evenly tinged with yellow-brown, without macrotrichia, costa slightly beyond middle between tips of  $R_{4+5}$  and  $M_{1+2}$ , Sc rather short, ending at level of distal one-third of Rs,  $R_1$  not broadened terminally, petiole of M a little longer than one-half length of  $M_{1+2}$ ; halter yellow. Legs yellow, fore coxa dark brown on basal half, all tarsi slightly brown-tinged and without white ventral hair, fore metatarsus about one-half as long as tibia.

Abdomen yellow, first and eighth tergites dark brown, second to seventh tergites and sternites with brown posterior margins, broadest on the seventh. Terminalia yellow; epandrium without membranous median cleft, dististylus only papillate on tip; hypandrium with four irregular rows of setae; cercus with four apical setae. Paramere H-shaped, spinulose on apical membrane; aedeagus 72  $\mu$  long, setose near tip.

Length: Body 5.2 mm.

*Female*: Unknown.

DISTRIBUTION: Taiwan.

Holotype ♂, Tzuchung, 2370 m, Chiai Hsien, Taiwan, Apr. 10, 1965, T. Saigusa; left antenna, right palpus and terminalia mounted on a slide; in coll. Nat. Sci. Mus., Tokyo.

This species is clearly distinct from any of the known Oriental species of *Macrocera* in lacking the wing pattern and the spine of the dististylus. It is immediately distinguished from *M. arcuata* n. sp. by the coloration of head, thorax and fore coxa and the venation. This species also resembles Indian *inconspicua* Brunetti in the general coloration and having pale yellowish wing, but in the related species the dististylus is provided with a pair of black spines at tip.

#### 4. *Macrocera ephemeraeformis* Alexander

1924, Insec. Insc. Mens., 12 : 53. (♂, Honshu, Japan)

1♂, Kanko, Sept. 18, 1925, T. Shiraki & J. Sonan; 1♀, Karenko, July 20, 1919, T. Okuni, J. Sonan et al. in coll. National Taiwan University.

DISTRIBUTION: Japan, Taiwan (new record).

The female specimen shows slight differences from the type: the first and second abdominal tergites with brown band on posterior one-fifth to two-fifths, the third with posterior band interrupted at middle, fourth to sixth tergites each with a pair of small brown spots on lateral sides, the seventh entirely brown; length of body 7.0 mm.

#### 5. *Macrocera ornata* Brunetti

1912, Fauna Brit. India, p. 51. (♂, ♀, Darjiling, India)

This species is immediately recognizable by the characteristic spot occupying nearly all the apical half of the wing and the quinquestriate mesonotum.

Head yellow; antenna yellow, nearly four times as long as length of body, relative ratio of flagellar segments as 1 : 0.8 : 1.1 : 1.7 : 2.0 : 2.3 : 2.3 : 2.5 : 2.6 : 2.8 : 3.0 : 2.5 : 1.0 : 0.6. Thorax shiny brown excepting yellow pronotum and propleuron; mesonotum with five dark brown stripes, of which median one linear and ending at middle of notum, a pair of submedian ones running along rows of dorso-centrals and united with each other on posterior one-fourth and lateral pair broadest. Abdomen yellow, tergites more or less brown-tinged posteriorly. Wing 8.5 mm in length.

1♂, Arisan, Oct. 10, 1912, I. Nitobe, in coll. National Taiwan Univ.

DISTRIBUTION: India, Taiwan (new record).

#### 6. *Macrocera quinquemaculata* sp. nov. (Fig. 4)

*Male*: Head black, slightly brown-tinged; vertex weakly shining; fronto-clypeus brown; eye rather sparsely hairy. Antenna 16-segmented, scape and pedicel brown but the latter yellow at apex, first flagellar segment yellow, other segments brown to black except for yellow bases of second to fifth segments, about one and a half times as long as body, with flagellar segments in proportion of 11 : 9.5 : 10 : 10.5 : 10.5 : 11.5 : 11 : 10 : 10 : 9.5 : 9 : 8 : 8 : 8, basal six segments sparsely setose on ventral sides. Palpus pale brown, 4-segmented, distal three segments in proportion of 5 : 3 : 4, second segment with three long ventral setae at middle and densely setigerous on dorsal apex, the third with one long ventral and several short dorsoapical setae, the fourth setose apically.

Thorax strongly shining black, scutellum and pleura tinged with brown; mesonotum with minute dorso-centrals and distinct setae on lateral sides; scutellum bare. Wing 3.0–3.3 mm, brown, with five rather large pale spots, thickly covered with numerous macrotrichia but scanty on upper side of anterior two spots, costa almost ending before basal one-third between tips of  $R_{4+5}$  and  $M_{1+2}$ , Sc short,  $R_1$  not broadened terminally,  $R_{2+3}$  absent, petiole of M nearly one-sixth length of  $M_{1+2}$ ; halter yellow, with knob brown. Legs yellow, middle and hind coxae brown, middle femur with brown ring at distal one-sixth, hind femur with pale brown ring on distal one-seventh before apex, distal ends of middle and hind tibiae and all tarsi slightly brown-tinged; fore metatarsus a little longer than one-half length of tibia.

Abdomen shiny black, first and second tergites excepting posterior margins, anterior one-third to one-half of the third and fourth brown. Terminalia: Epandrium with inverted T-shaped membranous concavity on posterior margin; dististylus with two spines, ventral one smaller; hypandrium subtrapezoidal; paramere with a pair of sharply pointed arms, dorsal arch setulose on latero-posterior parts.

Length: Body 2.3 mm.

*Female*: Very similar to the male, but antenna with pedicel yellow, only slightly brownish at base; abdomen entirely brownish black, cercus yellow.

Length: Body 2.7–3.2 mm, wing 3.3–3.5 mm.

DISTRIBUTION: Taiwan.

Holotype ♂, allotype ♀, Chuchi, 120 m, Chia Hsien, Taiwan, Apr. 14, 1965, M.

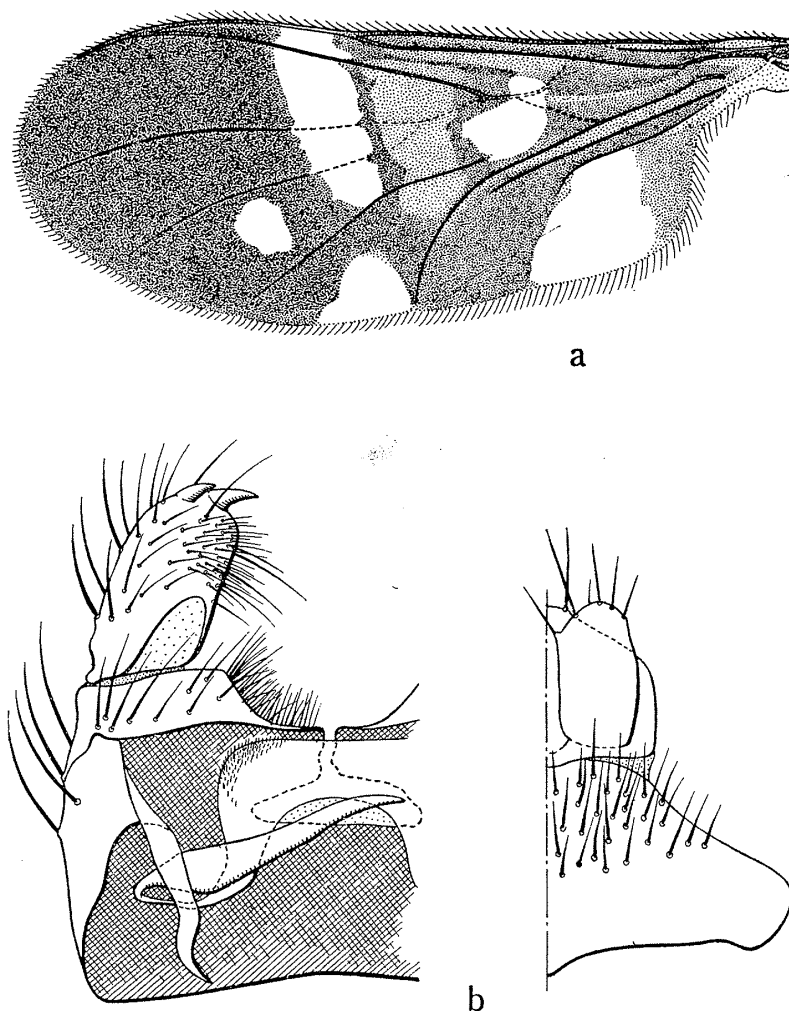


Fig. 4. *Macrocera quinquemaculata* n. sp. a, wing, ♂, omitted macrotrichia; b, ♂ terminalia, ventral view.

Sasakawa; ♂ terminalia mounted on a slide, in coll. Nat. Sci. Mus., Tokyo. Paratype ♀, Kuantzuling, 250 m, Tainan Hsien, Apr. 6, 1965, T. Saigusa.

On the basis of the known Oriental species, there are no closely allied species. The wings are distinctive.

#### 7. *Macrocera* sp.

1 ♀, Ali Shan Mts., Taiwan, Apr. 8, 1965, M. Sasakawa.

Closely allied to *M. centralis* Meigen but highly specific in the coloration of thoracic pleura and coxae. The definite identification is impossible in the poor condition of the specimen.