

Studies on the Oriental and Pacific Clusiidae (Diptera)

Part 9. Oriental species of the genus *Craspedochaeta* Czerny

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Abstract : The 16 Oriental species of *Craspedochaeta* are revised. Nine new species, *Craspedochaeta maai* sp. nov., *C. parva* sp. nov., *C. pilosa* sp. nov., *C. quinquespinula* sp. nov., *C. secunda* sp. nov., *C. spinulifera* sp. nov., *C. unguicauda* sp. nov., *C. vietnamensis* sp. nov. and *C. xanthopleura* sp. nov., are described. New locality records are given for *Craspedochaeta biseta* (Hendel), *C. borneoensis* (Sasakawa), *C. caligula* (Sasakawa), *C. hyalina* (Sasakawa), *C. nigripalpis* (Steyskal and Sasakawa) and *C. sasakawai* Lonsdale and Marshall. A key to the 19 Oriental species is provided, and their species groups are discussed.

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key words : Insecta, Diptera, Clusiidae, *Craspedochaeta*, Oriental, new species, new records.

Introduction

This is the second report of the Oriental species of the genus *Craspedochaeta* Czerny, 1903. In the first report (Sasakawa, 1971), four species, *Craspedochaeta biseta* (Hendel, 1913), *C. bisignata* (McAlpine, 1960), *C. boettcheri* (Frey, 1928) and *C. borneoensis* (Sasakawa 1971), of the 14 known Oriental and Pacific species, were recorded. After then, *Craspedochaeta thaiensis* (Sasakawa, 1986) and *C. flavofemorata* (Sasakawa, 1990) were added to the fauna by myself.

The present work is based on the specimens collected by staffs of the Bishop Museum, Honolulu, in the Philippines, Vietnam, Thailand, Laos, Malaysia, Brunei and Indonesia. As a result of examination, the occurrence of the 16 Oriental species including nine new species is recorded. Most of the Oriental species belong to the *C. biseta* species group (McAlpine, 1960) which is represented a dominancy in the Oriental and Australasian regions and only four to the other species groups discussed below.

Materials and Methods

Materials are dried specimens collected by staffs of the Bernice P. Bishop Museum (BPBM), Honolulu, Hawaii, U.S.A. The type specimens of nine new species are deposited in the collection of Diptera, BPBM.

Descriptive terminology and abbreviations follow Sasakawa (1998, 2009). Abbreviations for the setae are added as follows: dp, dorsopreapical(s) on tibia(e); lsc, lateral scutellar(s); oc, ocellar; pg, postgenal; poc, postocellar(s); vi, vi-brissa. The male genitalia and abdomen are preserved in a short polyethylene tubule with glycerine after a standard treatment, and the tubule is kept on the same pin as the rest of body. Wing and body lengths are given as the range of measured type specimens, and those of the holotype are given in brackets.

Genus *Craspedochaeta* Czerny

Craspedochaeta Czerny, 1903: 108. Type species: *Craspedochaeta transversa* Czerny, 1903.

Czernyola Bezzi, 1907: 52. Type species: *Czernyola transversa* (Czerny, 1903).

Tonnoiria Malloch, 1929: 98. Type species: *Tonnoiria palliseta* Malloch, 1929.

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Chaetoczernyola Soós, 1962: 141. Type species: *Chaetoczernyola novaeguineae* Soós, 1962.

Diagnosis Four or five fronto-orbital bristles (or), upper two reclinate, subequal in length (*C. concinna* and *hyalina* groups) or first (uppermost) one distinctly shorter than second (*C. biseta* group) and lower two or three, of which first pair in- and proclinate, remainder(s) reclinate. Mesoscutum with two or three postsutural dorsocentral bristles (dc). Fore and hind tibiae each with one dorsopreapical bristle (dp), mid tibia sometimes with two dp. Surstylus mostly subtriangular and rounded ventrally in lateral view, densely setulose on outer side, with or without spinules on inner ventral apex; cerci united with membrane basally and divided distally; hypandrium U-shaped, with arm loosely attached, pregonite present or absent, postgonite always present and with one or several basal setae and sparse setulae apically; mesophallus with long and narrow sclerites (right sclerite shorter than the left), hypophallus present with narrow and short sclerites or absent, distiphallus usually membranous globular, containing small sclerites; ejaculatory apodeme clavate to mushroom-shaped.

Species groups. McAlpine (1960) divided the genus into three species groups: *Craspedochaeta transversa* (Neotropical), *C. concinna* (formerly *C. atra*; Neotropical and Nearctic, Lonsdale and Marshall, 2006) and *C. biseta* (Indo-Australasian). The *transversa* group is characterized by the presence of five pairs of or, instead of having four pairs in the other species groups, and is not found in the Oriental region. The *transversa* and *concinna* groups are well represented in the neotropics, and only one species of the *biseta* group is known from there (Lonsdale and Marshall, 2006).

The *biseta* group was also subdivided into two subgroups by McAlpine, according to the development of or. In the subgroup a (*C. australis* McAlpine and *C. bisignata* McAlpine, 1960), three reclinate or are subequal in length, and in the subgroup b (*C. biseta* Hendel, 1913, *C. palliseta* Malloch, 1929, *C. atrifrons* Malloch, 1942, and *C. delta* McAlpine, 1960), the first (uppermost) pair of three reclinate or is short ($1/5 - 1/2$ as long as the second or). The *biseta* group (subgroup b) is maintained (Soós, 1962, Sasakawa, 1971, Lonsdale and Marshall, 2006). *C. bisignata* will be placed in the *concinna* group (*C. australis* is unknown to occur in the Oriental region). *Craspedochaeta boettcheri* (Frey, 1928) will be followed Lonsdale and Marshall's uncertain placement based only upon the original description, because the male genitalia are not yet examined. *Craspedochaeta hyalina* (Sasakawa, 1971) and *C. spinulifera* sp. nov. will be placed here in the *hyalina* group, because they are clearly distinguished by a plesiomorphic character state in the surstylus and dsitiphallus from the *biseta* and *concinna* groups.

Key to the Oriental species of *Craspedochaeta* (male)

1. All or subequal to each other in length 2
- First or distinctly shorter than second or (*C. biseta* group) 5
2. Mesoscutum with 0 + 2 dc; anterior dc about $1/2$ length of posterior dc; surstylus subtriangular (*C. concinna* group) 3
- Mesoscutum with 0 + 3 dc, first (anteriormost) dc very short, second dc shorter than the third; wing faintly infuscated anteroapically; surstylus elongate (*C. hyalina* group) 4
3. Wing almost entirely brown-tinged; coxae and femora black (Philippines) *C. boettcheri* (Frey, 1928)
- Wing with basal broad cloud extending from apex of R_1 across cell dm to posterior margin and dark apical cloud; coxae and femora yellow [Malaysia (Sarawak), Australia] *C. bisignata* (McAlpine, 1960)
4. Face and gena pale brown; fore and mid coxae, and femora brown; surstylus with two or three apical spinules [Malaysia (Sabah), Solomon Is.] *C. hyalina* (Sasakawa, 1971)
- Face and gena yellow; only mid coxa brown; surstylus with five apical spinules (Thailand) *C. spinulifera* sp. nov.
5. Thoracic pleura almost entirely black to dark brown 6
- Thoracic pleura entirely or partly yellow 15
6. Bristles brown to black 7
- Bristles on head and thorax yellow to yellowish brown, those on abdomen black 10
7. Face yellowish brown, blackened ventrally; gena black; first antennal flagellomere with brown apical margin; fore and mid coxae brown; surstylus with four apical spinules [Malaysia (Sarawak)] *C. maai* sp. nov.

- Face and gena yellow to yellowish brown 8
- 8. First antennal flagellomere with brown apical margin; femora yellowish brown, darkened apically; surstylus with two apical spinules (Thailand) *C. secunda* sp. nov.
- First flagellomere with brown spot surrounding base of arista 9
- 9. Palpus dark brown; femora with brown dorsal apices or apical rings; surstylus with two apical spinules (Vietnam, Mariana Is., Papua New Guinea) *C. nigripalpis* (Steyskal and Sasakawa, 1966)
- Palpus and femora entirely yellow; surstylus with five spinules (Philippines) *C. unguicauda* sp. nov.
- 10. Femora or tibiae with brown apical rings 11
- Femora entirely yellow 12
- 11. Mid and hind femora with brown apical rings, tibiae yellow; surstylus with two apical spinules [Malaysia (Peninsular), Papua New Guinea] *C. caligula* (Sasakawa, 1971)
- Hind femur and tibia each with brown apical ring; surstylus with three apical spinules [Taiwan, Philippines, Malaysia (Sarawak), Thailand, Laos, Papua New Guinea, New Britain] *C. biseta* (Hendel, 1913)
- 12. Wing length 1.5–2.2 mm; first antennal flagellomere without brown spot; surstylus narrowed ventrally 13
- Wing length 2.4 mm; first flagellomere with brown spot surrounding base of arista; surstylus broadened ventrally, slightly protruded at anteroventral corner, bearing five apical spinules (Philippines) *C. quinquespinula* sp. nov.
- 13. Wing with apical brownish cloud darker, extending to posterior margin; surstylus posteriorly protruded at middle, without spinules; cercus with long apical seta; postgonite with two basal setae [Indonesia (Java)] *C. pilosa* sp. nov.
- Wing slightly infuscated anteroapically; surstylus subtriangular, with two apical spinules; cercus with several apical setae; postgonite with one basal seta 14
- 14. Legs entirely yellow; distiphallus with large sclerites and striated lobe ventrally [Malaysia (Sabah, Sarawak), Brunei, Indonesia (Java, Sulawesi)] *C. parva* sp. nov.
- Legs with fore coxa and basal halves of all femora whitish; distiphallus with small sclerites, without striated lobe [Malaysia (Sabah)] *C. flavofemorata* (Sasakawa, 1990)
- 15. Thoracic pleura partly dark brown to black; legs partly darkened 16
- Thoracic pleura and legs entirely yellow; prsc present; surstylus without apical spinules; postgonite with one seta [Malaysia (Peninsular, Sabah)] *C. xanthopleura* sp. nov.
- 16. Face and gena brown to black; bristles black 17
- Face and gena yellow; bristles on head and thorax yellow to yellowish brown; prsc present; surstylus with four apical spinules; distiphallic tube straight [Malaysia (Sabah), Australasian/Oceanian regions] *C. sasakawai* Lonsdale and Marshall, 2006
- 17. Mesoscutum entirely black 18
- Mesoscutum black, with two narrow brown stripes above sa-lines, postpronotal lobe, notopleuron, anatergite and katatergite yellowish brown; femora and tibiae dark brown; surstylus with three apical spinules; postgonite with one seta (Vietnam) *C. vietnamensis* sp. nov.
- 18. Thoracic pleura black on anterior half and yellowish brown to pale brown posteriorly; first antennal flagellomere broadly brown apically; fore femur and all tibiae dark brown; surstylus with two apical spinules; postgonite with one seta [Malaysia (Peninsular, Sabah), Vietnam] *C. borneoensis* (Sasakawa, 1971) comb. nov.
- Thoracic pleura dark brown on dorsal half and yellow ventrally; first flagellomere with brown spot surrounding base of arista; femora yellow, fore and hind tibiae brownish on basal halves; surstylus without spinules; postgonite with two setae (Thailand) *C. thaiensis* (Sasakawa, 1986)

Systematics

Craspedochaeta biseta (Hendel)

Czernyola biseta Hendel, 1913: 80.

Czernyola puncticornis Frey: Sasakawa, 1971: 53.

Craspedochaeta biseta: Lonsdale and Marshall, 2006: 75.

Material examined. Thailand- 1 ♀, Banna, Chawang, nr. Nabon, 70 m, 5 Sept. 1958, J.L. Gressitt; 1 ♀, Trang Prov., Khaophappa, Khaochang, 200 m, 1–3 Jan. 1964, G.A. Samuelson. Laos- 1 ♀, Vientian Prov., Ban Van Eue, 15 Apr. 1966, native collector. Malaysia- 1 ♀, Sarawak, Nanga Pelagus, 7–14 Aug. 1958, T.C. Maa.

Remarks. This species was redescribed by myself in 1971. It is widely distributed in the Oriental and Australasian regions.

Distribution. Taiwan, Philippines, Malaysia (Sarawak), Thailand (new record), Laos (new record), Papua New Guinea, New Britain.

***Craspedochaeta borneoensis* (Sasakawa) comb. nov.**

Czernyola borneoensis Sasakawa, 1971: 54.

Material examined. Malaysia, Peninsular- 1 ♂, Pahang, Ringlet, 1150 m, 12 Jan. 1990, J.R. Vockeroth; 1 ♂, Pahang, Kuala Tahan, 12–14 Dec. 1958, L.W. Quate; 1 ♂, Penang, 12–14 Jan. 1959, Quate; 1 ♂ 1 ♀, Brinchang, Cameron Highlands, 2–7 Jan. 1959, Quate; Malaysia, Sabah- 1 ♂, Ranau Distr., Ranau, 30 Sept.–5 Oct. 1958, Quate; 2 ♂ 2 ♀, Tarawan Division, 19 km N. of Kalabakan, Forest camp, 18–20 and 30 Oct. 1962, Y. Hirashima. Vietnam- 1 ♂, 6 km S. of Dalat, 1400–1500 m, 9 June–7 July 1961, N.R. Spencer.

Diagnosis. This species is characterized by a black head in the male, short first or, yellow first antennal flagellomere with brown apical margin, presence of prsc, the brown to blackish brown fore and mid coxae, fore femur and all tibiae, brown-ringed mid femur (basal 1/3–1/4 and distal 1/4–1/6) and hind femur (distal 1/4–1/5), the black bristles, two inner apical spinules on the surstylus, the well developed basiphallus and mesophallus, and the complicated globular distiphallus.

Female is described for the first time, and differs from the male in the following points: face and gena yellow except for linearly brown lateral margin of face and black peristome; dark apical margin of first antennal flagellomere much narrower, thoracic pleura entirely dark brown; mid femur except for distal end and hind femur (distal 1/2–3/4) dark brown, all tibiae yellow; wing 2.4–2.8 mm long, with apical infuscation darker and broader; cercus yellow; body length 2.8–3.2 mm. Variation: One female (Sabah, 18 Oct. 1962) has an entirely yellow first antennal flagellomere, and the pale brown face and palpus.

Distribution. Malaysia (Sabah, Peninsular – new record), Vietnam (new record).

***Craspedochaeta caligula* (Sasakawa) comb. nov.**

Czernyola caligula Sasakawa, 1971: 55.

Material examined. 1 ♂, Malaysia, Pahang, Gua Che Yatim, 16–17 Dec. 1958, T.C. Maa.

Diagnosis. This black species has a brownish wing (darkened anteriorly on apical half and interrupted by a narrow transverse cross-band just distad of R_1 -termination), yellowish brown meron, and boot-shaped postgonite with three basal setae (Sasakawa 1971: fig. 2), and also differs from *C. biseta* in the characters as stated in a key to the species (couplet 11).

Distribution. Papua New Guinea, Malaysia (Peninsular, new record).

***Craspedochaeta flavofemorata* (Sasakawa) comb. nov.**

Czernyola flavofemorata Sasakawa, 1990: 58.

Material examined. 1 ♂, Malaysia, Brinchang, Cameron Highlands, 2–7 Jan. 1959, L.W. Quate.

Diagnosis. This species is recognized by the entirely black thorax, yellowish bristles on the head and thorax, yellow legs with whitish basal parts on the femora, and well developed hypophallus (Sasakawa and Tho, 1990: fig. 9).

Distribution. Malaysia (Sabah, Peninsular – new record).

***Craspedochaeta hyalina* (Sasakawa) comb. nov.**

(Figs. 1, 2)

Czernyola hyalina Sasakawa, 1971: 57.

Material examined. 1 ♂, Malaysia, Sabah, Sandakan Bay, Sapagaya Lumber camp, 2–20 m, 1 Nov. 1957, J.C. Gressitt; 1 ♂, Sabah, 19 km N. of Kalabakan, Forest camp, 22 Oct. 1962, K.J. Kuncheria.

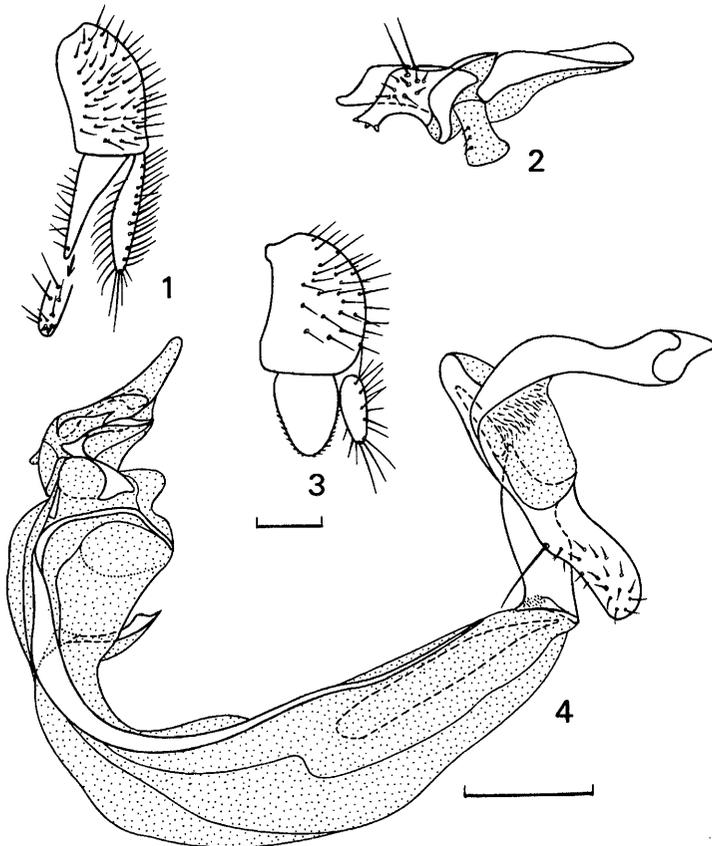
Diagnosis. This species has the faintly smoky wing, the variegated coxae and femora, an elongate surstylus with two or three inner apical spinules, a membranous pregonite with setulae, an apically truncated postgonite with three minute spinule-like processes, and the straight distiphallus (Sasakawa 1971: fig. 3).

Distribution. Solomon Is., Malaysia (Sabah – new record).

***Craspedochaeta maai* Sasakawa sp. nov.**

(Figs. 3, 4)

Material examined. Holotype female (BPBM 17279), Malaysia, Sarawak, Kapi District, Merirai Village, 1–6 Aug. 1958, T.C. Maa. Paratype: 1 ♂, Sarawak, Gunong Matang, 120 m, 13 Sept. 1958, Maa and J.L. Gressitt.



Figs. 1–4. Male genitalia of *Craspedochaeta hyalina* (Sasakawa) (1, 2) and *C. maai* sp. nov. (3, 4; paratype). 1, 3, epanthrium, surstylus and cercus, lateral view; 2, hypandrium, pregonite and postgonite, lateral view; 4, hypandrium, postgonite and phallus, lateral view. Scale = 0.1 mm.

Diagnosis. Black species with face yellowish brown dorsally and blackened ventrally, yellow first antennal flagellomere browned apically, yellow (male) or pale brown (female) metanepisternum and metakatepisternum; first or short; surstylus rounded apically and with four inner apical spinules; mesophallus almost as long as distiphallus.

Description. *Female.* Head shining black, parafrontalia and parafacialia dark brown, frontalia with yellowish brown small spot ventromesally, face yellowish brown and distinctly blackened on ventral 1/4, parafacialia with ventral part silvery white tomentose; antenna and palpus yellow, first antennal flagellomere with brown apical margin narrowly on outer side and broadened on inner side, arista pale brown except for base yellow; palpus yellow. Thorax and abdomen shining black; metanepisternum, metakatepisternum and katatergite pale brown. Wing hyaline, slightly infuscated on apical half between costa and M_1 , more or less dark in cell r_1 ; calypter yellow, with margin and fringe pale brown; halter yellow. Legs yellow, fore coxa entirely and mid coxa basally brown, hind tibia slightly brown-tinged. Bristles black.

Frons about 1.2 times as wide as eye, slightly diverging ventrally; parafrontalia not projecting above eye in profile; first or 1/2 length of second or, second to fourth or subequal in length; oc 1/2 length of second or, as long as poc; face flat; eye 1.2 times as high as wide; gena 1/7 as high as eye; pg 2/3 length of vi. First antennal flagellomere shorter than broad, rounded apically, microscopically pilose; arista slightly longer than eye height, pubescent.

Mesoscutum with 0 + 3 dc, first dc twice as long as acr, eight rows of acr anteriorly, four rows of them behind level of second dc, prsc lacking; scutellum with two lsc. Wing 2.2 mm long, three costal sections in proportion of 45 : 10 : 7, r-m beyond middle level of cell dm (15 : 10), M_1 ratio 3.7, ultimate section of CuA_1 3/5 length of penultimate. Fore tibial dp shortest; mid tibia with two dp, of which one shorter, and one long and one short spurs.

Body length 2.4 mm.

Male. Differs from the female in the following points: yellowish brown ventromedian spot on frontalia larger than that of male; palpus brown, with apex yellowish; metanepisternum and metakatepisternum yellow; mid coxa almost entirely brown, fore femur basally and fore tibia entirely brown-tinged; abdominal T1 and T2 brownish black; costal sections in proportion of 40 : 10 : 5.5; wing length 2.4 mm, body length 2.7 mm.

Genitalia: Surstylus lobate, about 2/3 as high as epandrium, with four inner apical spinules (one spinule minute); cercus with few apical setae. Hypandrium of normal form; postgonite with one basal seta. Phallapodeme 60 μ m long; basiphallus 100 μ m long, mesophallus 550 μ m long, hypophallus indistinct, distiphallus 200 μ m long, consisted of several small sclerites, with distal tube membranous. Ejaculatory apodeme clavate, 210 μ m long.

Distribution. Malaysia (Sarawak).

Remarks. This new species distinctly differs from *Craspedochaeta nigripalpis* (Steyskal and Sasakawa), *C. secunda* sp. nov. and *C. unguicauda* sp. nov. in coloration of the face, gena and legs (key: couplets 7–9).

Etymology. The specific name refers to the collector of this fly, Dr. T.C. Maa, formerly a staff of the Division of Entomology, Bishop Museum.

Craspedochaeta nigripalpis (Steyskal and Sasakawa) comb. nov.

Tonnoiria nigripalpis Steyskal and Sasakawa, 1966: 246.

Material examined. 1 ♂, Vietnam, 6 km S. of Dalat, 1400–1500 m, 9 June–7 July 1961, N.R. Spencer.

Diagnosis. This species belongs to the *biseta* group, and is unique in having a dark brown palpus and well developed hypophallus (Steyskal and Sasakawa, 1966: fig. 2).

Distribution. Vietnam (new record), Mariana Is., Papua New Guinea.

Craspedochaeta parva sp. nov.

(Figs. 5, 6)

Material examined. Holotype male (BPBM 17280), Brunei, Belait Distr., Ulu Belait, Manilas, 21–23 Mar. 1968, D.E. Hardy. Paratypes: 1 ♀, Brunei, Belait Distr., Manilas, 65 mil. SW. of Brunei Town, 20–21 Mar. 1968, Hardy; 1 ♂, Malaysia, Sabah, Tawau Distr., Kalabakan, Primary Forest, 8–15 Nov. 1958, Maa; 1 ♂, Malaysia, Sabah, Tawau Distr., Quoin Hill, 3–7 June 1962, H. Holtmann, 1 ♂, Malaysia, Sabah, 19 km N. of Kalabakan, Forest camp, 30 Nov.

1962, K.J. Kuncheria; 1 ♀, Malaysia, Sarawak, Sarikei Distr., Rejang Delta, 15–25 July 1958, Maa; 3 ♂, Malaysia, Sarawak, Nanga Pelagus, 7–14 Aug. 1958, Maa; 1 ♂, Sarawak, Bau (Lake area), 29–30 Aug. 1958, Maa; 1 ♂, Indonesia, Java, Tjibodas, 1600 m, 8 Aug. 1964, M. Delfinado; 1 ♂, Indonesia, Sulawesi (Celebes I), Kalawaranaputi, 34 km SW. of Palau, 4–6 Dec. 1965, R. Straatmann, Malaise trap.

Diagnosis. Thoracic pleura dark brown to black, legs entirely yellow; first or distinctly shorter than second or; surstylus subtriangular, with two inner apical spinules; hypophallus distinct, distiphallus with apical sclerite smaller than basal one.

Description. *Male.* Head with frons, occiput and back of head entirely black; frontalia shining, usually with yellowish brown ventromesal spot narrow and triangularly; parafrontalia and orbit brown; parafacialia, gena and face yellow, gena silvery white tomentose; antenna and palpus yellow, arista pale brown except for base yellow. Thorax shining black, katapisternum posteriorly, anepimeron, katepimeron, anatergite and katatergite dark brown. Wing hyaline, slightly infuscated anteroapically beyond level of r-m or m-cu, fading posteriorly beyond M_1 ; calypter whitish, with margin and fringe yellowish; halter yellow. Legs entirely yellow; fifth (-fourth) tarsomere(s) very faintly brown-tinged. Abdomen shining brownish black, cercus yellow. Bristles on head and thorax yellow to brownish yellow, those on abdomen brown to black.

Frons almost as wide as eye, parallel-sided but slightly diverging on ventral 2/3; parafrontalia not or linearly projecting above eye in profile; first or very short, setula-like (1/3 length of second or); oc subequal to poc which is longer than first or; eye slightly higher than broad; face flat; gena 1/5–1/6 as high as eye; pm three or four; pg 1/2 length of vi. First antennal flagellomere shorter than broad, rounded apically, microscopically pilose; arista 1.3–1.7 times as long as eye width, pubescent; palpus slightly narrower than genal height.

Mesoscutum with 0 + 3 dc, first dc close to transverse suture, short and twice as long as acr, second dc slightly shorter than third, six to eight rows of acr, prsc 1/2–1/3 length of third dc; scutellum with two short lsc (1/5 length of asc). Wing 1.5–2.2 (2.0) mm long, with three costal sections in proportion of 46–58 : 15 : 6–9, r-m distinctly beyond middle level of cell dm (15–18 : 10), M_1 ratio 4.2–5.1, ultimate section of CuA_1 2/3–4/5 as long as penultimate. Fore tibial dp shorter than those on mid and hind tibiae; mid tibia with one spur.

Epandrium with surstylus subtriangular, about 1/2 as high as epandrium, bearing two or three spinules on inner anterior tip and many setae, which are rather stout, along inner anterior margin; cerci fused basally. Hypandrium 150 µm long, with many setulae on basal membranous lobe; pregonite and postgonite weakly chitinized, the former with one apical seta, the latter with one basal seta. Phallapodeme Y-shaped, 80–100 µm long; basiphallus 90–110 µm long, mesophallus+distiphallus 410–440 µm long, hypophallus with left sclerite narrow, right sclerite broadened distally, ditiphallus with left basal sclerite curved at base, accompanying with small additional sclerites near apex. Ejaculatory apodeme narrow clavate, 160–290 µm long.

Body length 1.9–2.7 (2.3) mm.

Female. Similar to male, but first flagellomere pale brown along apical margin; mid and hind femora brown on distal halves, fore and hind tibiae brownish yellow, mid tibia pale brown; wing length 1.8 mm, body length 2.3 mm.

Distribution. Brunei, Malaysia (Sabah, Sarawak), Indonesia (Java, Sulawesi).

Remarks. This species differs clearly from *Craspedochaeta flavofemorata* (Sasakawa) in coloration of the legs as shown in the key (couplet 13) and structure of the distiphallus (phallus of *flavofemorata*: Sasakawa and Tho, 1990: fig. 9).

Etymology. The specific name refers to the little size (Latin *parvus*).

Craspedochaeta pilosa Sasakawa sp. nov.

(Figs. 7–9)

Material examined. Holotype male (BPBM 17281), Indonesia, Java, Tjibodas, 1600 m, mossy forest, 8 Aug. 1964, M. Delfinado.

Diagnosis. Thorax largely black, wing distinctly with apical cloud, legs entirely yellow; first or shorter than second, surstylus without apical spinule, cercus with long apical seta, phallus hairy at end of mesophallus, with claw-like membranous process before small distiphallic lobe.

Description. *Male.* Very similar to *Craspedochaeta parva* sp. nov. in general appearance, only differing from it

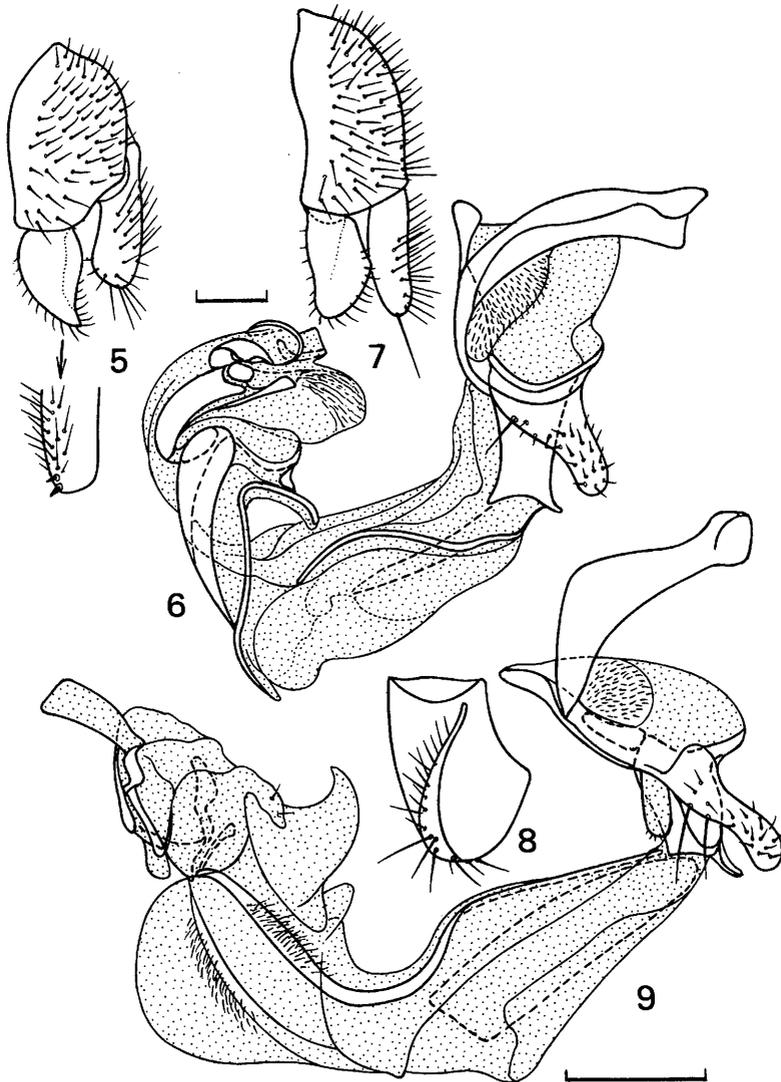
in the following points:

Frontalia with yellowish brown ventromedian area smaller; apical cloud on wing darker, extending beyond CuA_1 and to posterior margin; abdomen shining black, T6 and epandrium tinged with brown, cercus brown.

First or $1/2 - 2/3$ as long as second or; eye about 1.2 times as high as wide; arista about 1.5 times as long as eye width; wing 2.2 mm long, three costal sections in proportion of 55 : 15 : 7, M_1 ratio 4.2; body length 2.5 mm.

Genitalia differ distinctly from that of *C. parva* as follows: surstylus protruded posteriorly at middle, distinctly ridged on inner side, without spinule; cercus with long apical seta; hypandrium 120 μ m long; pregonite membranous, with few minute setulae on tip; postgonite with two basal setae; phallapodeme 100 μ m long; phallus 610 μ m long, epiphallus long, mesophallus with two hairy rows distally, hypophallus short, weakly sclerotized and with claw-like membranous process, distiphallus with several short sclerites and distal tube membranous; ejaculatory apodeme clavate, 210 μ m long.

Female. Unknown.



Figs. 5–9. Male genitalia of *Craspedochaeta parva* sp. nov. (5, 6; paratype) and *C. pilosa* sp. nov. (7–9; holotype). See Figs. 1–4; 8, surstylus, inner side.

Distribution. Indonesia (Java).

Etymology. The specific name refers to the hairy (Latin *pilosus*) mesophallus.

***Craspedochaeta quinquespinula* Sasakawa sp. nov.**

(Figs. 10–12)

Material examined. Holotype male (BPBM 17282), Philippines, Luzon, Nueva Vizcaya, Dalton Pass, 9–10 Apr. 1968, D.E. Hardy.

Diagnosis. Black except for face, gena, antenna, palpus and legs yellow, bristles on head and thorax yellowish; first or hair-like; surstylus slightly broadened distally, with five apical spinules on inner side; mesophallus and distiphallus subequal in length.

Description. *Male.* Head with frons, occiput and back of head shining black; frontalia sparsely pruinose ventrally in triangular form, with yellowish brown, semicircular spot on ventromedian margin; parafrontalia brown; face, parafacialia and gena yellow; parafacialia and gena silvery white tomentose; antenna and palpus yellow; first antennal flagellomere with brown spot surrounding base of arista (larger on inner side), arista brown except for base yellow. Thorax shining black; anatergite and katatergite blackish brown, meron brown. Wing hyaline, faintly infuscated anteroapically beyond level of m-cu, fading behind R_{4+5} ; calypter yellow, with margin pale brown and fringe brownish yellow; halter yellow. Legs yellow, fore coxa whitish. Abdomen shining black; cercus brown. Bristles on head and thorax yellow to yellowish brown, those on abdomen black.

Frons as wide as eye, slightly diverging ventrally; ventral part of parafrontalia projecting above eye margin in profile; first or hair-like, about 1/4 length of second or; oc slightly shorter than poc; face flat; eye about 1.3 times as high as wide; gena about 1/7 of eye height; vi slightly longer than second or. First antennal flagellomere shorter than broad, rounded apically, microscopically pilose; arista slightly longer than eye height, pubescent; palpus narrower than genal height.

Mesoscutum with $0 + 3$ dc, first dc 1/3 as long as second dc, third dc longer than second, eight rows of acr before level of first dc but four rows behind that, prsc absent; scutellum with one lsc. Wing 2.4 mm long, three costal sections in proportion of 50 : 15 : 9, r-m beyond middle of cell dm (19 : 10), M_1 ratio 4.7, CuA_1 not extending to wing margin, with ultimate section 3/4 as long as penultimate. Fore tibia with short dp, mid tibia with two dp (posterior one short) and one spur.

Surstylus subquadrate, shorter than epandrial height, with five inner apical spinules and membranous processes on inner anterior base; cercus broadened ventrally, with several long apical setae. Hypandrium of normal size; postgonite with one basal seta. Basiphallus 70 μ m long, epiphallus distinct; mesophallus 280 μ m long, distiphallus almost as long as mesophallus, with distal tube weakly chitinized. Ejaculatory apodeme clavate, 210 μ m long.

Body length 2.7 mm.

Female. Unknown.

Distribution. Philippines.

Remarks. This species differs from *Craspedochaeta flavofemorata* (Sasakawa), *C. parva* sp. nov. and *C. pilosa* sp. nov. in the characters such as the wing length and male genitalia stated in the key (couplets 12–14).

Etymology. The specific name refers to five spinules on the surstylus.

***Craspedochaeta sasakawai* Lonsdale and Marshall**

Czernyola pleuralis Curran, 1936: 54.

Czernyola palliseta pleuralis: McAlpine, 1960: 80.

Tonnoiria palliseta pleuralis: Steyskal and Sasakawa, 1966: 248.

Craspedochaeta pleuralis: Pitkin and Evenhuis, 1989: 536.

Craspedochaeta sasakawai: Lonsdale and Marshall, 2006: 47.

Material examined. 1 ♂, Malaysia, Sabah, Tarawan Division, Kalabakan, 48 km W. of Tawau, 9–18 Nov. 1958, L.W. Quate.

Remarks. Lonsdale and Marshall (2006) replaced a new name for this species by reason of the fact that *Craspedochaeta pleuralis* (Curran) is a junior homonym of the Neotropical *Craspedochaeta pleuralis* (Williston, 1896). McAlpine (1960), and Steyskal and Sasakawa (1966) redescribed this species, with illustrations of the male genitalia by McAlpine (figs. 17, 18) and Sasakawa (fig. 3).

Distribution. Solomon Is., Vanuatu, Papua New Guinea, Fiji, Micronesia, Indonesia (Irian Jaya), Malaysia (Sabah, new record).

***Craspedochaeta secunda* Sasakawa sp. nov.**

(Figs. 13 – 15)

Material examined. Holotype male (BPBM 17283), Thailand, Pakchong, 100 m, NE. of Bangkok, 3 Dec. 1957, J.L. Gressitt.

Diagnosis. Minute black species with dark bristles; yellow first antennal flagellomere with dark apical margin, femora and tibiae brownish; M_1 ratio 3.2; surstylus with two inner apical spinules.

Description. *Male.* Similar to *Craspedochaeta parva* sp. nov. in size, differing from it in the following points: gena yellowish brown, distinctly darkened along ventral margin; first antennal flagellomere yellow, with dark brown apical margin below base of arista (about 1/2 as long as segmental length on outer side, broadened on inner side); thorax shining brown, anepimeron and meron more or less pale; wing faintly infuscated on cells r_1 and r_3 ; fore coxa basally, mid coxa entirely yellowish brown to pale brown, hind coxa yellow, femora yellowish brown and darkened distally, tibiae yellowish brown to brown, tarsi yellow; abdomen shining black; all bristles brown to black; frons 1.3 times as wide as eye, slightly converging ventrally; eye 1.4 times as high as wide; gena 1/7 of eye height; second dc 2/3 length of third dc, acr in eight rows before level of second dc; wing 2.1 mm long, M_1 ratio 3.2; body length 2.0 mm.

Genitalia are also similar to those of *C. parva*, but differ from that in structure of the distiphallus as figured.

Female. Unknown.

Distribution. Thailand.

Etymology. The specific name refers to the second (Latin *secunda*) small size.

***Craspedochaeta spinulifera* Sasakawa sp. nov.**

(Figs. 16 – 19)

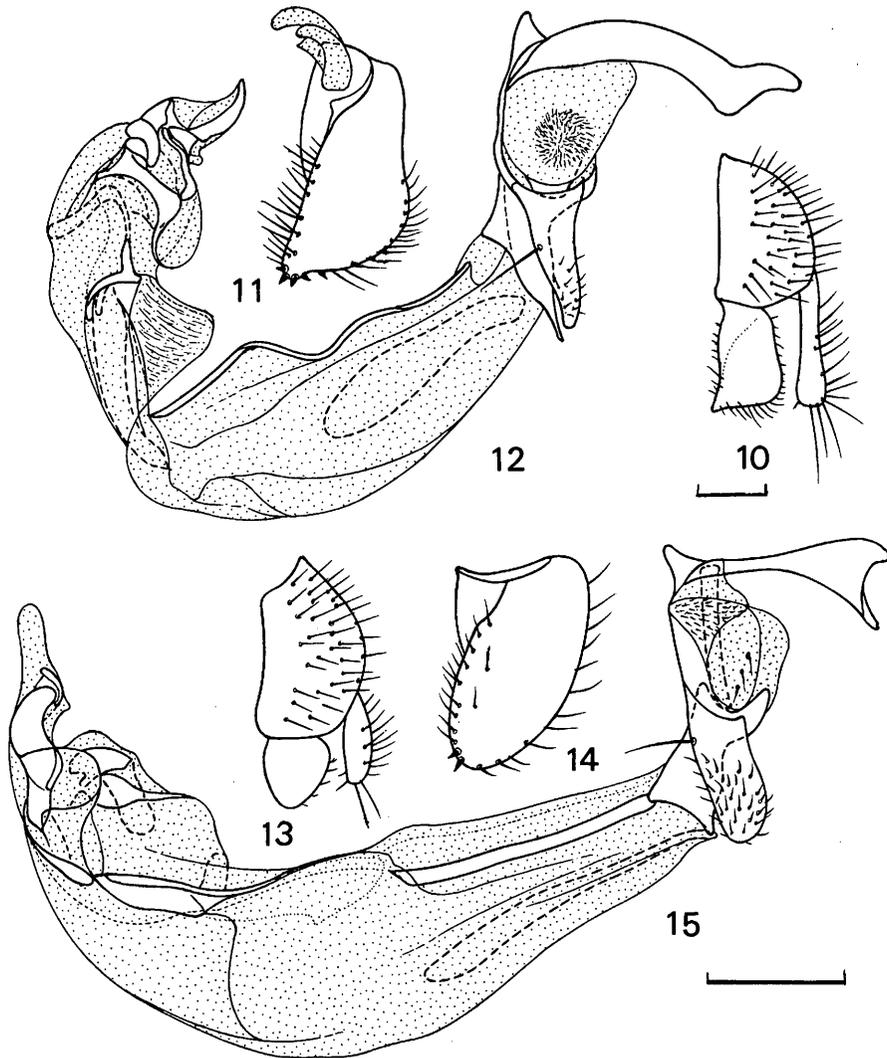
Material examined. Holotype male (BPBM 17284), Thailand, Chiangmai Prov., Doi Suthep, 28 – 31 Mar. 1958, T.C. Maa. Paratypes: 1 ♂, Thailand, Chiangdao, 5 – 11 Apr. 1958, native collector; 4 ♀, same data as holotype; 1 ♂ 3 ♀, same locality as holotype, 1 – 5 Apr. 1958, Maa; 2 ♀, Chiangmai, Fang, 12 – 19 Apr. 1958, Maa.

Diagnosis. Shining black with face, gena, antenna, palpus and legs yellow; bristles on head and thorax yellowish brown; first or shorter than second or; M_1 ratio 3.4 (male) – 3.7 (female); surstylus with five inner apical spinules; postgonite claw-like, with three basal setae; distiphallus with spinulose V-shaped sclerite; ejaculatory apodeme broadened distally.

Description. *Male.* Head with frons, occiput and dorsal half of postorbit black, frontalia semicircularly dark orange and sparsely pruinose on ventral half, parafrontalia brownish ventrally; face, parafacialia, gena, antenna and palpus yellow; antenna more or less orange, arista pale brown except for base yellow. Thorax shining black except for postpronotal lobe blackish brown. Wing hyaline but pale brown on apical 1/3, fading posteriorly beyond R_{4+5} ; calypter yellow, with fringe pale brownish yellow; halter yellow. Legs yellow, mid coxa brown. Abdomen shining black; epandrium brown, cercus yellow. Bristles on head and thorax yellowish brown, those on abdomen black.

Frons slightly narrower than eye, slightly diverging ventrally; parafrontalia not projecting above eye in profile; first or subequal to second or in length; face flat; eye 1.3 times as high as wide; gena 1/8 as high as eye. First antennal flagellomere shorter than broad, rounded apically, with white minute pile; arista sparsely pubescent; palpus almost as wide as genal height.

Mesoscutum with 0 + 3 dc, first dc very short, eight rows of acr anteriorly but four to five sparse rows behind level of second dc; scutellum with one lsc. Wing 2.5 – 2.8 (2.5) mm long, three costal sections in proportion of 65 : 15 :



Figs. 10–15. Male genitalia of *Craspedochaeta quinquespinula* sp. nov. (10–12; holotype) and *C. secunda* sp. nov. (13–15; holotype). See Figs. 5–9.

9, r-m beyond middle level of cell dm (20 : 15), M_1 ratio 3.4–3.5, ultimate section of CuA_1 about 3/5 as long as penultimate. Mid and hind tibiae with dp; mid tibia with one spur, hind tibia with spur less than half length of mid-tibial spur.

Epandrium densely setose; surstylus elongate, 2/3 as high as epandrium, slightly curved posteriorly, bearing five or six inner apical spinules (of which two minute); cercus slightly broadened at middle. Hypandrium 250 μ m long, pregonite membranous and with several setae; postgonite claw-like, with three basal setae. Phallapodeme 110 μ m long, Y-shaped; phallus 800 μ m long, basiphallus 100 μ m long, epiphallus short, hypophallus slightly shorter and narrower than mesophallus and with granulated membranous process, distiphallus straight, narrowing distally, and with spinulose V-shaped sclerite at base of distal tube. Ejaculatory apodeme 230 μ m long, broadened distally and 230 μ m wide.

Body length 3.1 mm.

Female. Similar to male, but back of head entirely black, gena pale brown, palpus yellow to pale brown; fore coxa, fore and mid femora brown, hind femur brown on distal half; wing length 2.4–2.9 mm, body length 2.8–

3.5 mm; three costal sections in proportion of 56 – 58 : 15 : 8 – 9, M_1 ratio 3.7.

Distribution. Thailand.

Remarks. This species is similar to *Craspedochaeta hyalina* (Sasakawa) which has the elongate surstylus and distiphallus, but is easily distinguished by coloration of the face, gena and legs, and the presence of spinulose small sclerite at ventral base of the distiphallic tube. Also it differs distinctly from *C. bisignata* (McAlpine) in number of the dc and the wing pattern.

Etymology. The specific name refers to V-shaped sclerite with spinules (Latin *spinula* + *fera*) on the distiphallus.

***Craspedochaeta unguicauda* Sasakawa sp. nov.**

(Figs. 20, 21)

Material examined. Holotype male (BPBM 17285), Philippines, Luzon, Nueva Vizcaya, Dalton Pass, 915 m, 9 – 10 Apr. 1968, M.D. Delfinado.

Diagnosis. Frontalia and parafrontalia with ventral part, and abdominal T1 yellowish brown; bristles black; first or shorter than second or; surstylus with five inner apical spinules; distiphallus with two claw-like processes.

Description. *Male.* Head with frons, occiput, postorbit and postgena shining black; frontalia with ventral half and ventral parafrontalia below level of fourth or yellowish brown; face, parafacialia and gena yellow; parafacialia silvery white tomentose; antenna and palpus yellow, scape and pedicel slightly brown-tinged, first flagellomere with brownish spot surrounding base of arista, arista brown except for base yellow. Thorax shining black; anatergite, katatergite and mediotergite blackish brown. Wing hyaline, faintly infuscated anteroapically between costa and M_1 distad of m-cu level; calypter yellowish, with margin pale brown, fringe yellowish brown; halter yellow. Legs yellow, mid coxa slightly brownish basally (above base of long basal seta). Abdomen shining, T1 brownish yellow, T2 pale brown, blackened posteriorly; cercus pale brown. Bristles black.

Frons almost as wide as eye, parallel-sided; ventral part of parafrontalia linearly projecting above eye-margin in profile; first or 1/2 length of second or, second to fourth or subequal; oc 2/3 length of third or, longer than poc; face flat; eye 1.3 times as high as wide; gena about 1/7 as high as eye; vi nearly twice as long as or; pg 1/2 of vi. First antennal flagellomere shorter than broad, rounded apically, with microscopic white pile; arista slightly shorter than eye height, shortly pubescent.

Mesoscutum with 0 + 3 dc, first dc only a little longer than acr, second dc slightly shorter than third dc, acr in six to eight rows anteriorly; scutellum with one lsc. Wing 2.4 mm long, three costal sections in proportion of 52 : 15 : 8, r-m beyond middle level of cell dm (16 : 10), M_1 ratio 4.3, ultimate section of CuA_1 3/5 length of penultimate. Tibiae each with dp, mid tibia with long and short dp, and one spur.

Epiandrium sparsely setose; surstylus subtriangular, 3/5 as high as epiandrium, with five inner apical spinules (of which two minute); cercus almost as long as surstylus, with two or three long apical setae. Hypandrium of normal form; postgonite with three basal setae. Phallapodeme short, 60 μ m long; phallus 800 μ m long, basiphallus weakly sclerotized distally and with microscopic spinules near distal end, epiphallus distinct, distiphallus with basal sclerite small and distal tube largely membranous, bearing weakly chitinized claw-like process directed posteriorly and membranous process directed anteriorly. Ejaculatory apodeme clavate, 210 μ m long.

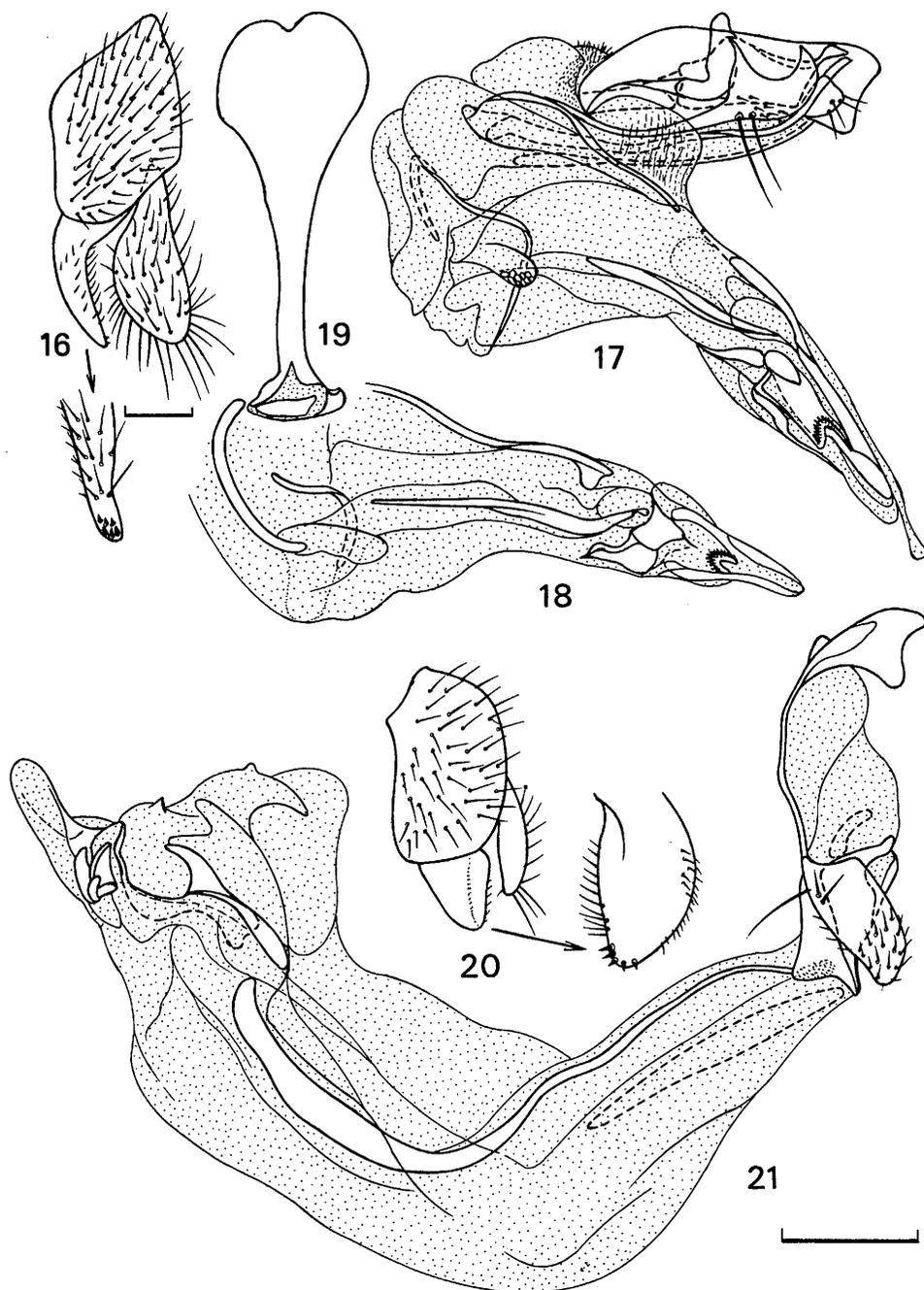
Body length 2.8 mm.

Female. Unknown.

Distribution. Philippines.

Remarks. This species is somewhat similar to *Craspedochaeta nigripalpis* (Steyskal and Sasakawa) in coloration of the thoracic pleura and bristles, but is clearly distinguished by its yellow palpus and legs, and also by its long mesophallus and absence of the hypophallus.

Etymology. The specific name refers to the claw-like process of distiphallus (Latin *unguis* + *cauda*).



Figs. 16–21. Male genitalia of *Craspedochaeta spinulifera* sp. nov. (16–19; paratype) and *C. unguicauda* sp. nov. (20, 21; holotype). 18, phallus, ventral view; 19, ejaculatory apodeme.

***Craspedochaeta vietnamensis* Sasakawa sp. nov.**
(Figs. 22, 23)

Material examined. Holotype male (BPBM 17286), Vietnam, Dilinh (Djiring), 1200 m, 22–28 Apr. 1960, L.W.

Quate. Paratype: 1 ♂, Vietnam, Fyan, 900–1000 m, 11 July–9 Aug. 1961, N.R. Spencer.

Diagnosis. Mesoscutum black, with two brown stripes between dc- and sa-lines, pleura yellow to brownish yellow with black vertical band extending from anepisternum to katepisternum; fore and mid coxae, femora and tibiae dark brown, hind coxa and tarsi yellow; first or shorter than second or; surstylus with three inner apical spinules.

Description. *Male.* Head black, frons shining; parafrontalia with lateral side below level of third or and parafacialia brown-tinged; face brown, paler or yellowish just below antennal bases; antenna and palpus yellow, first flagellomere with brown apical margin (apical 1/3 on outer side and 1/2 on inner side), arista brown (pale at base). Thorax shining; mesoscutum and scutellum black, the former with brown postsutural stripes narrowly just inside of sa-bases; postpronotal lobe and notopleuron yellowish brown; pleura yellow to brownish yellow, with black oblique band from anepisternum to katepisternum, mspl growing on black or yellow area, stpl always on yellow area; anatergite and katatergite brown-tinged, mediotergite brown. Wing hyaline, distinctly infuscated anteroapically beyond level of r-m, fading posteriorly beyond M_1 ; calypter yellowish gray, with margin and fringe pale brown; halter yellow. Legs: fore and mid coxae dark brown, hind coxa yellow; femora and tibiae blackish brown except for yellow knees (hind femur sometimes yellowish ventroproximally, fore tibia paler), tarsi yellow (distal one to three tarsomeres sometimes slightly brown-tinged). Abdomen shining black; cercus pale brown. Bristles black.

Frons as wide as or 1.3 times as wide as eye, parallel-sided dorsally, slightly converging ventrally; parafrontalia with dorsal part slightly projecting above eye margin in profile, first or 1/3–1/2 as long as second or, second to fourth or subequal in length; oc slightly longer than first or and as long as poc; eye slightly higher than wide; gena 1/7 as high as eye; vi slightly longer than lower or; pm five; pg slightly shorter than second or. First antennal flagellomere shorter than broad, with minute pile; arista pubescent. Palpus almost as wide as genal height, with stout setulae ventrally.

Mesoscutum with 0 + 3 dc, first dc about twice as long as acr, eight to ten rows of acr anteriorly and five or six rows behind level of second dc, without prsc; scutellum with one lsc. Wing 2.7–2.8 (holotype) mm long, three costal sections in proportion of 33 : 10 : 5, r-m at middle of cell dm, M_1 ratio 3.5, CuA_1 with ultimate section about 1/2 length of penultimate (12 : 20). Tibiae with dp, fore tibial dp short, mid tibia with one long and one short spurs.

Epandrium with surstylus triangular, bearing three inner apical spinules; cerci separated ventrally. Hypandrium of normal form, 180 μ m long; postgonite almost twice as long as pregonite, 100 μ m long, with one basal seta. Phallapodeme Y-shaped, 100 μ m long; basiphallus narrowed distally, distiphallus with short distal tube. Ejaculatory apodeme 240 μ m long, slightly broadened apically.

Body length 2.8 mm.

Female. Unknown.

Distribution. Vietnam.

Remarks. This species is unique in having two brown stripes on the black mesoscutum and the yellowish brown postpronotal lobe and notopleuron. It differs distinctly from *Craspedochaeta borneoensis* (Sasakawa) and *C. thaiensis* (Sasakawa) in the characters stated in the key to species (key: couplets 17–18).

Etymology. The specific name refers to the type locality.

Craspedochaeta xanthopleura Sasakawa sp. nov.

(Figs. 24, 25)

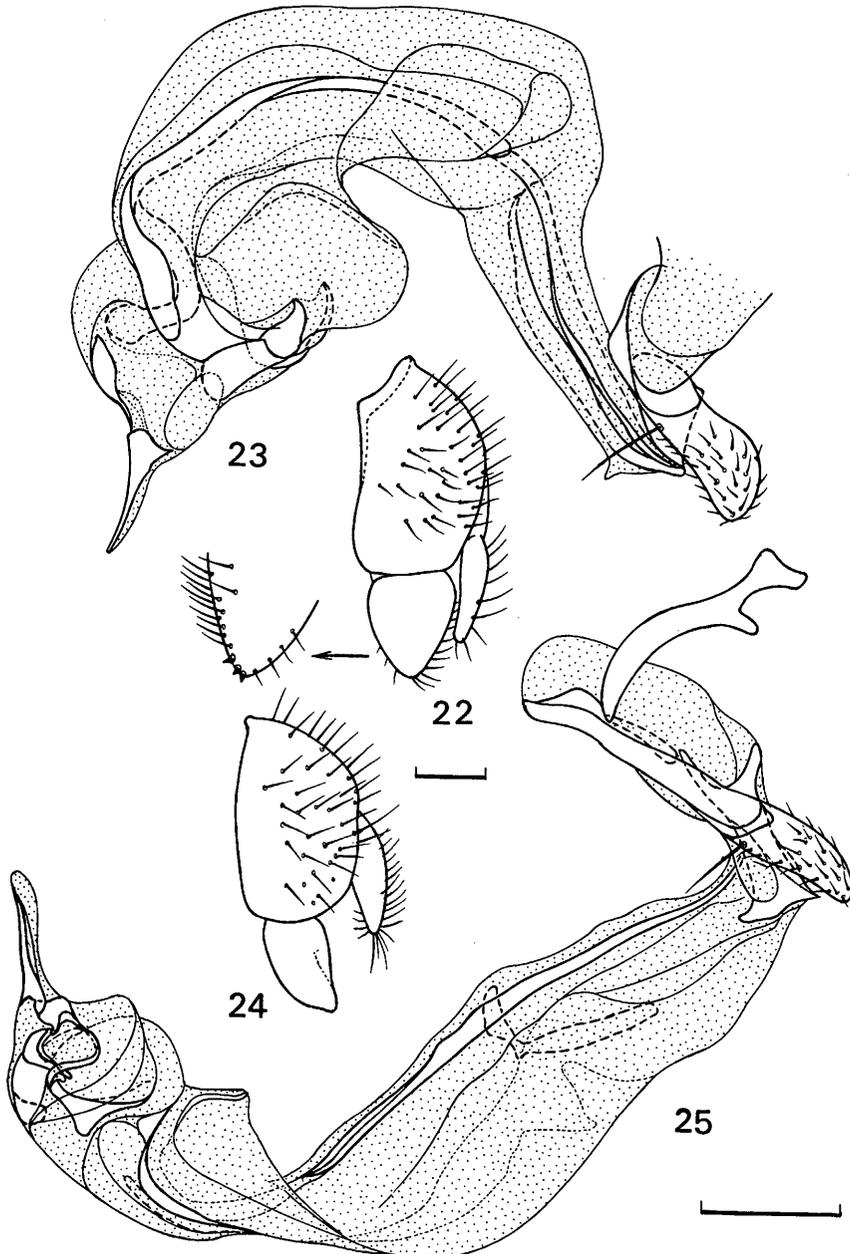
Material examined. Holotype male (BPBM 17287), Malaysia, Sabah, Tarawau Division, 19 km N. of Kalabakan, Forest camp, 19 Nov. 1962, Y. Hirashima. Paratype: 1 ♂, Malaysia, Peninsular, Cameron Highlands, Mt. Brichang, 2–7 Jan. 1959, L.W. Quate.

Diagnosis. Thoracic pleura and legs entirely yellow; first or shorter than second or; prsc present; surstylus without apical spinules; pregonite membranous; distiphallal lobe surrounded by circular sclerite basally.

Description. *Male.* Head with frons, occiput, postorbit and postgena black; frontalia orange on ventral 2/5, extending to brownish parafrontalia below level of ventromost or; face, parafacialia, gena, antenna and palpus yellow; gena silvery white tomentose; first antennal flagellomere with pale brown spot surrounding base of arista (paratype) or without in holotype, arista pale brown. Mesoscutum and scutellum shining black, mediotergite dark brown; thoracic pleura shining, entirely yellow, notopleuron brown-tinged before base of anterior npl. Wing hyaline, faintly in-

fuscated apically beyond middle level between r-m and m-cu, paler on cell m₁; calypter yellow, with margin pale brown and fringe yellow; halter yellow. Legs entirely yellow. Abdomen shining black except for T1 yellowish brown. Bristles black.

Frons almost as wide as or slightly wider than eye, slightly diverging ventrally; parafrontalia not or only ventral part slightly projecting above eye in profile; first or about 1/3 length of second or; eye 1.4 times as high as wide; face flat; gena 1/7 as high as eye; vi longer than or; pm three, pg slightly shorter than second or. First anten-



Figs. 22–25. Male genitalia of *Craspedochaeta vietnamensis* sp. nov. (22, 23; paratype) and *C. xanthopleura* sp. nov. (24, 25; holotype).

nal flagellomere orbicular, shorter than broad, microscopically pilose; arista slightly longer than eye height, pubescent.

Mesoscutum with 0 + 3 dc, first dc about thrice as long as acr, ten rows of acr before level of first dc but four to six sparse rows behind level of second dc, prsc about 1/2 length of third dc; scutellum with two lsc. Wing 2.1 (holotype) – 2.4 mm long, three costal sections in proportion of 42 – 47 : 10 : 6, r-m beyond middle level of cell dm (15 : 10), M_1 ratio 3.5 – 4.0, ultimate section of CuA_1 about 1/2 length of penultimate.

Epanthrium sparsely setose; surstylus subtriangular, nearly 1/2 as high as epanthrium, without apical spinules; cerci separated distally, about 2/3 as high as epanthrium. Hypandrium of normal form; pregonite membranous, postgonite with one basal seta. Phallapodeme 60 μ m long; basiphallus 130 μ m long, mesophallus with weakly chitinized sclerites, left sclerite 430 μ m long, distiphallus 360 μ m long, globular, surrounded by weakly sclerotized ventral band at base and tubular distally. Ejaculatory apodeme clavate, 200 μ m long.

Body length 2.3 (holotype) – 2.8 mm.

Female. Unknown.

Distribution. Malaysia (Peninsular, Sabah).

Remarks. This species is easily distinguished from its congeners by the entirely yellow thoracic pleura and other characters stated in the key.

Etymology. The specific name refers to the yellow pleura (Greek *xanthos* + *pleura*).

Acknowledgements

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