

The Rhagionidae of China (Diptera)

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Abstract

The Chinese Rhagionidae is revised. It contains 9 genera and 82 species of which 20 are described in this paper as new to science.

Key words: Taxonomy, Rhagionidae, China, 9 genera and 82 species, 20 new species.

Introduction

The principal aim of this paper is to introduce in English the Chinese Rhagionidae most of which were described by C.YANG & D.YANG (1989, 1990a, 1990b, 1991, 1992, 1993a, 1993b, 1993c) and D.YANG & C.YANG (1989, 1991, 1992) in Chinese language. We have recognized 9 Chinese genera: *Arthroceras*, *Chrysopilus*, *Desmomyia*, *Litoleptis*, *Ptiolina*, "*Spatulina*", *Symphoromyia*, *Rhagina*, and *Rhagio*. Here, 20 species are added to the fauna of China as new to science. It is certain that many undescribed species wait discovery.

One of the most important specific characters in Rhagionidae is colouration of various parts of the body, but the colouration tends to change from yellow to black when the specimen had gotten a wetting before killing, for example. It must be noted that checking original colouration is necessary, when the material in good condition is gained in some species described by us.

The abdomen not macerated in KOH solution is illustrated in many species. This roughly shows the relative abdominal width or length which may vary with species, besides the presence or absent of spots.

The type specimens of Rhagionidae described by us or some of us in this paper or in the past are deposited in China Agricultural University. Some paratypes (2, 1) of *Desmomyia sinensis* D.YANG et C.YANG will be preserved in Kagoshima University, Kagoshima.

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Family Rhagionidae

Diagnosis. Male eyes usually contiguous, female eyes widely separated; male facets usually larger dorsally. Clypeus strongly convex. Antenna variable in shape. Proboscis well developed and usually fleshy. Palpus 1- or 2- segmented. Wing: vein C continuing around whole wing margin; Rs arising well before base of discal cell; discal cell sometimes absent; R5 ending near or beyond wing apex; anal cell open or closed. Male genitalia: Tergite 10 and sternite 9 present or absent according to genus; ejaculatory apodeme well developed; aedeagal complex covered with aedeagal sheath. Female cercus usually 2-segmented, with first segment (except in *Ptiolina* and *Spania*) expanded ventro-laterally.

Remarks. Nineteen genera and about 500 species have been described throughout the world. From China 9 genera and 82 species are now known. Of them 2 remain undescribed, and 1 is described but no name is given to it.

Literature: BEZZI (1907, 1912, 1926); BRUNETTI (1920); FREY (1954); JAMES (1965, 1968); JAMES & TURNER (1981); LEONARD (1930); LINDNER (1925); MAJER (1988); M ALLOCH (1932); NAGATOMI (1975, 1977, 1982, 1996); NAGATOMI & EVENHUIS (1989); OLDROYD (1969); PARAMONOV (1962); ROZKOŠNÝ & SPITZER (1965); STUCKENBERG (1965, 1980); SZILÁDY (1934a); VERRALL (1909); WOODLEY (1989).

Key to genera of Chinese Rhagionidae

1. Flagellum with an unsegmented style or thick prolongation or flagellum sword- or willow leaf-like; metapleuron bare; female cerci in *Ptiolina* and *Spania* widely separated from each other, with segment 1 not dilated (it is not yet studied in *Litoleptis*) Spaniinae 2
- Flagellum with a slender arista or, flagellum subulate and annulated; metapleuron haired; female cerci contiguous with each other, with segment 1 dilated outward Rhagioninae 4
- 2(1). Discal cell present; tibial spurs 0–2–0 3
- Discal cell absent; tibial spurs 0–0–0 *Litoleptis*
- 3(2). Clypeus extending to antennae or mid-upper face flat; upper eye margin almost straight; mid tibial spurs short and inconspicuous; palpus usually shorter than face *Ptiolina*
- Mid-upper face (surrounded by parafacials and clypeus) deeply sunken; occiput above neck strongly concave and upper eye margin Y-shaped; mid-tibial spurs long and conspicuous; palpus long and extending to antennae; [based on 1 of *sinensis*] "*Spatulina*"
- 4(1). Flagellum subconical 5
- Flagellum kidney-shaped *Symphoromyia*
- 5(4). Hairs on metapleuron present on posterior part as well as anterior part; tibial spurs

- 0-2-1 6
- Hairs on metapleuron present only on anterior part; tibial spurs 0-2-2 7
- 6(5). Flagellum with a long unsegmented arista *Chrysopilus*
- Flagellum subulate and annulated and usually 7-8 (sometimes 5-6) segmented
Arthroceras
- 7(5). Vein R2 + 3 not sinuate; hind femur usually without apico-ventral hump 8
- Vein R2 + 3 strongly sinuate; hind femur usually with distinct apico-ventral hump
Rhagina
- 8(7). Parafacial especially in male swollen; scape much longer than pedicel
..... *Desmomyia*
- Parafacial not swollen; scape and pedicel subequal in size *Rhagio*

Subfamily RHAGIONINAE

Genus *Arthroceras* WILLISTON

Arthroceras WILLISTON, 1886, Ent. Amer., 2: 107. Type species: *Arthroceras pollinosum* WILLISTON, 1886, from N. America (by designation of COQUILLET, 1910).

Ussuriella PARAMONOV, 1929, Trav. Mus. Zool. Kieff, 7: 281. Type species; *Ussuriella gadi* PARAMONOV, 1929 from Ussuri (by monotypy).

Pseudocoenomyia ÔUCHI, 1943, Shanghai Shizenkagaku Kenkyusho Iho, 13: 493. Type species: *Pseudocoenomyia sinensis* ÔUCHI, 1943 from E. China (by original designation).

Only 1 species has been recorded from China. For diagnosis of *Arthroceras*, see Nagatomi (1982).

Literature: NAGATOMI (1966); ÔUCHI (1943); WEBB (1987).

Arthroceras sinense (ÔUCHI)

Pseudocoenomyia sinense ÔUCHI, 1943, Shanghai Shizenkagaku Kenkyusho Iho, 13(6): 493.

An abridged translation of the original description (in Japanese) of this species was given by NAGATOMI (1966).

Distribution. China (Zhejiang).

Genus *Chrysopilus* MACQUART

Chrysopilus MACQUART, 1826, Mem. Soc. Sci. Agric. Lille, 1825: 403. Type species:

Rhagio diadema FABRICIUS, 1775 (from Europe) = *Chrysopilus aureus* (MEIGEN, 1804) (by designation of WESTWOOD, 1840).

Diagnosis. Body often with some golden yellow or white hairs. Male eyes contiguous or rarely very narrowly separated, with larger upper facets. Width of female frons just above antennae wider or narrower than one eye according to species. Parafacial rather wide and bare, sometimes with some hairs. Clypeus usually ending before antennae. Antenna with a long arista. Metapleuron haired on anterior part as well as posterior part. Tibial spurs 0–2 –1. Wing: Rs arising near humeral crossvein; R2 + 3 distinctly curved and close to R1; anal cell usually petiolate. Male genitalia: Gonocoxites fused on ventero-basal portion; sternite 9 absent; tergite 10 present.

Remarks. This genus is distributed worldwide, and previously contained about 300 known species. Thirty-eight species are known from China now.

Literature: HARDY (1949); NAGATOMI (1968, 1978, 1986c); NAGATOMI & KANMIYA (1968); STUCKENBERG (1965); C.YANG & D.YANG (1989, 1990a, 1990b, 1991, 1992, 1993a, 1993b); D.YANG & C.YANG (1989, 1991).

Key to species of Chinese *Chrysopilus*

[except for *C. ferruginosus* (WIEDEMANN) widely distributed in the Oriental region, Moluccas and New Guinea]

1. Pleuron yellow; it is dark yellow in *trimaculatus* and largely brown in *hubeiensis* but in these species, wing below stigma with a large darker area whose boundary is indistinct, however 2
 - Pleuron dark brown to black or largely so; wing not as in *trimaculatus* and *hubeiensis* 11
- 2(1). Apical part of wing distad from the line between stigma and base of vein M3 darker or wing with a transverse darker band from stigma to base of vein M3, or wing with a darker band near apex (as well as darker spot below stigma) 3
 - Wing not as above 7
- 3(2). Wing not as below 4
 - Wing with a darker band near apex (which is pale) (besides a darker spot below stigma) (see Nagatomi, 1986: figs. 10–13); Taiwan and Japan (Okinawa I. and Amami Ôshima) *poecilopterus*
- 4(3). Wing with a darker band from stigma to base of vein M3 (apex of wing pale or 1st submarginal cell with a large paler area) 5
 - Apical part of wing distad from the line between stigma and base of M3 darker 6
- 5(4). Abdominal tergites 2–4 with basal black wide border; abdominal venter (except posterior border and sternites 1–2) black; mesonotum and scutellum largely dark brown to black and covered with golden yellow recumbent hairs; [unknown]; South China..... *lucimaculatus*
 - Abdominal tergites 3–7 with basal black spots which are more or less divided

- medially on tergites 3–5; abdominal venter yellow; mesonotum and scutellum dark yellow [the hairs are mostly rubbed off but apparently chiefly black]; [unknown]: North China *nigrimaculatus*
- 6(4). Abdominal tergite 4 (usually except posterior margin) yellow; frons without purple luster; South China *grandis*
(which belongs to *ferruginosus* complex or is possibly a synonym of *ferruginosus*)
- Abdominal tergite 4 entirely black (as well as sternite 4); frons with a purple luster in certain lights; [unknown]; South China *ningminganus*
- 7(2). Wing below stigma with a large darker area whose boundary is indistinct; frons (at least in *trimaculatus*) wider than one eye 8
- Wing (except stigma) nearly hyaline or evenly with a brown tinge; frons narrower than one eye 9
- 8(7). Abdomen yellow to dark yellow, but base of tergites 2–6 or 4–6 darker and sternites 4–6 (except posterior border) and segments 7–8 may be also darker; abdomen largely dark yellow or dark brown; arista roughly 2.5 times as long as rest of antenna; North China *trimaculatus*
- Apical half of abdomen black; arista roughly 3 times as long as rest of antenna; [unknown]; South China *hubeiensis*
- 9(7). Palpal segment 2 deeply black 10
- Palpus almost wholly yellow; Taiwan and Japan *fenestratus*
- 10(9). Abdomen (often except for segments 1–2 or 1–3) dark brown to black; abdominal dorsum densely covered with golden yellow short recumbent hairs; South China *basiflavus*
- Abdomen yellow (apical margin of tergites 3–7 or 4–7 narrowly black); golden yellow short recumbent hairs on abdominal dorsum few and practically absent; Taiwan *nigripalpis*
- 11(1). Mesonotum, scutellum and abdomen sooty (they may possibly be so in *pingxianganus* which falls in both couplets 12 and 19) [the examined specimen (1) of *pingxianganus* was somewhat moistened before killing] 12
- Mesonotum, scutellum and abdomen not sooty 19
- 12(11). Femur wholly yellow 13
- Femur wholly dark brown to black or, base of fore and mid femora dark brown 16
- 13(12). Male eyes broadly contiguous; frons (except just above antenna) wholly shining black 14
- Male eyes narrowly separated or nearly contiguous portion of eyes short; frons pale gray pollinose or with a shining black patch which is separated from ocellar triangle 15
- 14(13). Hairs on abdominal venter black; Taiwan and Japan *ditissimis*
- Hairs on abdominal venter yellow; South China *nagatomii*
- 15(13). Hairs on abdominal venter sparse and not similar to those on dorsum; frons

- pale gray pollinose; Taiwan and Japan (Yaeyama Is.) *griseipennis*
- Hairs on abdominal venter dense and similar to those on dorsum; frons with a shining black patch which is separated from ocellar triangle (after Szilády, 1934a: fig. 4a); North China and Siberia *dives*
- 16(12). Fore and mid femora (except base or basal portion), and hind femur (except apex or base and apex) yellow; halter wholly yellow or stem and base of knob yellow 17
- All femora wholly dark brown to black; halter (sometimes except base of stem) dark brown to black 18
- 17(16). Hairs on occiput and gena black; halter wholly yellow; South China *yunnanensis*
- Hairs on occiput and gena pale; apical part of halter knob black; [unknown]: South China; (see couplet 37) *pingxianganus*
- 18(16). Recumbent hairs on abdomen white; hairs on palpus and parafacial pale; hairs on gena and fore coxa longer and denser; North China *choui*
- Recumbent hairs on abdomen golden yellow; hairs on palpus and parafacial black; hairs on gena and fore coxa shorter and sparse; North China *lii* sp. nov.
- 19(11). Wing strongly dark brown and with or without numerous pale spots 20
- Wing hyaline or nearly so 21
- 20(19). Wing with numerous pale spots (see NAGATOMI, 1986c: fig. 17); Taiwan *trypetopterus*
- Wing without numerous paler spots but with some paler parts on posterior area; [unknown]; South China, Taiwan, India, and Philippines *luctuosus*
- 21(19). Wing not as below 22
- Apical part of wing distad from the line between stigma and base of vein M3 darker; [unknown]; South China *ruiliensis*
- 22(21). Coxa yellow (it is partly dark brown in *neimongolicus* which falls in both couplets 23 and 25) 23
- Coxa dark brown to black 25
- 23(22). Body larger (wing length 4.8 mm or 5.5–5.7 mm); stigma not reaching to wing margin; wing with narrow darker part at or near apex; coxa wholly yellow; frons narrower than one eye 24
- Body smaller (wing length 3.9–4.2 mm); stigma reaching to wing margin; wing (except stigma) wholly hyaline; coxa either largely dark brown or largely yellow; frons wider than one eye; North China; see couplet 39 *neimongolicus*
- 24(23). Wing without darker band near apex; palpus dark brown to black; flagellum narrower than pedicel; South China *nigrimarginatus*
- Wing with darker band near apex (apex of wing pale); palpus yellow but its apex

- deeply black; flagellum not narrower than pedicel; [unknown]; South China
xanthocromus
- 25(22). Hind femur wholly or largely dark brown to black (it is so by half in
apicimaculatus, *mojiangensis* and *xizangensis* which fall in both couplets 26 and
34) 26
- Hind femur wholly or largely yellow (it is often dark yellow or brown in
guangxiensis, *sauteri*, and *pingquanus* which fall in both couplets 26 and 34)
..... 34
- 26(25). Hind femur yellow at basal portion (in *apicimaculatus* and *xizangensis*) or on
dorsal surface (in *mojiangensis*) 27
- Hind femur wholly dark brown to black 29
- 27(26). Abdominal dorsum chiefly consisting of longer erect hairs which are chiefly black
.....28
- Abdominal dorsum chiefly () or wholly () consisting of shorter recumbent
golden yellow hairs; frons wider than one eye; North China; (see couplet 35)
..... *xizangensis*
- 28(27). Hairs on gena pale [palpus broken off]; abdominal tergites 1–3 (except base of
tergite 2 at two rows of sensory pits) black; apical portion of mid and hind femora
dark brown; [unknown]; South China; (see also couplet 36)
..... *apicimaculatus*
- Hairs on gena and palpus black; abdominal tergites 1–3 (except posterior part)
yellow; ventral surface of femur dark brown; [unknown]; South China; (see
also couplet 36) *mojiangensis*
- 29(26). Body smaller (wing length 4.3 to 4.7 mm); tibia and tarsomere 1 either dark
brown to black (in *gansuensis*) or brown and paler than femur (in *parvus*), and
in the latter case flagellum distinctly longer than wide 30
- Body larger (wing length 5.5 to 8.3 mm); tibia and tarsomere 1 (often except
apical portion) yellow to dark yellow; flagellum always about as long as wide
..... 31
- 30(29). Hairs on gena and palpus black; flagellum longer than wide and longer than
pedicel; palpus more slender and longer than clypeus; tibia and tarsomere 1 brown
and paler than femur; [unknown]; South China.....
..... *parvus* sp. nov.
- Hairs on gena and palpus pale; flagellum about as long as wide and pedicel;
palpus more robust and not longer than clypeus; tibia and tarsomere 1 dark brown
to black and concolorous with femur; [unknown]; North China
..... *gansuensis*
- 31(29). Stigma reaching to wing margin and at base acute or gradually evanescent; palpus
more robust 32
- Stigma not reaching to wing margin and at base truncate; palpus more slender
..... 33

- 32(31). Palpus longer than clypeus; hairs on palpus about as long as (in) and somewhat shorter than (in) antenna (minus arista); parafacial bare; knob of halter wholly dark brown to black; North China
 *obscuralatus* (= *ningxianus*)
- Palpus not extending to upper margin of clypeus; hairs on palpus much shorter than antenna (minus arista); parafacial abundantly haired; base of halter knob yellow; North China; (see couplet 41) *pingquanus* sp. nov.
- 33(31). Abdominal tergite 1 with chiefly black erect hairs; [see couplet 42]
guangxiensis [unknown] (South China) and *sauteri* (Taiwan and Japan) (the former is possibly a synonym of the latter)
- Abdominal tergite 1 without black erect hairs but with white recumbent hairs which are present on mesonotum, scutellum, anterolateral part of tergite 2 and anterior border of tergites 3–4; [unknown]; South China; (see couplet 42)
pallipilosus
- 34(25). Hind femur by half yellow 35
- Hind femur wholly or largely yellow 37
- 35(34). See upper branch of couplet 27 36
- See lower branch of couplet 27 *xizangensis*
- 36(35). See upper branch of couplet 28 *apicimaculatus*
- See lower branch of couplet 28 *mojiangensis*
- 37(34). Fore and mid femora wholly yellow; hairs on palpus pale (except in *flaviscutellus* and often *shaanxiensis*) 38
- Base of fore and mid femora dark brown; hairs on palpus black; [unknown]; South China; (see couplet 17) *pingxianganus*
- 38(37). Hairs on upper occiput or on ocellar tubercle pale (often black in *shaanxiensis* which falls in couplet 42 but *shaanxiensis* may be easily separated from *guangxiensis* by having abdominal tergite 1 with golden yellow recumbent hairs) 39
- Hairs on upper occiput or on ocellar tubercle black 40
- 39(38). Body smaller (wing length 3.9–4.2 mm); parafacial nearly flat; hind femur and tibia more stout (hind femur 7.3–7.5 times and hind femur 5.4 times as long as wide); North China; (see couplet 23)..... *neimongolicus*
- Body larger (wing length 5.2 mm); parafacial with steep inclination; hind femur and tibia more slender (hind femur 8.0 times as long as wide); North China *shaanxiensis*
- 40(38). Pedicel dark brown to black 41
- Pedicel yellow to dark yellow 43
- 41(40). Pterostigma not reaching to wing margin and at base truncate 42
- Pterostigma elongate and reaching to wing margin and at base acute or gradually evanescent; North China; (see couplet 32) *pingquanus* sp. nov.
- 42(41). See upper branch of couplet 33.....
 *guangxiensis* (South China) and *sauteri* (Taiwan and Japan)

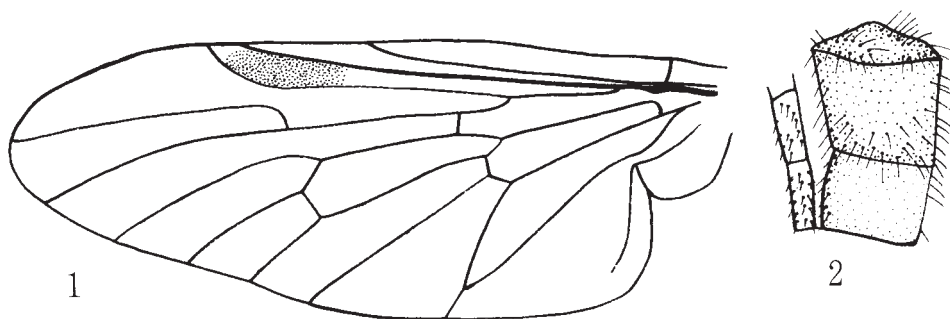
- See lower branch of couplet 33 *pallipilosus*
- 43(40). Antennal flagellum as wide as pedicel; hairs on palpus pale; parafacial less than 1/2 as wide as clypeus; [unknown]; North China *huashanus*
- Antennal flagellum distinctly wider than pedicel; hairs on palpus chiefly black; parafacial over 1/2 as wide as clypeus; [unknown]; South China *flaviscutellus*

Chrysopilus apicimaculatus C.YANG et D.YANG
(Figs.1-9)

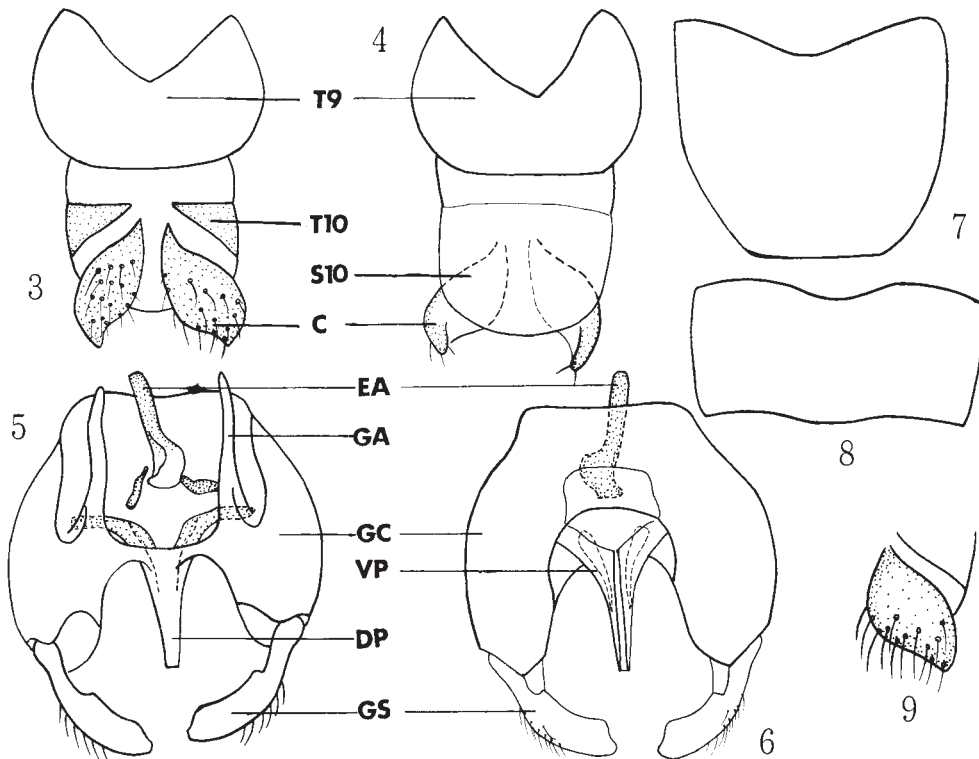
Chrysopilus apicimaculatus C.YANG et D.YANG, 1991, Acta Hubei Univ. (Nat. Sci.), 13: 274. Type locality: Shennongjia, Hubei.

Male. Face, clypeus, thorax, coxa, halter and abdomen (except base of tergite 2) dark brown to black. Pterostigma truncate at apex and not reaching to wing margin. [Flagellum and palpus broken off].

Male. Body length 6.0 mm, wing length 7.0 mm. Head dark brown to black, and pale gray pollinose. Hairs on head pale; upper margin of occiput with some black hairs; clypeus and parafacial with pale hairs which are sparse on clypeus. Antenna [flagellum and arista broken off] brownish yellow, scape pale haired ventrally, pedicel black haired; scape and pedicel not longer than wide. Proboscis brownish yellow with pale hairs; [palpus broken off]. Head (excluding protruded clypeus) 1.5 times higher than long; contiguous portion of eye 1.2 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus, 1.9 times width of frons just above antennae, and 1.3 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.6 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 5.4 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.3 times as wide as parafacial, and 0.6 times as wide as



Figs. 1-2. *Chrysopilus apicimaculatus* C.YANG et D.YANG, male. 1, Wing; 2, basal portion of abdomen, lateral view.



Figs. 3–9. *Chrysopilus apicimaculatus* C.YANG et D.YANG, male. 3, Tergites 9–10 and cerci, dorsal view; 4, tergite 9, sternite 10 and cerci, ventral view; 5, genital capsule, dorsal view; 6, genital capsule, ventral view; 7, sternite 8; 8, tergite 8; 9, cercus, dorso-lateral view. C, cercus; DP, dorsal plate; EA, ejaculatory apodeme; GA, gonocoxal apodeme; GC, gonocoxite; GS, gonostylus; S10, sternite 10; T9, tergite 9; T10, tergite 10; VP, ventral plate.

face at upper margin of clypeus.

Thorax black, and pale gray pollinose; mesonotum and scutellum grayish brown pollinose with black and golden yellow hairs; pleuron with pale hairs. Legs yellow, coxa black and concolorous with pleuron; trochanter brownish yellow; apical portion of mid and hind femora brown; tibia brownish yellow; tarsus brown to dark brown except tarsomere 1 paler. Hairs on legs pale; coxa with long pale hairs; femur with chiefly pale hairs. Wing hyaline; stigma dark brown, long, not reaching to wing margin; basal section of M2 as long as crossvein m; anal cell closed before wing margin. Halter dark yellow, knob dark brown.

Abdominal dorsum black with black hairs but tergite 1 (except sides) with pale hairs; venter yellow with pale hairs. Male genitalia (Figs. 3–9): Tergite 8 much wider than long, with a weak mid-anterior incision; sternite 8 somewhat narrow apically, with a V-shaped anterior incision; tergite 9 wider than long, with a deep V-shaped anterior incision; sternite 10 quadrate, with widely rounded apex; cercus curved inwards apically, with oblique inner posterior margin and with somewhat acute apex; gonocoxites with anterior margin nearly straight on fused ventral portion; gonostylus elongate, with apical margin oblique and

weakly concave; gonocoxal apodemes nearly parallel; ejaculatory apodeme thick and curved basally.

Female. Unknown.

Specimen examined. Holotype , Shennongjia (1,700 m), Hubei, 29. vi. 1984, Chi-kun YANG.

Distribution. China (Hubei).

Remarks. This species may be separated from *mojiangensis* as shown in the key (couplet 28).

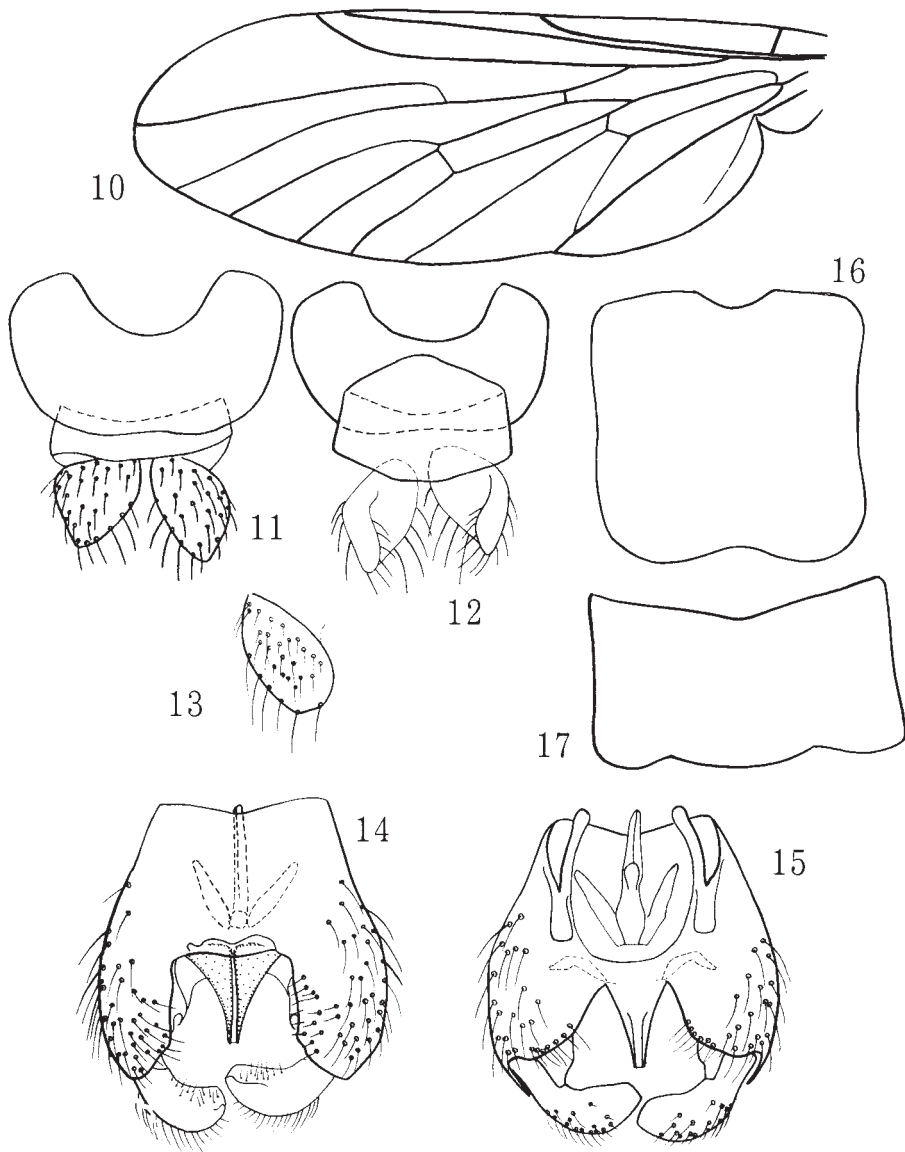
Chrysopilus basiflavus C.YANG et D.YANG
(Figs.10–17)

Chrysopilus basiflavus C.YANG et D.YANG, 1992, Acta Ent. Sin., 35: 355. Type locality: Longzhou, Guangxi.

Male and female. Palpus (except base) deeply black. Pleuron, coxa, femur and halter yellow. Mesonotum, scutellum and abdominal dorsum short golden yellow recumbent haired. Pterostigma indistinct. Mid-upper face short. Arista thin and long. frons wider toward antennae and at narrowest point not over 1/2 as wide as one eye.

Male. Body length 6.9–8.3 mm, wing length 7.1–7.6 mm. Head black, and pale gray pollinose; clypeus dark yellow. Hairs on head pale; frons, parafacial (except lower portion) and clypeus bare. Antenna black, arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. From inner view, pedicel longer than scape, and flagellum not wider than pedicel; arista long and thin. Proboscis yellow with pale hairs; palpus black except base yellow, with black hairs. Head (excluding protruded clypeus) 1.4–1.5 times higher than long; contiguous portion of eye 1.6–2.0 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1–1.2 times distance from antennae to median ocellus, 2.3–2.5 times width of frons just above antennae, and 1.2–1.4 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.5–0.6 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view, and 4.6–5.0 times width of frons at median ocellus; distance from proboscis to antennae 0.6–0.7 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long, 2.0–2.2 times as wide as parafacial, and 0.6–0.7 times as wide as face at upper margin of clypeus. [N = 5].

Thorax yellow, and pale gray pollinose; mesonotum and scutellum brownish yellow to brownish with golden yellow recumbent and black hairs; hairs on pleuron yellow. Legs yellow, tibia brownish yellow and tarsus brown to dark brown. Hairs on legs black; coxa with long yellow hairs; fore and mid femora with chiefly pale hairs, hind femur with chiefly black hairs. Wing tinged with yellow on anterior field; stigma indistinct; veins brown; anal cell closed before wing maring; basal section of M2 very short, 0.1–0.2 times as long as crossvein m. Halter yellow, knob somewhat darker.



Figs. 10–17. *Chrysopilus basiflavus* C.YANG et D.YANG, male. 10, Wing; 11, tergites 9–10 and cerci, dorsal view; 12, tergite 9, sternite 10 and cerci, ventral view; 13, cercus, dorso-lateral view; 14, genital capsule, ventral view; 15, genital capsule, dorsal view; 16, sternite 8; 17, tergite 8.

Abdomen brownish black, and pale gray pollinose; tergites 1–2 and sternites 1–2 dark yellow to brownish yellow. Hairs on abdomen black, tergites 1–7 also with many golden yellow recumbent hairs. Male genitalia (Figs.11–17): Tergite 8 distinctly wider than long, with a weak anterior incision; sternite 8 quadrate, with a weak mid-apical incision; tergite 9 distinctly wider than long, with a deep anterior incision; sternite 10 with posterior margin gently convex; cercus somewhat acute apically; gonocoxites with a weak anterior incision

on fused ventral portion; gonostylus curved and obtuse apically; gonocoxal apodemes weakly convergent apically; ejaculatory apodeme somewhat thick basally.

Female. Body length 6.9–7.2 mm, wing length 7.2–7.3 mm. Similar to male except as follows: Frons with some short black hairs and upper occiput with stout black hairs. Head (excluding protruded clypeus) 1.6–1.7 times higher than long; width of one eye on a mid line in direct frontal view 1.2–1.3 times distance from antennae to median ocellus, 1.6 times width of frons just above antennae, and 1.0–1.1 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.7 times distance from antennae to median ocellus, 0.6–0.7 times width of face at lowest point in direct frontal view, and 1.2–1.3 times width of frons at median ocellus; distance from proboscis to antennae 1.0 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 3.0 times as wide as parafacial, and 0.7–0.8 times as wide as face at upper margin of clypeus. [N = 2].

Specimens examined. Holotype ♂, paratype 1 ♀, Longzhou, Guangxi, 19. v. 1982, Chi-kun YANG. Paratypes; 2 ♂, 1 ♀, Jinxiu, Guangxi, 12–14. vi. 1982, Chi-kun YANG; 1 ♂, Jinxiu (720 m), Guangxi, 10. vi. 1982, Fasheng LI; 2 ♂, Jinxiu, Guangxi, 15. vi. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

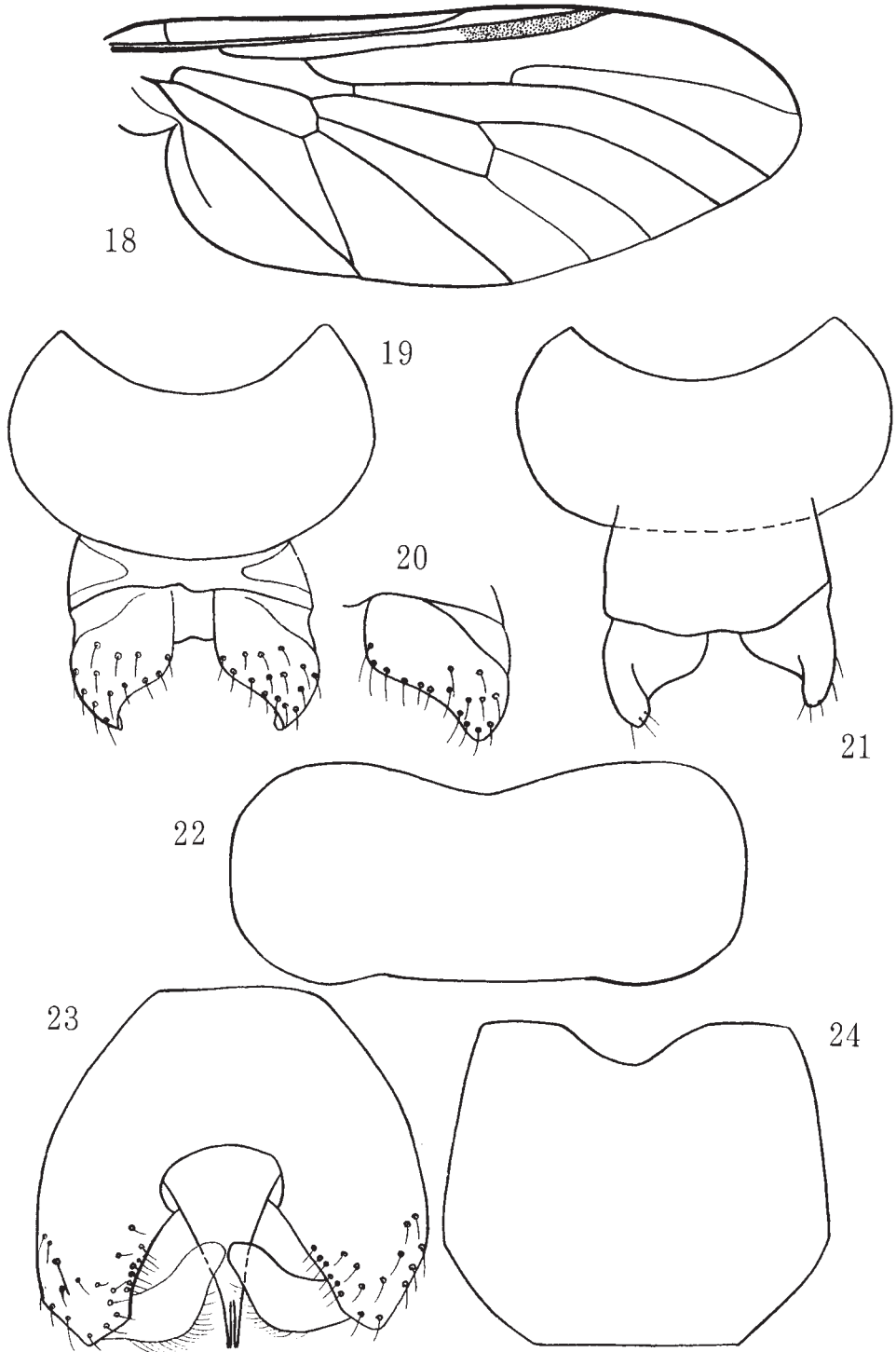
Remarks. This species may be distinguished from *nigripalpis* as shown in the key (couplet 10).

Chrysopilus choui D.YANG et C.YANG
(Figs. 18–24)

Chrysopilus choui D.YANG et C.YANG, 1989, Entomotaxon., 11: 243. Type locality: Zhouzhi, Shaanxi.

Male and female. Mesonotum, scutellum and abdomen sooty black. Coxa and femur dark brown to black. Abdominal tergites 1–4 each with white recumbent hairs at posterior part. Frons much wider than one eye.

Male. Body length 5.7–7.5 mm, wing length 6.1–6.3 mm. Head black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle black haired; clypeus and parafacial bare except for the latter black haired on lower part. Antenna dark brown; scape bare, pedicel black haired, flagellum pale haired. Pedicel and flagellum subequal in size. Proboscis and palpus dark brown with black hairs. Head (excluding protruded clypeus) 1.4–1.5 times higher than long; contiguous portion of eye 1.5–2.0 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 2.0–2.1 times width of frons just above antennae, and 1.0–1.1 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.5 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view, and 4.6–4.7 times width of frons at median ocellus; distance from proboscis to antennae 0.7 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long,



Figs. 18–24. *Chrysopilus choui* D.YANG et C.YANG, male. 18, Wing; 19, tergites 9–10 and cerci, dorsal view; 20, cercus, dorso-ventral view; 21, tergite 9, sternite 10 and cerci, ventral view; 22, tergite 8; 23, genital capsule, ventral view; 24, sternite 8.

1.5–1.6 times as wide as parafacial, and 0.5 times as wide as face at upper margin of clypeus. [N = 2].

Thorax brown to brownish black, and pale gray pollinose; mesonotum and scutellum velvety black. Hairs on thorax pale; mesonotum with golden yellow recumbent hairs on mid-lateral and posterior parts, and with some black hairs on anterolateral margin; scutellum wholly black haired. Legs brownish black, but tibia brownish yellow; tarsus brown to dark brown except tarsomere 1 somewhat pale. Hairs on legs chiefly black, but coxa chiefly pale haired and dorsal surface of femur pale scale-like haired. Wing hyaline; stigma very elongate, brownish yellow, reaching to wing margin; veins brown to dark brown; basal section of M2 1.0–1.1 times as long as crossvein m; anal cell closed before wing margin. Halter brownish black with basal portion brownish yellow.

Abdomen brown to dark brown and pale gray pollinose; dorsum more or less velvety black. Hairs on abdomen black and pale, but tergites 1–4 with white or golden yellow recumbent hair tufts. Male genitalia (Figs.19–24): Tergite 8 much wider than long, with weak mid-anterior incision; sternite 8 nearly quadrate, somewhat narrow apically, with a mid-anterior incision nearly V-shaped; tergite 9 distinctly wider than long, somewhat rounded posteriorly, with curved anterior incision; cercus with oblique posterior margin and somewhat narrow apically; gonocoxites with anterior margin straight on fused ventral portion; gonostylus distinctly curved and rounded apically; gonocoxal apodemes somewhat convergent apically; ejaculatory apodeme somewhat flattened.

Female. Body length 6.3 mm; wing length 6.6 mm. Similar to male but different as follows: Eyes widely separated. Frons brown pollinose except for narrow anterior margin, with some black hairs. Upper occiput with stout black hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 0.7 times width of frons just above antennae, and 0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.2 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.8 times width of frons at median ocellus; distance from proboscis to antennae 1.1 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.8 times as wide as parafacial, and 0.5 times as wide as face at upper margin of clypeus. Recumbent golden hairs on mesonotum and abdominal tergites 1–4 white. Wing: basal section of M2 as long as crossvein m (as in).

Specimens examined. Holotype , Zhouzhi, Shaanxi, 16. viii. 1962, Fasheng LI. Paratypes: 1 , Kangxiang (1,200 m), Gansu, 31. vii. 1980, Chi-kun YANG; 1 , Chang'an, Shaanxi, 26. vi. 1956, Chi-kun YANG; 1 , Taibai Mountain, Shaanxi, 27. vii. 1956, Io C HOU.

Distribution. China (Shaanxi and Gansu).

Remarks. This species may be separated from *lii* as shown in the key (couplet 18).

Chrysopilus ditissimis BEZZI

Chrysopilus ditissimis BEZZI 1912, Ann. Mus. Nat. Hung., 10: 451. Type locality: Toyenmongai or Kosempo, Taiwan.

Chrysopilus apyros SÉGUY, 1948, Notes Ent. Chin., 12: 154. Type locality: Japan (Honshu: Nikko).

For redescription of this species, see NAGATOMI (1968) and NAGATOMI & KANMIYA (1968).

Distribution. China (Taiwan), Japan.

Chrysopilus dives LOEW

Chrysopilus dives LOEW, 1871, Besch. europ. Dipt., 2: 62. Type locality: "Kultuk"... "Bajkal".

For taxonomic notes on this species, see SZILÁDY (1934a), NAGATOMI (1968, 1986c) and NAGATOMI & KANMIYA (1968).

Distribution. North China, Siberia.

Chrysopilus fenestratus BEZZI

Chrysopilus fenestratus BEZZI, 1912, Ann. Mus. Nat. Hung., 10: 448. Type locality: Toyenmongai or Fuhosho, Taiwan.

For redescription of this species, see NAGATOMI (1968, 1978) and NAGATOMI & KANMIYA (1968).

Distribution. China (Taiwan), Japan.

Chrysopilus ferruginosus (WIEDEMANN)

Leptis ferruginosus WIEDEMANN, 1819, Zool. Mag., 1(3): 4. Type locality: Java.

Distribution. China (Taiwan). This species is widely distributed in the Oriental region.

Remarks. A *Chrysopilus ferruginosus* complex may be present, for which a revision is needed. A restudy of this species from Taiwan is not made here.

Chrysopilus flaviscutellus C.YANG et D.YANG
(Fig. 25)

Chrysopilus flaviscutellus C.YANG et D.YANG, 1989, J. Zhejiang Forest. Coll., 6: 290. Type

locality: Tianmushan Mountain, Zhejiang.

Female. Antennal flagellum distinctly wider than pedicel and rounded (except base). Frons much wider than one eye. Mid-upper face subequal in length to clypeus. Thorax, coxa and abdomen dark brown. Femur and tibia yellow.

Female. Body length 7.7 mm, wing length 8.2 mm. Head dark brown to black, and grayish brown pollinose. Hairs on head black, but those on lower occiput and gena pale; parafacials and clypeus with some pale hairs. Antenna dark yellow, arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Flagellum wider and longer than pedicel, and rounded (except base). Arista stout and *c.* 2.1 times as long as rest of antenna. Proboscis dark yellow with pale and brownish hairs; palpus dark yellow with yellow and black hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 0.7 times width of frons just above antennae, and 0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.6 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.8 times width of frons at median ocellus; distance from proboscis to antennae 2.1 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.7 times as wide as parafacial, and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown, partly dark yellow, and grayish brown pollinose; mesonotum with three wide darker longitudinal spots; scutellum grayish dark yellow. Mesonotum and scutellum golden yellow haired; pleuron yellow haired. Legs yellow, but coxa darker and concolorous with pleuron; tarsus dark brown apically. Hairs on legs black; coxa with yellow hairs, femur with nearly wholly pale hairs. Wing nearly hyaline, tinged with grayish yellow on anterior field; stigma very elongate, yellow, reaching to wing margin; veins brownish yellow; R4 with a short basal appendage; basal section of M2 short, 0.4 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, but knob brownish.

Abdomen brown to dark brown, and grayish brown pollinose. Hairs on abdomen pale, but tergites 2–3 with some black hairs medially.

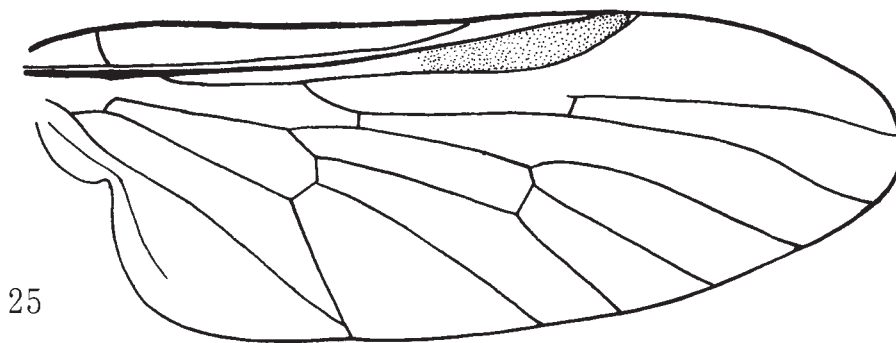


Fig. 25. *Chrysopilus flaviscutellus* C. YANG et D. YANG, female wing.

Male. Unknown.

Specimen examined. Holotype , Tianmushan Mountain, Zhejiang, 27. vi. 1957, Chikun YANG.

Distribution. China (Zhejiang).

Remarks. This species may be separated from *huashanus* as shown in the key (couplet 43).

Chrysopilus gansuensis D.YANG et C.YANG
(Figs. 26–32)

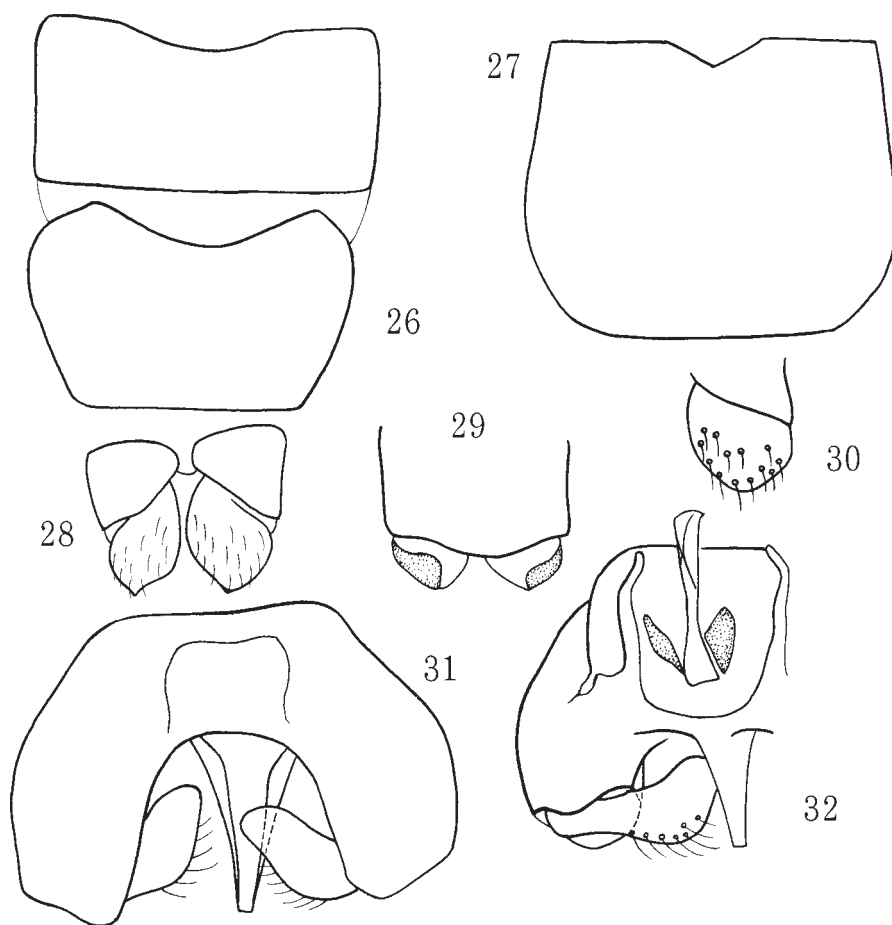
Chrysopilus gansuensis D.YANG et C.YANG, 1991, Acta Agric. Univ. Pekin., 17: 95. Type locality: Jone, Gansu.

Male. Body relatively small (wing length 4.7 mm). Antenna, palpus, thorax, legs and abdomen dark brown to black. Parafacial wide (over 1/2 as wide as clypeus) and nearly flat.

Male. Body length 4.7 mm, wing length 4.7 mm. Head black, and pale gray pollinose. Hairs on head wholly pale; upper face, parafacial and clypeus bare. Antenna black; scape bare, pedicel pale haired, flagellum and arista minutely pale pubescent. Flagellum not wider than pedicel which is longer than scape; arista stout and *c.* 2.1 times as long as rest of antenna. Proboscis brownish yellow with pale hairs; palpus brownish with pale hairs. Head (excluding protruded clypeus) 1.4 times higher than long; eyes very narrowly separated, their nearly contiguous portion 1.1 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus, 1.5 times width of frons just above antennae, and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.8 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 5.7 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus as wide as long, 1.7 times as wide as parafacial, and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose. Mesonotum and scutellum wholly with golden yellow hairs; pleuron with pale hairs. Legs dark brown to black, coxa darker and concolorous with pleuron; tibia brown, tarsus dark brown. Hairs on legs black; coxa with long pale hairs, femur nearly wholly pale haired. Wing hyaline; stigma brownish, long, not reaching to wing margin; veins brown to dark brown; basal section of M2 as long as crossvein m: anal cell closed just before wing margin. Halter dark brown with basal portion yellow.

Abdomen dark brown to black, and pale gray pollinose. Hairs on abdomen pale; dorsum with golden yellow hairs. Male genitalia (Figs. 26–32): Tergite 8 much wider than long, with a mid-anterior incision; sternite 8 nearly quadrate; tergite 9 wider than long, with a distinct anterior incision; sternite 10 nearly quadrate, with rounded apex; cercus somewhat



Figs. 26–32. *Chrysopilus gansuensis* D. YANG et C. YANG, male. 26, Tergites 8–9; 27, sternite 8; 28, tergite 10 and cerci, dorsal view; 29, sternite 10 and cerci, ventral view; 30, cercus, dorso-lateral view; 31, genital capsule, ventral view; 32, genital capsule, dorsal view.

acute apically in dorsal view; gonocoxites with a large membranous area on fused ventral portion, with anterior margin nearly straight on fused ventral portion; gonostylus distinctly curved and rounded apically; gonocoxal apodemes nearly parallel and somewhat curved inwards apically; ejaculatory apodeme somewhat thick basally and weakly flattened apically.

Female. Unknown.

Specimen examined. Holotype , Jone (2,900 m), Gansu, 16. viii. 1980, Chi-kun YANG.

Distribution. China (Gansu).

Remarks. This species () is similar to *neimongolicus* (,) by having the body smaller and parafacial wide and nearly flat, but may be separated from the latter by the

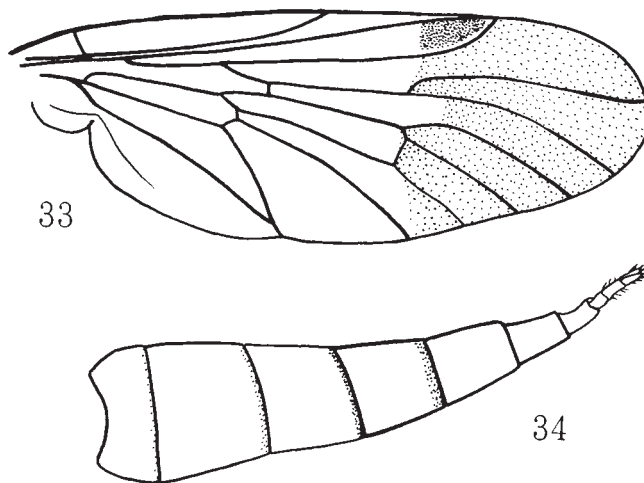
femur dark brown to black (not yellow). It may easily be separated from *parvus* as shown in the key (couplet 30).

Chrysopilus grandis C.YANG et D.YANG
(Figs. 33–41)

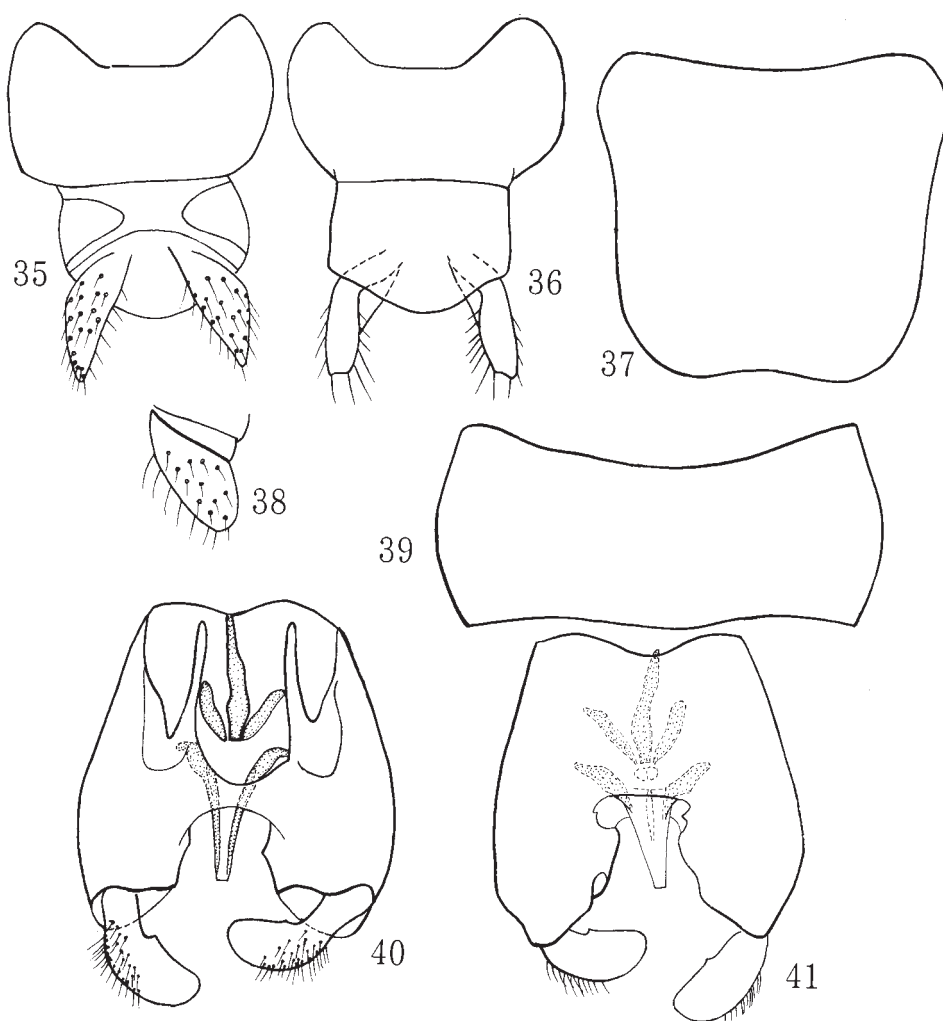
Chrysopilus grandis C.YANG et D.YANG, 1993b, Ent. J. E. China, 2: 3. Type locality: Longzhou, Guangxi.

Male and female. Apical part of wing (distad from the line between stigma and base of vein M3) darker. Clypeus, palpus, thorax and legs (except apical portion of tarsus) yellow. Mid-upper face short. frons at narrowest point much narrower than (but over 1/2 as wide as) one eye. palpus spatula-like.

Male. Body length 9.4–13 mm, wing length 9.0–11.5 mm. Head black, and pale gray pollinose; clypeus yellow. Hairs on head pale, but upper occiput and vertex with black hairs. Antenna brownish; scape bare, pedicel black haired, flagellum and arista white pubescent. Antenna relatively short; pedicel wider than long and wider than scape; flagellum wider than long and wider than pedicel; arista slender and roughly 4.3–4.5 times as long as rest of antenna. Proboscis and palpus yellow with yellow hairs. Head (excluding protruded clypeus) 1.5–1.6 times higher than long; contiguous portion of eye 2.1–2.2 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1–1.2 times distance from antennae to median ocellus, 2.3–2.6 times width of frons just above antennae, and 1.3–1.4 times width of face at lowest point in direct frontal view; width of frons just



Figs. 33–34. *Chrysopilus grandis* C. YANG et D. YANG, female. 33, Wing; 34, abdomen, dorsal view.



Figs. 35–41. *Chrysopilus grandis* C. YANG et D. YANG, male. 35, Tergites 9–10 and cerci, dorsal view; 36, tergite 9, sternite 10 and cerci, ventral view; 37, sternite 8; 38, cercus, dorso-lateral view; 39, tergite 8; 40, genital capsule, dorsal view; 41, genital capsule, ventral view.

above antenna 0.4–0.5 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view, and 4.3–5.5 times width of frons at median ocellus; distance from proboscis to antennae 0.5–0.6 times that from antennae to median ocellus; clypeus 0.7–0.8 times as wide as long, 2.3–2.4 times as wide as parafacial, and 0.7–0.8 times as wide as face at upper margin of clypeus; upper face (= space between clypeus and antennae) very short.

Thorax yellow, mesonotum and scutellum brownish yellow; mesonotum with one median longitudinal spot and two pairs of small lateral spots, which are indistinct and brownish. Mesonotum and scutellum with black and golden yellow hairs; pleuron with yellow hairs.

Legs yellow, but tibia brownish yellow, tarsus dark brown. Hairs on legs black; coxa with yellow hairs, fore and mid femora with some yellow hairs. Wing hyaline, tinged with yellowish particularly on anterior field; apical portion nearly wholly brownish; stigma short and somewhat broad, brown, not reaching to wing margin; basal section of M2 very short (0.1 times as long as crossvein m) or absent; anal cell closed before wing margin. Halter yellow.

Abdomen yellow, but apical margin of each tergite usually blackish; venter somewhat darker particularly on apical portion. Hairs on abdomen black. Male genitalia (Figs. 35–41): Tergite 8 much wider than long, with anterior margin weakly concave; sternite 8 large and nearly quadrate, with posterior margin weakly concave; tergite 9 distinctly wider than long, with a trapezoid basal incision; sternite 10 quadrate, with apex somewhat narrow and rounded; cercus elongate, somewhat acute apically in dorsal view; gonocoxites with a weak anterior incision on fused ventral portion; gonostylus rather short and obtuse apically; gonocoxal apodemes parallel; ejaculatory apodeme very elongate and thin apically.

Female. Body length 11.7 mm, wing length 9.4 mm. Similar to male, but different as follows: Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 1.4 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.8 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 1.1 times width of frons at median ocellus; distance from proboscis to antennae 0.9 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 4.0 times as wide as parafacial, and 0.8 times as wide as face at upper margin of clypeus. Palpus spatula-like and much larger than in . Wing: basal section of M2 0.2 times as long as crossvein m.

Specimens examined. Holotype , Longzhou, Guangxi, 19. v. 1982, Chi-kun YANG. Paratypes: 1 , Jinxiu, Guangxi, 15. vi. 1982, Chi-kun YANG; 1 , Longsheng, Guangxi, 11. vi. 1963, Chi-kun YANG; 1 , Longyan, Fujian, 21. vii. 1988, Chi-kun YANG.

Distribution. China (Guangxi, Fujian).

Remarks. This species belongs to *C. ferruginosus* complex and may possibly be a junior synonym of the latter. More comparison is necessary before final decision of the identity of *grandis*. It is similar to *ningminganus* but is separated from the latter as shown in the key (couplet 6).

Chrysopilus griseipennis BEZZI

Chrysopilus griseipennis BEZZI, 1912, Ann. Mus. Nat. Hung., 10: 451. Type locality: Kosempo, Taiwan.

For redescription of this species, see NAGATOMI (1986c).

Distribution. China (Taiwan).

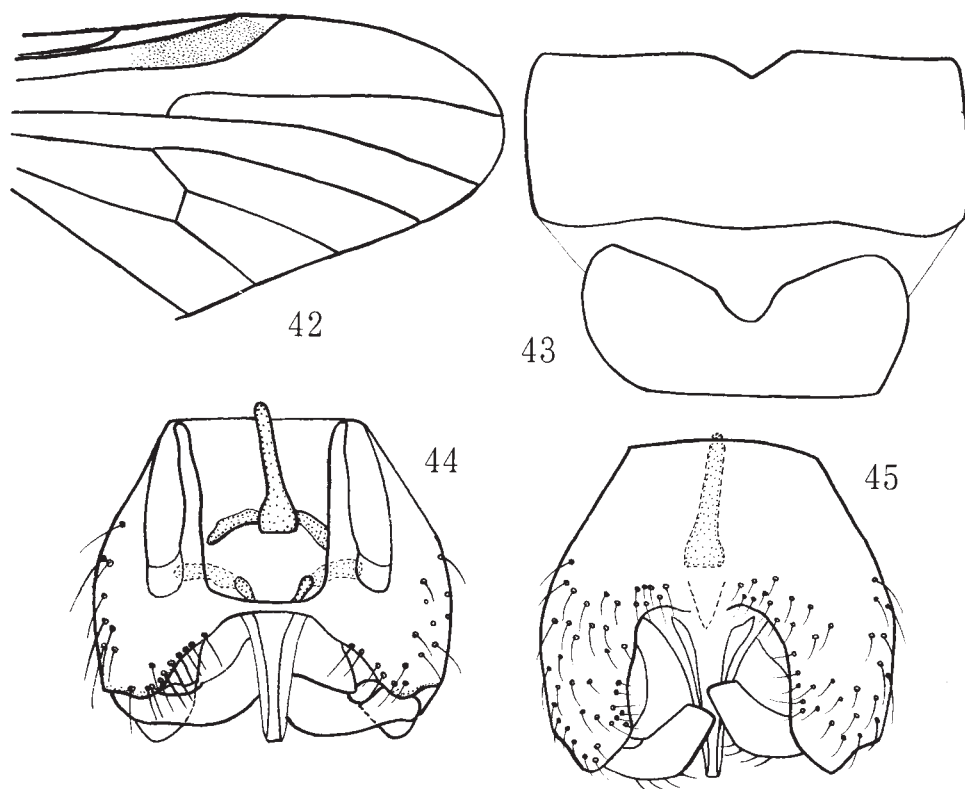
Chrysopilus guangxiensis C.YANG et D.ANG
(Figs. 42–45)

Chrysopilus guangxiensis C.YANG et D.ANG, 1992, Acta Ent. Sin., 35: 354. Type locality: Jinxiu, Guangxi.

Male. Antenna and palpus brownish yellow to dark brown; thorax, coxa and abdomen brown to dark brown . Femur dark yellow.

Male. Body length 6.5 mm, wing length 6.7 mm. Head black, and grayish brown pollinose. Hairs on head pale; ocellar tubercle and upper margin of occiput with black hairs; frons, upper face, parafacial (except lower portion) and clypeus bare or nearly so. Antenna brownish yellow to dark brown, arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Antenna relatively short; flagellum not wider than pedicel. Proboscis brownish yellow to dark brown with pale hairs; palpus brownish yellow to dark brown with probably pale hairs. [Head was crumpled and not measured].

Thorax brown to dark brown, and grayish brown pollinose; postalar area somewhat paler.



Figs. 42–45. *Chrysopilus guangxiensis* C. YANG et D. YANG, male. 42, Wing; 43, tergites 8–9; 44, genital capsule, dorsal view; 45, genital capsule, ventral view.

Mesonotum with black erect and golden yellow recumbent hairs; pleuron with pale and black hairs. Legs dark yellow, coxa and trochanter brown; tibia brownish yellow, tarsus brownish to brown except tarsomere 1 somewhat paler. Hairs on legs black; coxa with chiefly black hairs, femur with some pale hairs. Wing hyaline; stigma brownish, not reaching to wing margin; veins brown to dark brown; anal cell closed before wing margin; basal section of M2 1.4 times as long as crossvein m. Halter yellow, knob brown to dark brown.

Abdomen brown to dark brown, and grayish brown pollinose. Hairs on abdomen black; tergite 1 may have several golden yellow hairs. Male genitalia (Figs. 43–45): Tergite 8 much wider than long, with a small mid-anterior incision; tergite 9 distinctly wider than long, with a deep anterior incision; gonocoxites with anterior margin straight on fused ventral portion; gonostylus distinctly curved, with wide apex; gonocoxal apodemes weakly divergent apically; ejaculatory apodeme rather thick basally.

Female. Unknown.

Specimen examined. Holotype , Jinxiu, Guangxi, 14. vi. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

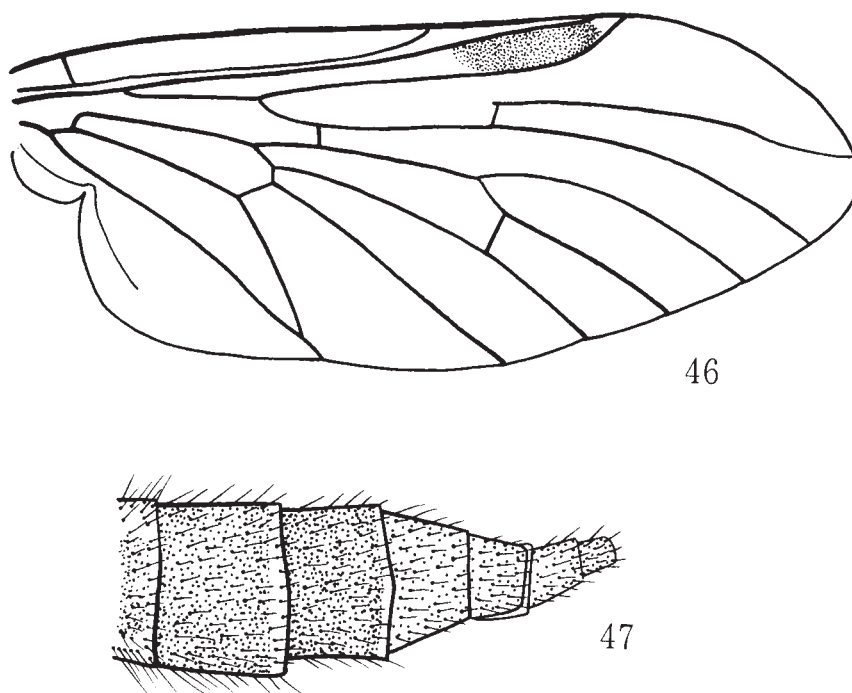
Remarks. This species may possibly be a junior synonym of *sauteri*. *C. guangxiensis* was based on a single specimen () partly damaged. Further comparative study is necessary between these two species. *C. guangxiensis* is similar to *pallipilosus* but may be separated from the latter as shown in the key (couplet 33).

Chrysopilus huashanus D.YANG et C.YANG
(Figs. 46–47)

Chrysopilus huashanus D.YANG et C.YANG, 1989, Entomotaxon., 11: 244. Type locality: Huashan Mountain, Shaanxi.

Female. Frons somewhat narrower toward antennae and much wider than one eye. Scape and pedicel yellow. Thorax, coxa and abdomen brown to dark brown (the former two may be dark brownish yellow). Femur and tibia yellow.

Female. Body length 6.2 mm, wing length 6.7 mm. Head brownish black, and grayish brown pollinose; clypeus brownish yellow with median portion darker. Hairs on head pale, but ocellar tubercle and upper margin of occiput black haired; frons with somewhat black hairs; upper face and clypeus bare. Antenna yellow [but flagellum possibly dark brown]; scape bare, pedicel black haired, and flagellum pale haired; arista dark brown. Antenna relatively short; flagellum not narrower than pedicel; arista roughly 3 times as long as rest of antenna. Proboscis brownish yellow with pale hairs; palpus dark brownish yellow with pale hairs. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 0.8 times width of frons just above antennae, and 0.7 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.2 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.8 times



Figs. 46–47. *Chrysopilus huashanus* D. YANG et C. YANG, female. 46, Wing; 47, abdomen, dorsal view.

width of frons at median ocellus; distance from proboscis to antennae 1.2 times that from antennae to median ocellus; clypeus 0.95 times as wide as long, 2.8 times as wide as parafacial, and 0.7 times as wide as face at upper margin of clypeus.

Thorax dark brownish yellow, and grayish brown pollinose. Hairs on thorax pale; mesonotum and scutellum with some golden yellow recumbent hairs; mesonotum partly black haired at mid-lateral margin. Legs yellow, but coxa darker and concolorous with pleuron; tarsus brownish yellow, but somewhat darker apically. Hairs on legs black, but coxa and femur with pale hairs. Wing hyaline; stigma dark brown, moderately long, and not reaching to wing margin; vein dark brown; R4 with a short basal appendage; basal section of M2 1.1 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, but knob dark brown.

Abdomen dark brown to brownish black, and grayish brown pollinose; apical margin of tergites 1–4 brownish yellow. Hairs on abdomen chiefly pale.

Male. Unknown.

Specimen examined. Holotype , Huashan Mountain, Shaanxi, 21. viii. 1962, Chi-kun YANG.

Distribution. China (Shaanxi).

Remarks. This species may be separated from *flaviscutellus* as shown in the key (couplet 43).

Chrysopilus hubeiensis C.YANG et D.YANG
(Figs. 48–55)

Chrysopilus hubeiensis C.YANG et D.YANG, 1991, J. Hubei. Univ. (Nat. Sci.), 13: 274.

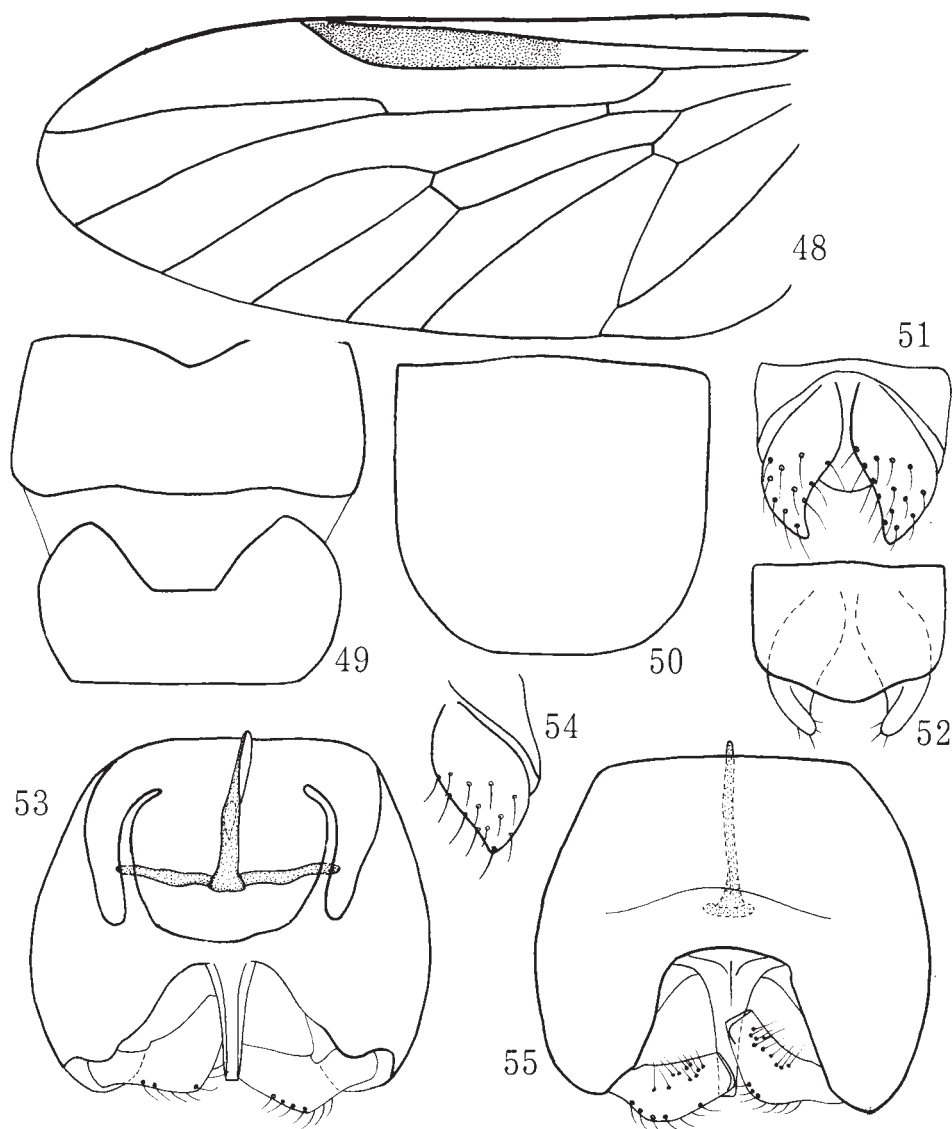
Type locality: Shennongjia, Hubei.

Male. Wing below stigma with a large darker area whose boundary is indistinct. Thorax and apical half of abdomen dark brown to black. Antenna, palpus and legs (except apical portion of tarsus) yellow. Mid-upper face long (but shorter than clypeus).

Male. Body length 7.0 mm, wing length 6.0 mm. Head black, and pale gray pollinose; clypeus dark yellow. Hairs on head pale; upper margin of occiput and ocellar tubercle with black hairs; frons and upper face bare; clypeus and lower portion of parafacial with some short pale hairs. Antenna yellow except for arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Flagellum not narrower than and somewhat longer than pedicel; arista roughly 3 times as long as rest of antenna. Proboscis yellow with pale hairs; palpus yellow with pale hairs except apex with black hairs. Head (excluding protruded clypeus) 1.4 times higher than long; contiguous portion of eye 1.8 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 3.1 times width of frons just above antennae, and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.3 times distance from antennae to median ocellus, 0.3 times width of face at lowest point in direct frontal view, and 3.3 times width of frons at median ocellus; distance from proboscis to antennae 0.7 times that from antennae to median ocellus; clypeus as wide as long, 1.7 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; scutellum brownish yellow except base. Mesonotum and scutellum with golden yellow hairs; pleuron with pale hairs. Legs yellow; tarsus brown to dark brown except tarsomere 1 paler. Hairs on legs black; coxa with long pale hairs, femur with wholly pale hairs. Wing tinged with brown, but apical and hind portions paler; stigma brownish, very elongate, nearly reaching to wing margin; veins brown to dark brown; basal section of M2 0.2 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, knob brown to dark brown.

Abdomen yellow, but apical half black. Hairs on abdomen pale; dorsum also with golden yellow and black hairs. Male genitalia (Figs. 49–55): Tergite 8 distinctly wider than long, with a weak mid-anterior incision; sternite 8 nearly quadrate, with widely rounded and somewhat narrow apex; tergite 9 much wider than long, with a deep nearly trapezoid anterior incision; cercus somewhat acute apically; gonocoxites with anterior margin nearly



Figs. 48–55. *Chrysopilus hubeiensis* C. YANG et D. YANG, male. 48, Wing; 49, tergites 8–9; 50, sternite 8; 51, tergite 10 and cerci, dorsal view; 52, sternite 10 and cerci, ventral view; 53, genital capsule, dorsal view; 54, cercus, dorso-lateral view; 55, genital capsule, ventral view.

straight; gonostylus curved with thick apex; gonocoxal apodemes slightly divergent and distinctly curved inwards apically; ejaculatory apodeme somewhat thick at base and flattened apically.

Female. Unknown.

Specimen examined. Holotype , Shennongjia (700–800 m), Hubei, 24. vi. 1980, Xinli WANG.

Distribution. China (Hubei).

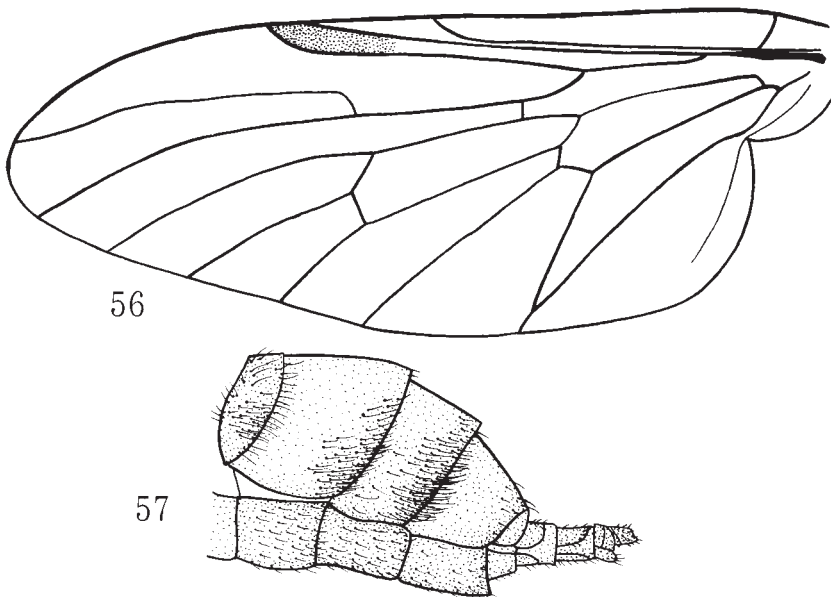
Remarks. This species may be separated from *trimaculatus* as shown in the key (couplet 8).

Chrysopilus lii D. YANG, C. YANG et NAGATOMI sp. nov.

(Figs. 56–57)

Female. Antenna, palpus, thorax, legs, and abdomen dark brown to black (tibia somewhat paler than femur). Abdominal tergite 1 and posterior part of tergites 2–4 golden yellow recumbent haired. Frons much wider than one eye.

Female. Body length 8.5 mm, wing length 8.1 mm. Head black; grayish brown pollinose, but frons and upper occiput chiefly brown pollinose. Hairs on head pale, but upper margin of occiput with black hairs; frons, upper face and clypeus bare; parafacial distinctly pale haired. Antenna black; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Antennal segments 1–3 subequal in size; arista about 3 times as long as rest of antenna. Proboscis and palpus dark brown to black with pale hairs, some of which may become black on the latter. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to



Figs. 56–57. *Chrysopilus lii* D. YANG, C. YANG et NAGATOMI, sp. nov., female. 56, Wing; 57, abdomen, lateral view.

median ocellus, 0.6 times width of frons just above antennae, and 0.5 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.6 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.3 times that from antennae to median ocellus; clypeus as wide as long, 1.5 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax black, and pale gray pollinose; mesonotum and scutellum sooty. Hairs on thorax pale; margin of mesonotum and basal margin of scutellum with golden yellow recumbent hairs (mesonotum without black hairs). Legs [hind tarsomere 5 broken off] dark brown to black, coxa concolorous with pleuron. Hairs on legs black; coxa with longer pale hairs; femur with chiefly pale hairs which are scale-like dorsally. Wing hyaline; stigma brownish yellow, reaching to wing margin; veins brown to dark brown; basal section of M2 1.2 times as long as crossvein m; petiole of anal cell 0.9 times as long as crossvein m-cu. Halter dark brown to black with basal portion brownish.

Abdomen dark brown to black, and pale gray pollinose; tergites 1–4 sooty. Hairs on abdomen pale; tergite 1 and lateral portion of tergites 2–3 with golden yellow recumbent hairs.

Male. Unknown.

Holotype ♂, Bomi (2,700 m), Xizang, 24. vii. 1978, Fasheng LI.

Distribution. China (Xizang).

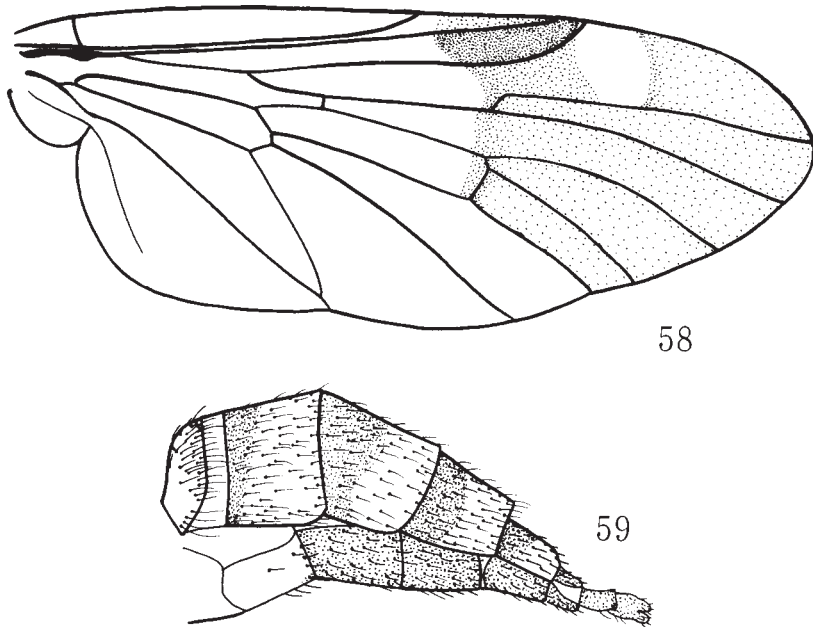
Remarks. This species may be separated from *choui* as shown in the key (couplet 18).

Chrysopilus lucimaculatus C.YANG et D.YANG
(Figs. 58–59)

Chrysopilus lucimaculatus C.YANG et D.YANG, 1992, Acta Ent. Sin., 35: 355. Type locality: Jinxiu, Guangxi.

Female. Wing with a darker band from stigma to base of vein M3, and 1st submarginal cell with a large paler area. Clypeus, palpus, pleuron, legs (except apical portion of tarsus), and halter yellow. Antenna dark brown. Frons much narrower than (but over 1/2 as wide as) one eye. Mid-upper face short.

Female. Body length 6.5 mm, wing length 7.2 mm. Head black, and pale gray pollinose; clypeus yellow. Hairs on head pale; ocellar tubercle and upper margin of occiput chiefly black haired; frons with some short black hairs; upper face, parafacial (except lower portion) and clypeus bare. Antenna brown to dark brown, pedicel paler, and arista darker; scape bare, pedicel black haired, flagellum pale and arista minutely black pubescent. Scape wider than pedicel; flagellum wider than long and longer than pedicel; arista slender and $c \approx 3.4$ times as long as rest of antenna. Proboscis and palpus yellow with pale hairs; palpus spatula-like. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus,



Figs. 58–59. *Chrysopilus lucimaculatus* C. YANG et D. YANG, female. 58, Wing; 59, abdomen, lateral view.

1.5 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.8 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae equal to that from antennae to median ocellus; clypeus as wide as long, 4.3 times as wide as parafacial, and 0.8 times as wide as face at upper margin of clypeus; mid-upper face (= space between clypeus and antennae) short.

Thorax yellow, and pale gray pollinose; mesonotum and scutellum dark brownish yellow with golden yellow recumbent hairs and with some black hairs; pleuron with pale hairs. Legs yellow, tibia brownish yellow, tarsus brown to dark brown except for tarsomere 1 somewhat paler. Hairs on legs black; coxa with longer pale hairs, fore and mid femora with chiefly pale hairs, hind femur with some black hairs. Wing nearly hyaline to brown and its apical portion somewhat darker; submarginal cell with a large paler spot just behind stigma; stigma dark brown, moderately long, nearly reaching to wing margin; veins brown; anal cell closed before wing margin; basal section of M2 0.2 times as long as crossvein m. Halter yellow, knob brownish.

Abdomen yellow, and weakly pale gray pollinose; base of tergites 2–5 black, venter dark brown except sternites 1–2 and posterior part of sternites 3–5. Hairs on abdomen black;

tergite 1 with some golden yellow hairs, venter with some pale hairs.

Male. Unknown.

Specimen examined. Holotype , Jinxiu, Guangxi, 15. vii. 1982, Chi-kun Yang.

Distribution. China (Guangxi).

Remarks. This species is similar to *nigrimaculatus* by having a darker band below pterostigma but is easily separated from the latter as shown in the key (couplet 5).

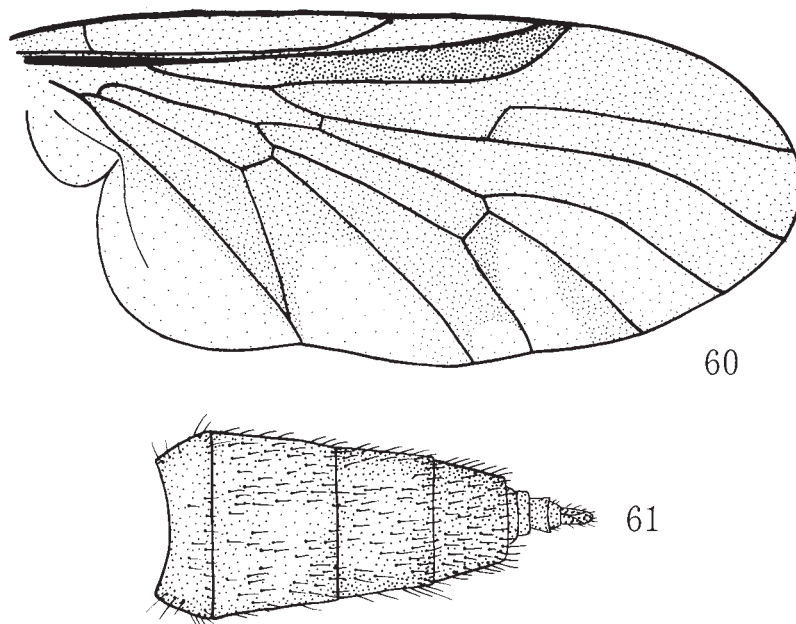
Chrysopilus luctuosus BRUNETTI

(Figs. 60–61)

Chrysopilus luctuosus BRUNETTI, 1909, Rec. Ind. Mus., 2: 430. Type locality: Assam, India.

Female. Wing dark brown, but 3rd posterior cell, 5th posterior cell, and axillary cell maybe largely pale. Antennal flagellum, palpus, thorax, coxa, and abdomen dark brown to black. Frons much narrower than (but over 1/2 as wide as) one eye.

Female. Body length 5.3 mm, wing length 5.3 mm. Head dark brown, and pale gray pollinose; clypeus brownish yellow. Hairs on head black; frons with short black hairs; upper face, clypeus and parafacial (except extreme lower portion) bare. Antennal scape and



Figs. 60–61. *Chrysopilus luctuosus* BRUNETTI, female. 60, Wing; 61, abdomen, dorsal view.

pedicel brownish yellow, flagellum and arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Flagellum wider than pedicel; arista 3.5 times as long as rest of antenna. Proboscis brownish yellow with pale hairs; palpus somewhat flattened, dark brown to black, with black hairs. Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 1.4 times width of frons just above antennae, and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.8 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.0 times that from antennae to median ocellus; clypeus as wide as long, 2.5 times as wide as parafacial on a mid line, and 0.75 times as wide as face at upper margin of clypeus.

Thorax brownish yellow to brown, and pale gray pollinose; mesonotum (except lateral margin) and scutellum darker and more or less pale gray pollinose. Hairs on thorax black; mesonotum and scutellum with golden white shorter recumbent hairs besides some black ones. Legs brownish yellow, coxa somewhat darker and concolorous with pleuron; apical portion of tarsus darker. Hairs on legs black. Wing strongly dark brown, but posterior margin somewhat paler; veins brown to dark brown; basal section of M2 short and 0.3 times as long as crossvein m; petiole of anal cell 0.8 times as long as crossvein m-cu. Halter yellow, knob dark brown.

Abdomen dark brown, and grayish brown pollinose. Hairs on abdomen black; tergite 2 with white recumbent hairs, apical portion with some pale hairs.

Male. Unknown.

Specimen examined. 1 ♂, Longsheng, Guangxi, 23. vi. 1982, Chi-kun YANG.

Distribution. China (Guangxi, Taiwan), India, Philippines.

Remarks. This species is similar to *trypetopterus* BEZZI from Taiwan by having the wing dark brown but is at once distinguished from the latter as shown in the key (couplet 20).

Chrysopilus mojiangensis C.YANG et D.YANG

(Figs. 62–70)

Chrysopilus mojiangensis C.YANG et D.YANG, 1989, Zool. Res., 11: 281. Type locality: Mojiang, Yunnan.

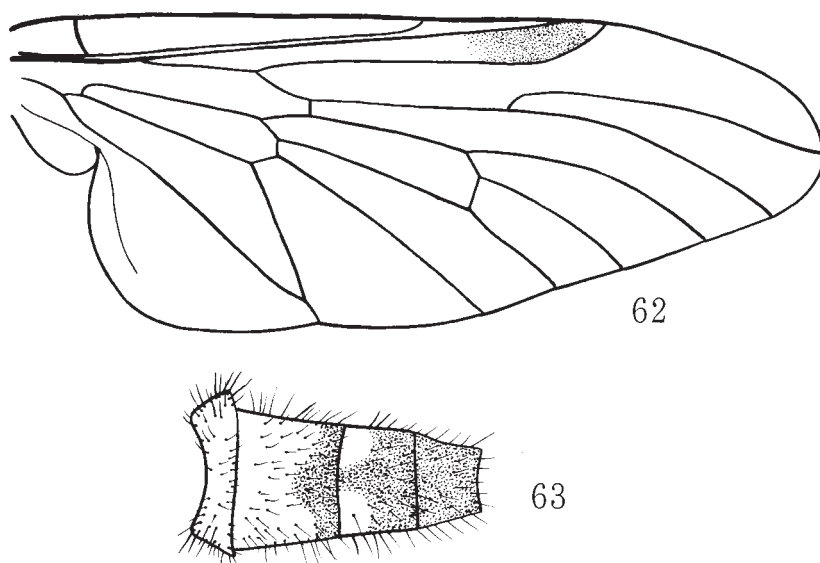
Male. Palpus, thorax and coxa dark brown to black.

Male. Body length 8.0 mm, wing length 6.5 mm. Head black, and pale gray pollinose. Hairs on head black; frons, upper face, parafacial (except lower portion) and clypeus bare. Antennal scape blackish and bare, pedicel yellow and black haired; flagellum dark yellow, arista dark brown, flagellum and arista minutely pale pubescent. Flagellum not wider than pedicel; arista roughly 3 times as long as rest of antenna. Proboscis brownish yellow with pale hairs; palpus blackish with black hairs. Head (excluding protruded clypeus) 1.6 times

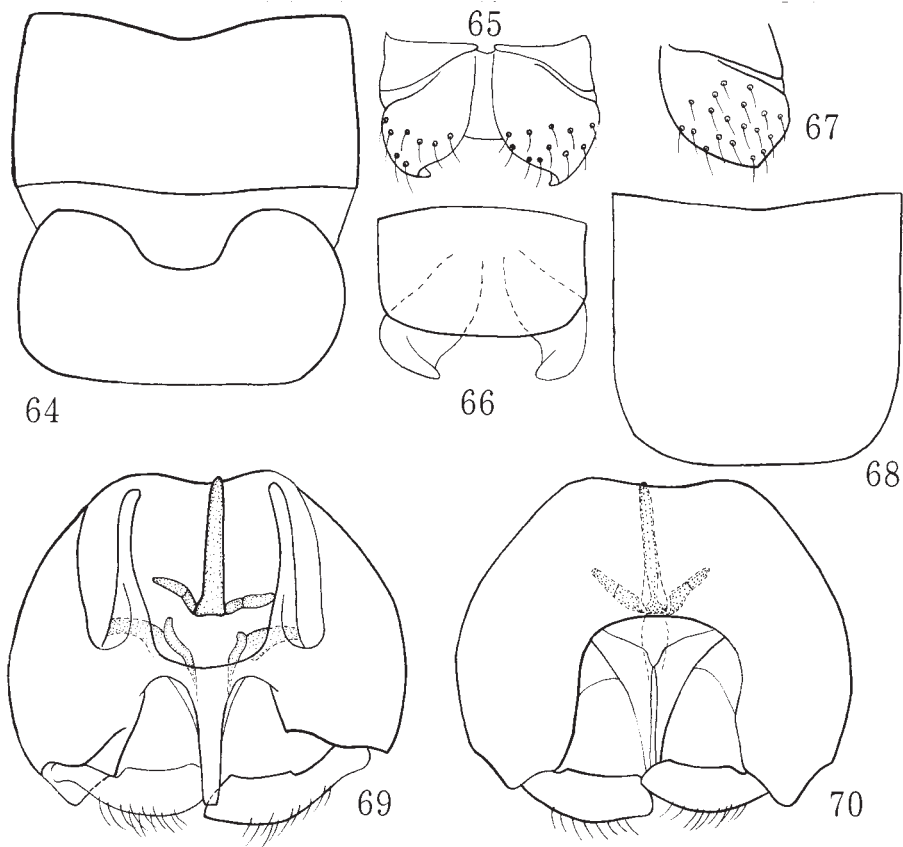
higher than long; eye with contiguous portion as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus, 1.9 times width of frons just above antennae, and 1.1 times width of face at lowest point from a direct frontal view; width of frons just above antenna 0.7 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 5.0 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.6 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown, and pale gray pollinose; mesonotum with 3 wide longitudinal dark brown spots. Mesonotum and scutellum with black and sparse golden yellow hairs; pleuron with yellow hairs. Legs brownish yellow; coxa darker and concolorous with pleuron; tarsus especially at apex darker. Hairs on legs black; coxa with long and chiefly black hairs, femur with golden yellow recumbent hairs on dorsal surface. Wing hyaline; stigma short, dark brown, not reaching to wing margin; veins brown; basal portion of M2 0.9 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, knob dark brown.

Abdomen black, and pale gray pollinose; tergites 1–3 yellow with posterior portions dark brown to black; sternites 1–2 yellow. Hairs on dorsum longer, yellow and black; hairs on venter short and black. Male genitalia (Figs. 64–70): Tergite 8 distinctly wider than long, with a weak anterior incision; sternite 8 nearly quadrate; tergite 9 distinctly wider than long,



Figs. 62–63. *Chrysopilus mojiangensis* C. YANG et D. YANG, male. 62, Wing; 63, basal portion of abdomen, dorsal view.



Figs. 64–70. *Chrysopilus mojiangensis* C. YANG et D. YANG, male. 64, Tergites 8–9; 65, tergite 10 and cerci, dorsal view; 66, sternite 10 and cerci, ventral view; 67, cercus, dorso-lateral view; 68, sternite 8; 69, genital capsule, dorsal view; 70, genital capsule, ventral view.

with a nearly trapezoid anterior incision; sternite 10 distinctly wider than long, nearly quadrate; cercus curved inwards apically, with apex somewhat acute; gonocoxites with anterior margin weakly concave on fused ventral portion; gonostylus weakly curved with oblique apical margin; gonocoxal apodemes nearly parallel; ejaculatory apodeme somewhat thick basally and gradually tapering toward apex.

Female. Unknown.

Specimen examined. Holotype , Mojiang, Yunnan, 5. iv. 1981, Chi-kun YANG.

Distribution. China (Yunnan).

Remarks. This species may be separated from *apicimaculatus* as shown in the key (couplet 28).

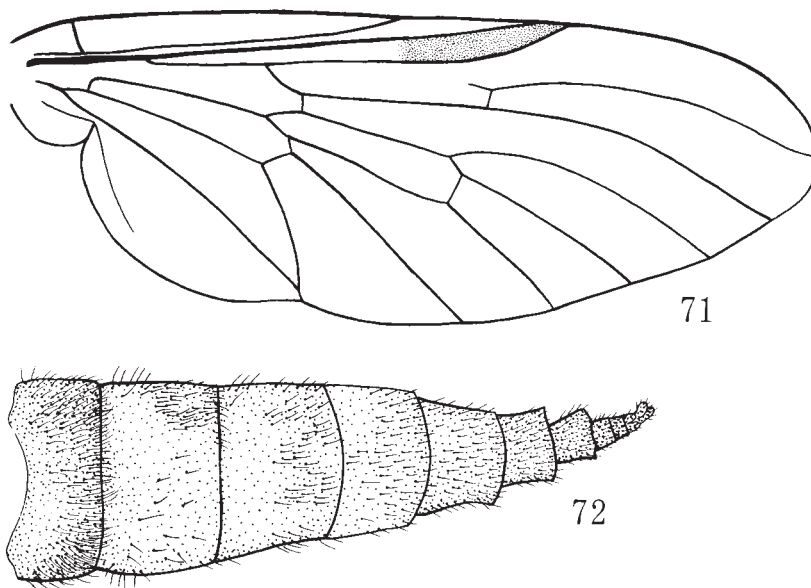
Chrysopilus nagatomii C.YANG et D.YANG
(Figs. 71–79)

Chrysopilus nagatomii C.YANG et D.YANG, 1991, J. Hubei Univ. (Nat. Sci.), 13: 273.

Type locality: Shennongjia, Hubei.

Male and female. Mesonotum, scutellum and abdomen sooty black. Antenna, palpus, pleuron, and coxa black. Femur, tibia and halter yellow. Clypeus ending far below antennae. frons wholly shining (except just above antennae) and much wider than one eye.

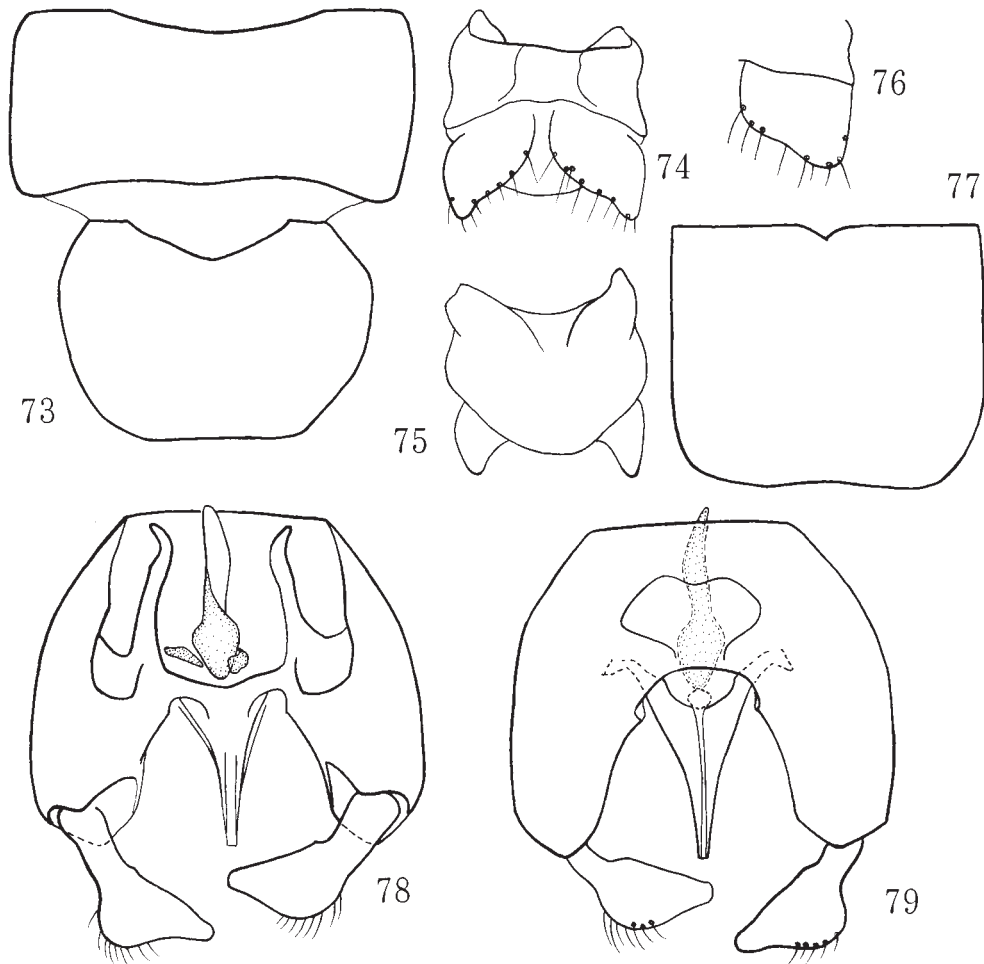
Male. Body length 11.6 mm, wing length 8.4 mm. Head black, and pale gray pollinose. Hairs on head pale; occiput with golden yellow hairs; frons and clypeus bare; upper face and parafacial with distinct yellow hairs. Antenna black, arista dark brown; scape distinctly pale haired ventrally, pedicel black haired, flagellum and arista minutely pale pubescent; scape and pedicel relatively large but not longer than wide; flagellum narrower than pedicel; [apical portion of arista broken off]. Proboscis and palpus black with yellow hairs. Head (excluding protruded clypeus) 1.3 times higher than long; eye with contiguous portion as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.3 times distance from antennae to median ocellus, 1.9 times width of frons just above antennae, and 1.2 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.7 times distance from antennae to median ocellus, 0.6 times width of face at



Figs. 71–72. *Chrysopilus nagatomii* C. YANG et D. YANG, female. 71, Wing; 72, abdomen, dorsal view.

lowest point from a direct frontal view, and 5.0 times width of frons at median ocellus; distance from proboscis to antennae 0.9 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 1.7 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax velvety black, and pale gray pollinose. Mesonotum and scutellum with golden yellow hairs; pleuron with pale hairs. Legs yellow; coxa black and concolorous with pleuron; trochanter black; tarsus brown to dark brown except tarsomere 1 paler. Hairs on legs pale; coxa with long yellow hairs, tibia with strong black hairs; tarsus wholly black haired. Wing hyaline; stigma very elongate, yellow, reaching to wing margin; veins pale brownish yellow; R4 with a distinct basal appendage; basal portion of M2 0.8 times as long



Figs. 73-79. *Chrysopilus nagatomii* C. YANG et D. YANG, male. 73, Tergites 8-9; 74, tergite 10 and cerci, dorsal view; 75, sternite 10 and cerci, ventral view; 76, cercus, dorso-lateral view; 77, sternite 8; 78, genital capsule, dorsal view; 79, genital capsule, ventral view.

as crossvein m; anal cell closed near wing margin. Halter yellow.

Abdomen velvety black, and weakly pale gray pollinose. Hairs on abdomen pale; dorsum with golden yellow hairs, which are denser on tergite 1. Male genitalia (Figs. 73–79): Tergite 8 much wider than long, with a weak mid-anterior incision; sternite 8 quadrate; tergite 9 slightly wider than long, with a nearly V-shaped mid-anterior incision; sternite 10 somewhat narrow and rounded apically; gonocoxites with a distinct membranous area on fused ventral portion and with anterior margin straight; gonostylus distinctly thick medially with narrow apex; gonocoxal apodemes weakly convergent and curved outwards apically; ejaculatory apodeme distinctly thick basally and somewhat flattened apically.

Female. Body length 11.7–15.7 mm, wing length 9.7–12.8 mm. Similar to male except as follows: Frons polished black except lower margin. Arista 2.5–2.8 times as long as rest of antenna. Head (excluding protruded clypeus) 1.4–1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.7–0.9 times distance from antennae to median ocellus, 0.6 times width of frons just above antennae, and 0.5–0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.3–1.5 times distance from antennae to median ocellus, 0.9 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.2–1.3 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.7–2.0 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus. Wing: basal section of M2 sometimes slightly longer than crossvein m. [N = 3].

Specimens examined. Holotype ♂, paratypes 2 ♀♀, Shennongjia (1,700 m), Hubei, 29–30. vi. 1984, Xiao-yuan MAO; paratype 1 ♂, Shennongjia, 15. vi. 1985, Xiao-yuan MAO.

Distribution. China (Hubei).

Remarks. This species is very similar to *ditissimis* but is probably distinguished from the latter as shown in the key (couplet 14). Further comparative study is necessary on these two species, however.

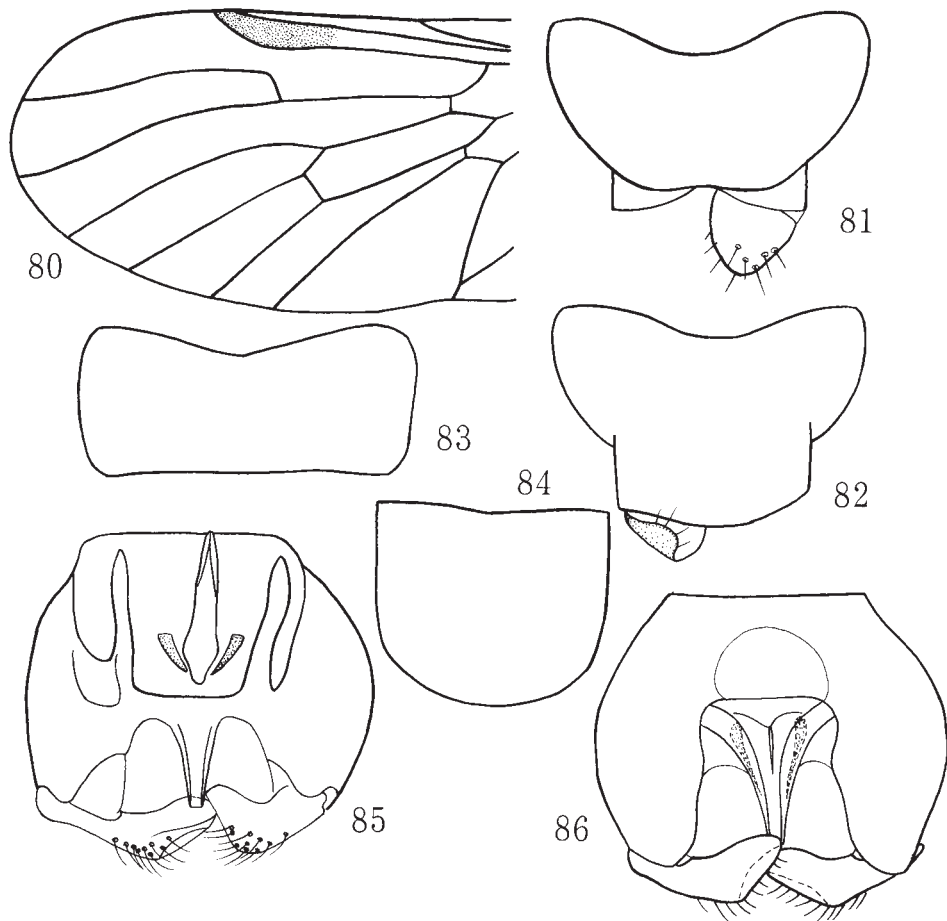
Chrysopilus neimongolicus C.YANG et D.YANG
(Figs. 80–86)

Chrysopilus neimongolicus C.YANG et D.YANG, 1990a, Entomotaxon., 12: 289. Type locality: Liangcheng, Nei Mongol.

Male and female. Body relatively small (wing length 3.9–4.2 mm). Antenna, thorax, and abdomen black. Femur and tibia yellow. Parafacial wide and nearly flat. Frons much wider than one eye.

Male. Body length 4.0–4.7 mm, wing length 3.9–4.2 mm. Head black, and pale gray pollinose. Hairs on head wholly pale; frons, upper face, and clypeus bare; parafacial with some pale hairs. Antenna black; scape pale haired ventrally, pedicel pale haired, flagellum

and arista minutely pale pubescent. In dorsal and inner view, pedicel larger than scape or flagellum [apical portion of arista broken off]. Proboscis and palpus brownish yellow to dark brown with pale hairs. Head (excluding protruded clypeus) 1.4 times higher than long; eyes very narrowly separated and their nearly contiguous portion 1.0–1.2 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 1.8–2.0 times width of frons just above antennae, and 1.0–1.1 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.6 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view, and 4.3–4.5 times width of frons at median ocellus; distance from proboscis to antennae 0.7 times that from antennae to median ocellus; clypeus 1.2 times as wide as long, 1.7–1.8 times as wide as parafacial on a mid line, and 0.6 times as wide as face at upper margin of clypeus. [N = 3].



Figs. 80–86. *Chrysopilus neimogolicus* C. YANG et D. YANG, male. 80, Wing; 81, tergites 9–10 and cercus, dorsal view; 82, tergite 9, sternite 10 and cercus, ventral view; 83, tergite 8; 84, sternite 8; 85, genital capsule, dorsal view; 86, genital capsule, ventral view.

Thorax black, and pale gray pollinose. Mesonotum and scutellum with golden yellow hairs (without black hairs); pleuron with pale hairs. Legs yellow; coxa either largely yellow or dark brown; tarsus brown to dark brown except tarsomere 1 somewhat paler. Hairs on legs black; coxa with long pale hairs, femur with wholly pale hairs which are scale-like on dorsal surface. Wing hyaline; stigma brown, long, and reaching to wing margin; veins brown to dark brown; basal section of M2 as long as crossvein m; anal cell closed before wing margin. Halter yellow, apical portion dark brown.

Abdomen black, and pale gray pollinose. Dorsum with golden yellow hairs, venter with pale hairs. Male genitalia (Figs. 81–86): Tergite 8 much wider than long, with a V-shaped anterior incision; sternite 8 quadrate with widely rounded apex; tergite 9 distinctly wider than long, somewhat narrow posteriorly, with a distinct anterior incision; sternite 10 nearly quadrate with widely rounded apex; gonocoxites with a distinct membranous area on fused ventral portion and with anterior margin straight; gonostylus obtuse apically, with a distinct apical concavity; gonocoxal apodemes somewhat divergent; ejaculatory apodeme somewhat thick basally.

Female. Body length 4.3 mm, wing length 4.0 mm. Similar to male except as follows: Frons with short black hairs. Arista roughly 2.5 times as long as rest of antenna. Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 0.8 times distance from antennae to median ocellus, 0.6 times width of frons just above antennae, and 0.4 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.3 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.1 times that from antennae to median ocellus; clypeus 1.2 times as wide as long, 1.9 times as wide as parafacial, and 0.6 times as wide as face at upper margin of clypeus.

Specimens examined. Holotype , paratypes 2 , 1 , Liangcheng, Nei Mongol, 2. viii. 1978, Chi-kun YANG.

Distribution. China (Nei Mongol).

Remarks. This species is similar to *gansuensis* by having the body smaller and parafacial wide and nearly flat, but may be separated from the latter by the yellow femur (not dark brown to black). It resembles *nigrimarginatus*, *xanthocromus* and *shaanxiensis* in some respects but may be easily separated from them as shown in the key (couplets 23 and 39).

Chrysopilus nigripalpis BEZZI

Chrysopilus nigripalpis BEZZI, 1912, Ann. Mus. Nat. Hung., 10: 448. Type locality: Kanshirei or Toyenmongai, Taiwan.

For redescription of this species, see NAGATOMI (1986).

Distribution. China (Taiwan).

Remarks. This species is very similar to *fenestratus* and *basiflavus* but may be separated

from them as shown in the key (couplets 9 and 10).

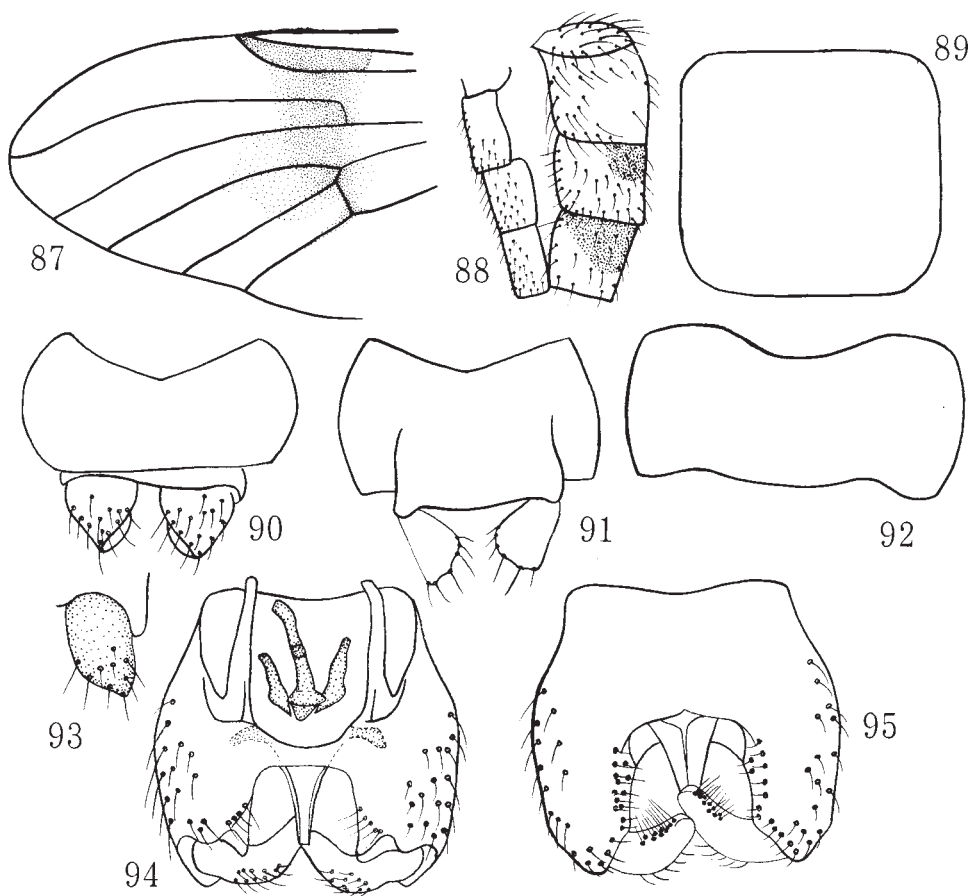
Chrysopilus nigrimaculatus D.YANG et C.YANG
(Figs. 87–95)

Chrysopilus nigrimaculatus D.YANG et C.YANG, 1991, Acta Agric. Univ. Pekin., 17: 92.
Type locality: Bomi, Xizang.

Male. [Head, fore tarsus and mid femur broken off]. Wing with a darker band below stigma. Thorax and legs (except apical portion of tarsus) yellow.

Male. Body length *c.* 8.0 mm, wing length 9.2 mm. [Head broken off and not yet described].

Thorax yellow, and pale gray pollinose; mesonotum dark yellow. Mesonotum and scutellum with black hairs; mesonotum also with some golden yellow recumbent hairs;



Figs. 87–95. *Chrysopilus nigrimaculatus* D. YANG et C. YANG, male. 87, Wing; 88, basal portion of abdomen, lateral view; 89, sternite 8; 90, tergites 9–10 and cerci, dorsal view; 91, tergite 9, sternite 10 and cerci, ventral view; 92, tergite 8; 93, cercus, dorso-lateral view; 94, genital capsule, dorsal view; 95, genital capsule, ventral view.

pleuron with yellow hairs. Legs [mid femur and fore tarsus broken off] yellow; tibia brownish; tarsus brown to dark brown. Hairs on legs black; coxa with chiefly pale hairs; femur with some pale hairs. Wing hyaline, tinged with yellow on anterior field; stigma dark brown, reaching to wing margin; a brown transverse spot just below stigma reaching to apex of discal cell; veins brownish yellow to brown; basal section of M2 rather short, 0.4 times as long as crossvein m; anal cell closed before wing margin. Halter dark yellow with yellow base.

Abdomen yellow, and pale gray pollinose; tergites 3–7 with a black basal spot (the spot on tergites 3–5 is more or less divided medially). Hairs on abdomen chiefly black. Male genitalia (Figs. 89–95): Tergite 8 much wider than long, with a distinct mid-anterior incision; sternite 8 quadrate; tergite 9 distinctly wider than long, with a V-shaped anterior incision; sternite 10 nearly quadrate; cercus triangular in dorsal view, and nearly trapezoid in ventral view; gonocoxites with a weak anterior incision on fused ventral portion; gonostylus curved, somewhat narrow and obtuse apically; gonocoxal apodemes nearly parallel; ejaculatory apodeme curved apically.

Female. Unknown.

Specimen examined. Holotype , Bomi (2,300 m), Xizang, 16. vi. 1978, Fasheng Li.

Distribution. China (Xizang).

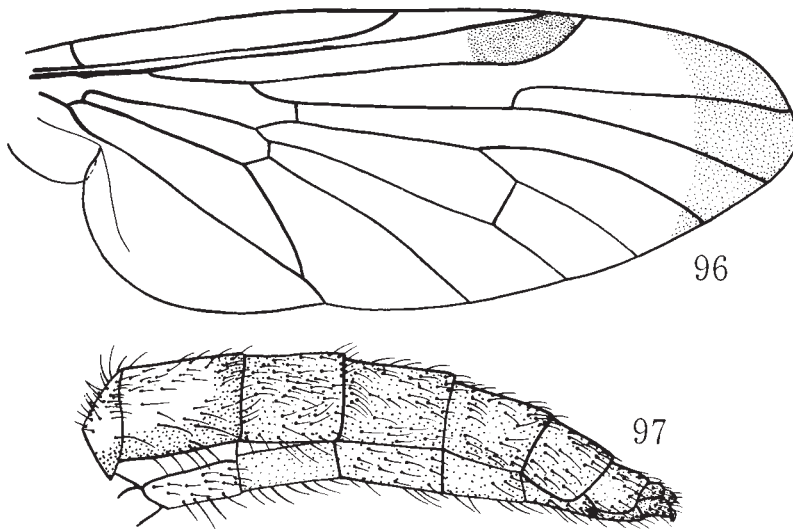
Remarks. This species is similar to *lucimaculatus* by having a darker band below perostigma, but is easily separated from the latter as shown in the key (couplet 5).

Chrysopilus nigrimarginatus C.YANG et D.YANG
(Figs. 96–104)

Chrysopilus nigrimarginatus C.YANG et D.YANG, 1990b, Zool. Res., 11: 281. Type locality: Ruili, Yunnan.

Male and female. Thorax largely dark brown. Legs (except apical portion of tarsus) yellow. frons somewhat narrower toward antennae and face nearly parallel-sided. frons at narrowest point somewhat less than width of one eye.

Male. Body length 6.6–7.1 mm, wing length 5.6–5.7 mm. Head black, and pale gray pollinose. Hairs on head pale; frons, upper face, parafacial and clypeus bare. Antennal scape brown to dark brown, pedicel and flagellum yellow, arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Pedicel distinctly larger than scape and flagellum; arista slender and roughly 4–4.5 times as long as flagellum. Proboscis yellow with pale hairs; palpus black with pale hairs. Head (excluding protruded clypeus) 1.5–1.6 times higher than long; eye with contiguous portion 1.6–2.0 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 2.2–2.4 times width of frons just above antennae, and 1.2 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.4

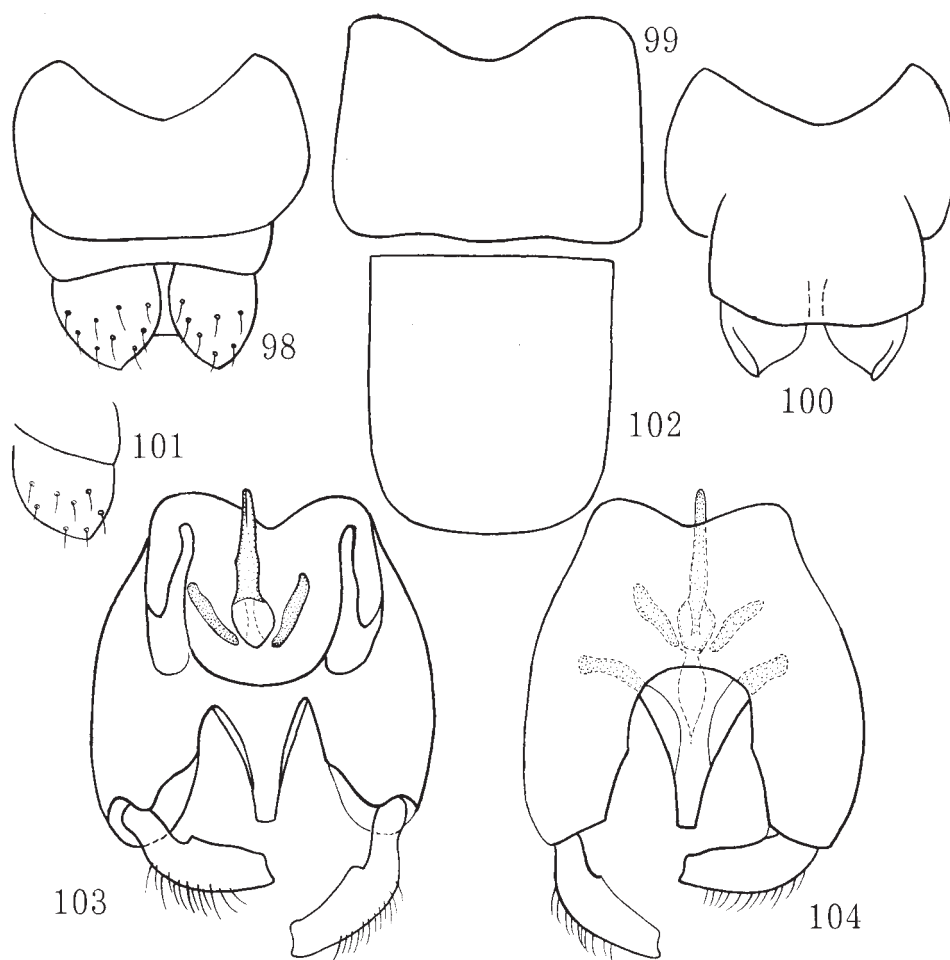


Figs. 96–97. *Chrysopilus nigrimarginatus* C. YANG et D. YANG, male. 96, Wing; 97, abdomen, lateral view.

–0.5 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view, and 3.4–3.9 times width of frons at median ocellus; distance from proboscis to antennae 0.6 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 2.0–2.1 times as wide as parafacial on a mid line, and 0.6 times as wide as face at upper margin of clypeus. [N = 2].

Thorax dark brown to black, and pale gray pollinose; pronotum, humerus and postalar callus yellow. Mesonotum and scutellum with many recumbent golden yellow hairs; mesonotum also with some longer black or pale hairs; pleuron with yellow hairs. Legs yellow; tibia brownish yellow; tarsus dark brown except tarsomere 1 (except apex) somewhat paler. Hairs on legs black; coxa with longer pale hairs, femur with some pale hairs. Wing hyaline with brownish apex; stigma short, dark brown; apex of marginal cell pale; veins brownish to brown; basal section of M2 as long as crossvein m; anal cell closed before wing margin. Halter yellow with apical portion dark brown.

Abdomen black, and pale gray pollinose; tergites 1–2 yellow except for side of tergites 1–2 and posterior part of tergite 2, sternites 1–2 yellow. Hairs on abdomen chiefly black; tergites 1–6 with many golden yellow recumbent hairs. Male genitalia (Figs. 98–104): Tergite 8 wider than long, with a distinct anterior incision; sternite 8 quadrate, longer than wide; tergite 9 distinctly wider than long, with a nearly V-shaped anterior incision; sternite 10 with wide apex (which is weakly narrowed); cercus somewhat acute apically; gonocoxites with a distinct anterior incision on fused ventral portion; gonostylus elongate,



Figs. 98–104. *Chrysopilus nigrimarginatus* C. YANG et D. YANG, male. 98, Tergites 9–10 and cerci, dorsal view; 99, tergite 8; 100, tergite 9, sternite 10 and cerci, ventral view; 101, cerci, dorso-lateral view; 102, sternite 8; 103, genital capsule, dorsal view; 104, genital capsule, ventral view.

weakly curved, with apical margin weakly concave; gonocoxal apodemes nearly parallel, weakly curved outward; ejaculatory apodeme distinctly thick basally and somewhat flattened apically.

Female. Body length 5.1 mm, wing length 5.5 mm. Similar to male except as follows: Frons with sparse and short pale hairs. Arista roughly 3.5 times as long as rest of antenna. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 1.1 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.1 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.8 times width of frons at median ocellus; distance from proboscis to antennae 1.1 times that from antennae

to median ocellus; clypeus 0.8 times as wide as long, 3.0 times as wide as parafacial, and 0.6 times as wide as face at upper margin of clypeus. Mesonotum without black hairs. Abdomen entirely blackish brown to dark brown with pale hairs.

Specimens examined. Holotype , paratype 1 , 1 , Ruili, Yunnan, 2–4. v. 1981, Chi-kun Yang.

Distribution. China (Yunnan).

Remarks. This species is similar to *xanthocromus* but is separated from the latter as shown in the key (couplet 24).

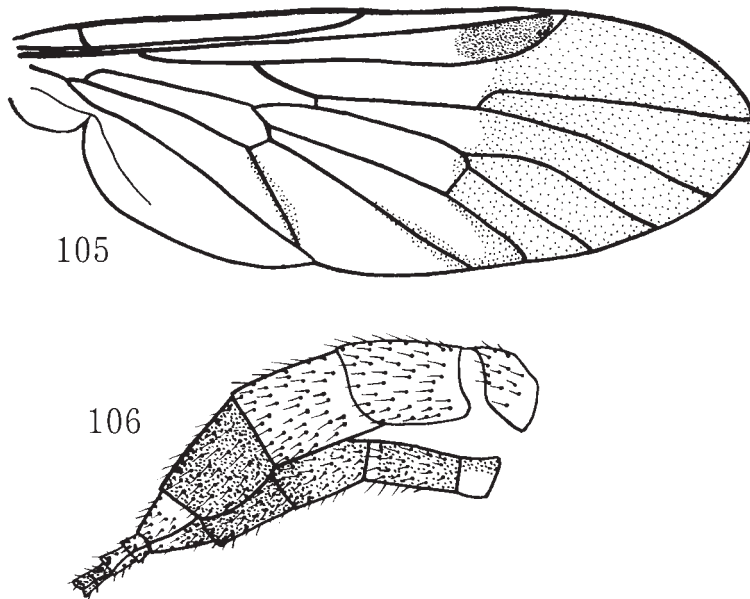
Chrysopilus ningminganus C.YANG et D.YANG

(Figs. 105–106)

Chrysopilus ningminganus C.YANG et D.YANG, 1993a, J. Guangxi Acad. Sci., 9: 51. Type locality: Ningming, Guangxi.

Female. Apical part of wing distad from the line between stigma and base of M3 darker. Clypeus, thorax, coxa and femur yellow. Abdomen largely yellow but segment 4 entirely black. Frons at narrowest point less than $1/2$ as wide as one eye. Palpus large and spatulate.

Female. Body length 10.5 mm, wing length 11.0 mm. Head black, and pale gray pollinose. Frons with a violet lustre in certain lights. Hairs on head pale, but upper occiput, vertex, frons and parafacial with black hairs. Antenna dark brown to black, arista dark



Figs. 105–106. *Chrysopilus ningminganus* C. YANG et D. YANG, female. 105, Wing; 106, abdomen, lateral view.

brown; scape bare, pedicel black haired, flagellum white pubescent, arista black haired. In outer view, pedicel distinctly smaller than scape or flagellum; flagellum much wider than long; arista slender and long [but not measured]. Proboscis yellow with yellow hairs; palpus dark brown with dark yellow base and minute white pubescent (basal portion with some longer yellow hairs); palpus large and spatula-like. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.3 times distance from antennae to median ocellus, 1.6 times width of frons just above antennae, and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.8 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 1.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae 0.9 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 3.3 times as wide as parafacial on a mid line, and 0.7 times as wide as face at upper margin of clypeus.

Thorax yellow, mesonotum and scutellum brownish yellow; mesonotum may have one median longitudinal spot and two pairs of small lateral spots which are indistinct and brownish. Mesonotum and scutellum with short black hairs; pleuron with chiefly yellow hairs. Legs yellow, but tibia brownish yellow and tarsus dark brown. Hairs on legs black, but coxa yellow haired; fore and mid femora partly yellow haired. Wing hyaline, tinged with yellow particularly on costal field; apical portion darker; stigma shorter, dark brown, not reaching to wing margin; veins brownish yellow to brown; basal section of M2 0.3 times as long as crossvein m. Halter brown to dark brown, but yellow basally.

Abdomen yellow to brownish yellow, but segments 4 and 8–9, sternite 5 (except posterolateral part) and posterior part of sternite 3 dark brown to black. Hairs on abdomen chiefly black and recumbent.

Male. Unknown.

Specimen examined. Holotype , Ningming, Guangxi, 19. v. 1984, Fasheng LI.

Distribution. China (Guangxi).

Remarks. This species is similar to *grandis* (which is possibly identical with *ferruginosus*) but may be separated from the latter as shown in the key (couplet 6).

Chrysopilus obscuralatus D.YANG et C.YANG

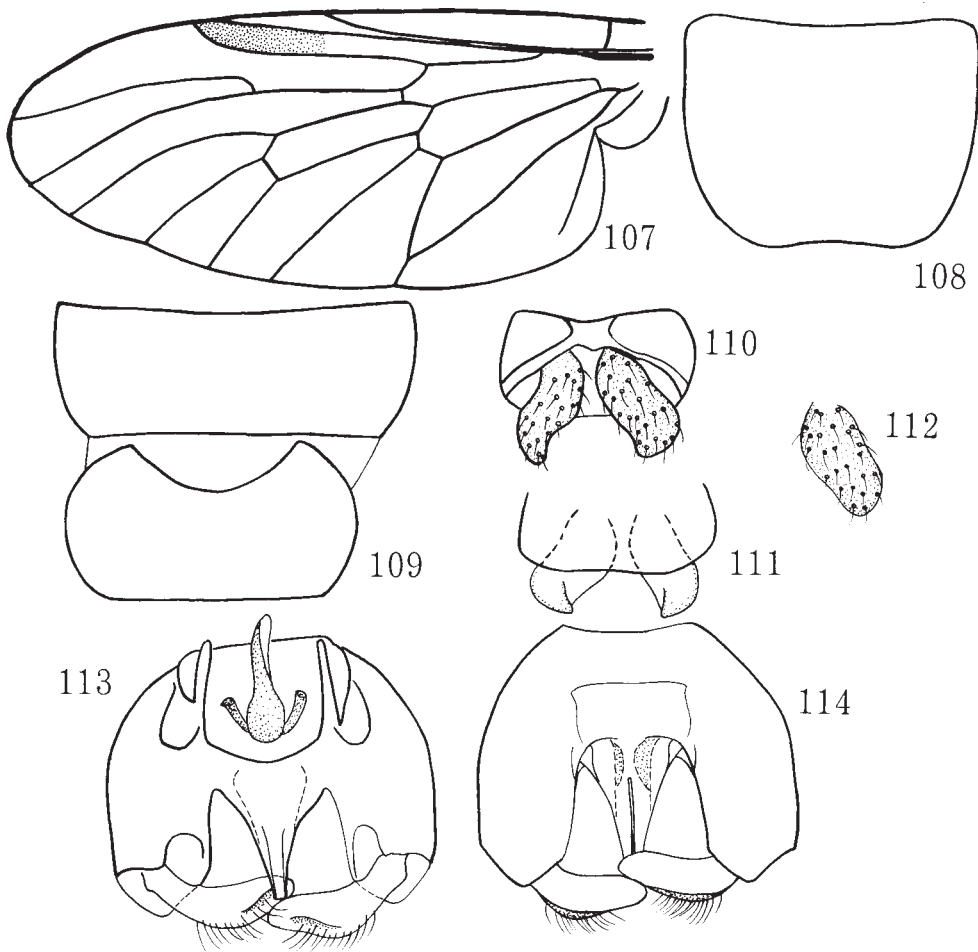
(Figs. 107–114)

Chrysopilus obscuralatus D.YANG et C.YANG, 1989, Entomotaxon., 11: 245. Type locality: Huanglong, Shaanxi.

Chrysopilus ningxianus D.YANG et C.YANG, 1991, Acta Agric. Univ. Pekin., 17: 94. Type locality: Lupan Mountain, Ningxia. **New synonymy.**

Male. Antenna, palpus, thorax, coxa, femur, and abdomen dark brown to black. Palpus stout and longer than clypeus. Clypeus ending far below antennae. Parafacial wide and over 1/2 as wide as clypeus. frons much wider than one eye and face parallel-sided.

Male. Body length 7.4 mm, wing length 6.8 mm. Head black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle and upper margin of occiput with black hairs; frons, upper face, parafacial and clypeus bare. Antenna black; scape bare, pedicel black haired, flagellum and arista minutely pale haired. Flagellum somewhat longer than wide and than pedicel, not wider than pedicel; arista stout and roughly twice as long as rest of antenna. Proboscis blackish with black hairs; palpus black with long pale hairs (except apex with some black hairs). Palpus robust and not shorter than clypeus. Head (excluding protruded clypeus) 1.4 times higher than long; eye with contiguous portion 1.4 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus, 1.6 times width of frons just above antennae, and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna



Figs. 107–114. *Chrysopilus obscuralatus* D. YANG et C. YANG, male. 107, Wing; 108, sternite 8; 109, tergites 9–10; 110, tergite 10 and cerci, dorsal view; 111, sternite 10 and cerci, ventral view; 112, cercus, dorso-lateral view; 113, genital capsule, dorsal view; 114, genital capsule, ventral view.

0.7 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 5.6 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus as wide as long, 1.6 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown, and pale gray pollinose; mesonotum with one mid-longitudinal darker spot and two pairs of darker lateral spots. Mesonotum and scutellum with golden yellow hairs (mesonotum also with some black hairs); pleuron with plae hairs. Legs black; coxa concolorous with pleuron; tip of femur yellow; tibia pale brownish yellow; tarsus brown to dark brown except tarsomere 1 brownish yellow. Hairs on legs black; coxa with long pale hairs; femur with pale recumbent dorsal hairs. Wing hyaline; stigma brownish yellow, longer and about 1/3 as long as cell R1, reaching to wing margin; veins brown to dark brown; basal section of M2 nearly as long as crossvein m; anal cell closed before wing margin. Halter yellow with apical half dark brown.

Abdomen black, and gray pollinose; dorsum with golden yellow and chiefly recumbent hairs, venter with pale hairs, genitalia with chiefly black hairs. Male genitalia (Figs. 108–114): Tergite 8 much wider than long, without distinct anterior incision; sternite 8 nearly quadrate; tergite 9 with a deep anterior incision; sternite 10 with broad apex; cercus band-like, somewhat curved inward apically; gonocoxites with a large membranous area on fused ventral portion; gonocoxal apodemes parallel; gonostylus curved and rounded apically; ejaculatory apodeme thick basally, and somewhat flattened apically.

Female. Body length 8.2 mm, wing length 8.3 mm. Similar to male except as follows: Frons and face each much wider than one eye; frons with short black hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.7 times distance from antennae to median ocellus, 0.5 times width of frons just above antennae, and 0.4 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.5 times distance from antennae to median ocellus, 0.9 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.1 times that from antennae to median ocellus; clypeus 1.1 times as wide as long, 1.4 times as wide as parafacial on a mid line, and 0.4 times as wide as face at upper margin of clypeus. Hairs on abdominal tergites 1–4 white.

Specimens examined. 1 ♂, 1 ♀ (holotype and paratype of *ningxianus*), Lupan Mountain (2,100 m), Ningxia, 14. vii. 1980, Chi-Kun Yang.

Distribution. China (Shaanxi, Ningxia).

Remarks. It has been found that there is no significant difference between *obscuralatus* and *ningxianus*. *C. obscuralatus* (= *C. ningxianus*) is similar to *pingquanus* but is separated from the latter as shown in the key (couplet 32).

Chrysopilus pallipilosus C.YANG et D.YANG
(Fig. 115)

Chrysopilus pallipilosus C.YANG et D.YANG, 1992, Acta Ent. Sin., 35: 354. Type locality: Jinxiu, Guangxi.

Female. Antenna, palpus, thorax, coxa, femur and abdomen dark brown to black. Frons at narrowest point somewhat wider than one eye.

Female. Body length 6.0 mm, wing length 6.7 mm. Head black, and pale gray pollinose. Hairs on head black; frons with short black hairs; parafacial black haired; upper face and clypeus bare. Antenna brown, arista dark brown; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Flagellum about as wide as pedicel; arista slender and roughly 4 times as long as rest of antenna. Proboscis and palpus dark brown to black and with black hairs which are chiefly pale on the former. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.3 times distance from antennae to median ocellus, 0.9 times width of frons just above antennae, and 0.7 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.5 times distance from antennae to median ocellus, 0.9 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.4 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 3.3 times as wide as parafacial on a mid line, and 0.7 times as wide as face at upper margin of clypeus. Upper face much shorter than clypeus.

Thorax dark brown to black, and pale gray pollinose. Hairs on thorax black; mesonotum and scutellum with chiefly white and shorter recumbent hairs; metapleuron with chiefly pale hairs. Legs brownish yellow to dark brownish yellow; coxa black and concolorous with pleuron; tarsus brown to dark brown except tarsomere 1 somewhat pale. Hairs on legs black; coxa with black hairs; femur with some pale erect hairs and with pale recumbent

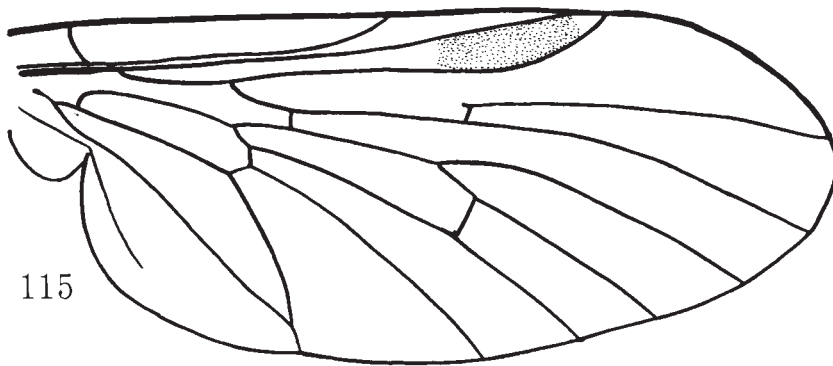


Fig. 115. *Chrysopilus pallipilosus* C. YANG et D. YANG, female wing.

dorsal hairs. Wing hyaline, indistinctly tinged with brown on apical portion; stigma dark brown, not reaching to wing margin; veins dark brown; R4 with a short basal appendage; basal portion of M2 1.2 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, knob dark brown.

Abdomen black, and more or less pale gray pollinose. Hairs on abdomen dense and black; tergite 1 wholly white chiefly recumbent haired; tergites 2–4 with white recumbent hairs on anterior border.

Male. Unknown.

Specimen examined. Holotype , Jinxiu, Guangxi, 14. vi. 1982, Chi-kun Yang.

Distribution. China (Guangxi).

Remarks. This species is similar to *guangxiensis* and *sauteri* but may be separated from the latter as shown in the key (couplets 33 and 42).

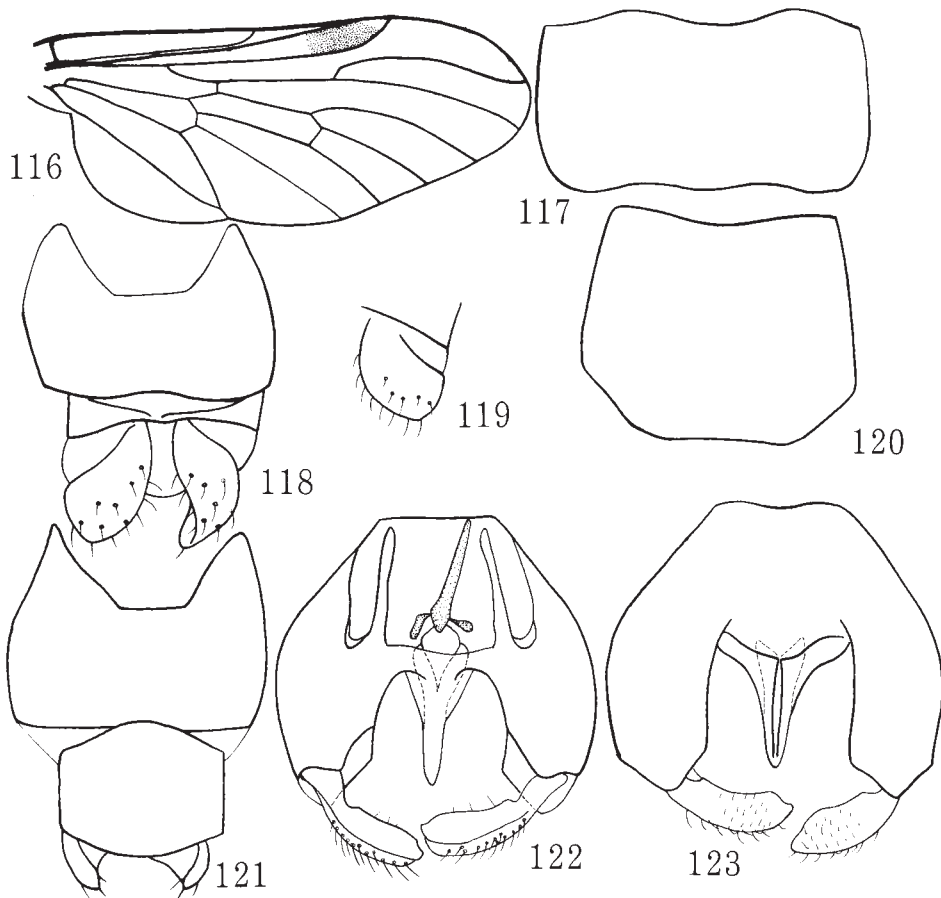
Chrysopilus parvus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 116–123)

Male. Body rather smaller (wing length 4.3 mm). Antenna, palpus, thorax, and abdomen dark brown to black. Legs also dark brown to black, but tibia and tarsomere 1 brown or somewhat paler than femur. Hairs on gena and palpus black. Parafacial about as wide as clypeus. Flagellum longer than wide and than pedicel. Arista stout and less than twice as long as rest of antenna.

Male. Body length 4.8 mm, wing length 4.3 mm. Head black, and pale gray pollinose. Hairs black and those on ocellar tubercle and upper occiput very short; frons, upper face, parafacial and clypeus bare. Antenna dark brown; pedicel black haired; flagellum pale haired. Scape distinctly shorter than pedicel; flagellum longer than wide and than pedicel; arista stout and less than 2 times as long as rest of antenna. Proboscis and palpus dark brown with black hairs. Palpus slender and longer than clypeus. Head (excluding protruded clypeus) 1.2 times higher than long; eye with contiguous portion 1.5 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 1.5 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.6 times distance from antennae to median ocellus, 0.8 times width of face at lowest point from a direct frontal view, and 5.9 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus as wide as long, as wide as parafacial, and 0.4 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose. Mesonotum and scutellum with longer black hairs and shorter pale ones; propleuron and metapleuron pale haired. Legs dark brown to black; coxa concolorous with pleuron; tibia brownish yellow; tarsus brown to dark brown except tarsomere 1 somewhat paler. Hairs on legs black; hind coxa and femur partly pale haired. Wing hyaline; stigma brown, less than 3 times as long as wide, truncate at both ends, and not reaching to wing margin; veins brown to dark brown; basal section of M2 0.8



Figs. 116–123. *Chrysopilus parvus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 116, Wing; 117, tergite 8; 118, tergites 9–10 and cerci, dorsal view; 119, cercus, dorso-lateral view; 120, sternite 8; 121, tergite 9, sternite 10 and cerci, ventral view; 122, genital capsule, dorsal view; 123, genital capsule, ventral view.

times as long as crossvein m; anal cell closed near wing margin. Halter brown to dark brown with base of stem brown.

Abdomen dark brown to black, and pale gray pollinose. Dorsum pale haired, venter black haired. Male genitalia (Figs. 117–123): Tergite 8 much wider than long, with a weak mid-anterior incision; sternite 8 nearly as wide as long, somewhat narrow apically; tergite 9 wider than long, with a trapezoid anterior incision; sternite 10 broad, with widely rounded apex; cercus as in figures; gonocoxites with anterior margin nearly straight on fused ventral portion; gonostylus long and thick, with apical margin oblique and weakly concave; gonocoxal apodemes nearly parallel; ejaculatory apodeme thick basally.

Female. Unknown.

Holotype , Shangyou, Jiangxi, 1. v. 1978, Chi-kun YANG.

Distribution. China (Jiangxi).

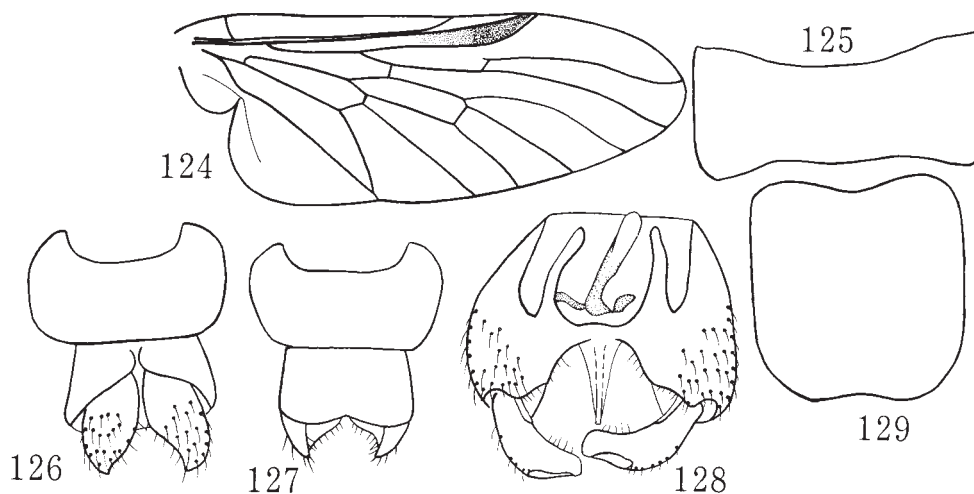
Remarks. This species is most closely related to *gansuensis* but may be easily separated from the latter as shown in the key (couplet 30).

Chrysopilus pingquanus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 124–129)

Male and female. Antenna, palpus, thorax, coxa and abdomen dark brown to black. Femur, tibia and tarsomere 1 brownish yellow to yellow. Hairs on gena and palpus pale. Parafacial abundantly pale haired. frons much wider than one eye.

Male. Body length 7.6–8.0 mm, wing length 6.6–6.9 mm. Head black, and pale gray pollinose. Hairs on head pale, but upper occiput and ocellar tubercle black haired; frons, upper face bare; clypeus sparsely haired, parafacial abundantly haired. Antenna dark brown to black; scape bare, pedicel black or pale haired, flagellum and arista minutely pale pubescent. Arista less than 3 times as long as rest of antenna. Proboscis brownish yellow to brown with pale hairs; palpus dark brown with pale hairs. Head (excluding protruded clypeus) 1.3–1.5 times higher than long; eye with contiguous portion 1.2–1.3 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1–1.2 times distance from antennae to median ocellus, 2.9–3.1 times width of frons just above antennae, and 0.9–1.0 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.3–0.4 times distance from antennae to median ocellus, 0.3–0.35 times width of face at lowest point in direct frontal view, and 4.0–4.3 times width of frons at median ocellus; distance from proboscis to antennae 0.6–0.7 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.1–1.5 times as wide as parafacial on a mid line,



Figs. 124–129. *Chrysopilus pingquanus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 124, Wing; 125, tergite 8; 126, tergites 9–10 and cerci, dorsal view; 127, tergite 9, sternite 10 and cerci, ventral view; 128, genital capsule, dorsal view; 129, sternite 8.

and 0.4–0.6 times as wide as face at upper margin of clypeus. [N = 4].

Thorax dark brown to black, and pale gray pollinose; mesonotum with three wide darker spots. Thorax with pale or yellow hairs which are mostly recumbent on mesonotum. Legs brownish yellow; coxa black and concolorous with pleuron; tarsus somewhat darker apically. Hairs on legs black; coxa long pale haired, femur shorter pale haired. Wing hyaline, weakly tinged with brown; stigma dark brown, elongate, reaching to wing margin; veins brownish yellow; R4 with a short appendage; basal section of M2 0.3 times as long as crossvein m; anal cell closed near wing margin. Halter yellow, knob black.

Abdomen dark brown to black, pale gray pollinose and pale haired. Male genitalia (Figs. 125–129): Tergite 8 much wider than long, with a distinct mid-anterior incision; sternite 8 nearly quadrate, longer than wide; tergite 9 wider than long, with a arcuate anterior incision; sternite 10 quadrate, weakly concave mid-posteriorly; cercus as in figure and somewhat acute apically; gonocoxites with anterior margin nearly straight on fused ventral portion; gonostylus thick and curved; gonocoxal apodemes nearly parallel; ejaculatory apodeme curved basally.

Female. Body length 8.0–8.3 mm, wing length 7.5–9.1 mm. Similar to male except as follows: Frons with black hairs. Palpus wider than long and than pedicel. Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.0–1.3 times distance from antennae to median ocellus, 0.6–0.7 times width of frons just above antennae, and 0.5–0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.6–2.0 times distance from antennae to median ocellus, 0.7–0.8 times width of face at lowest point in direct frontal view, and 0.8–0.9 times width of frons at median ocellus; distance from proboscis to antennae 2.0 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.3–1.4 times as wide as parafacial, and 0.45–0.5 times as wide as face at upper margin of clypeus. [N = 2]. Hairs on abdomen shorter than in ♂, and mostly recumbent.

Holotype ♀, paratypes 6 ♀, 2 ♂, Pingquan (2,000 m), Hebei, 2–4. vii. 1986, Fasheng LI.

Distribution. China (Hebei).

Remarks. This species falls in couplets 32 and 41 according to the interpretation of femur coloration and is similar to *obscuralatus* (= *ningxianus*), *guangxiensis*, *sauteri* and *pallipilosus*, but may be separated from them as shown in the key.

Chrysopilus pingxianganus C.YANG et D.YANG
(Figs. 130–131)

Chrysopilus pingxianganus C.YANG et D.YANG, 1992, Acta. Ent. Sin., 35: 353. Type locality: Pingxiang, Guangxi.

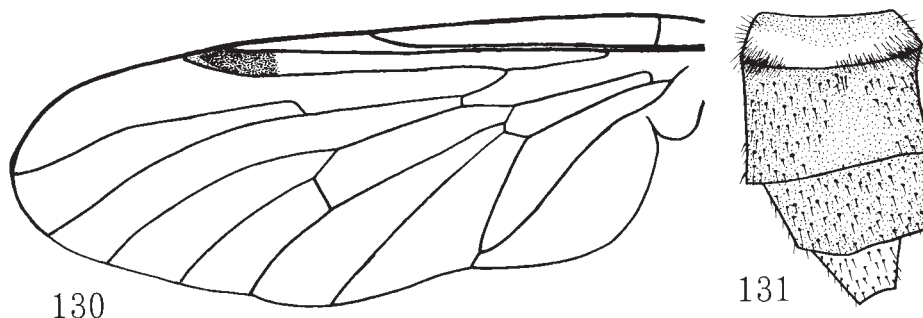
Female. Mesonotum, scutellum and abdomen possibly sooty black [examined specimen is not in good condition]. Palpus, pleuron and coxa dark brown to black. Femur (except

base of fore and mid femora) and tibia yellow. Frons somewhat wider than one eye.

Female. Body length 8.0 mm, wing length 8.2 mm. Head black, and pale gray pollinose; clypeus dark yellow. Hairs on head pale; frons and lower part of parafacial with some indistinct pale hairs; upper face and clypeus bare. [Antennal flagellum and arista broken off]. Scape black and bare, pedicel brownish with black hairs. In dorsal or outer view, scape somewhat larger than pedicel. Proboscis brownish yellow with pale hairs; palpus black with black hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 0.9 times width of frons just above antennae, and 0.7 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.0 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 0.8 times width of frons at median ocellus; distance from proboscis to antennae 1.0 times that from antennae to median ocellus; clypeus as wide as long, 3.0 times as wide as parafacial on a mid line, and 0.7 times as wide as face at upper margin of clypeus. Upper face distinctly shorter than clypeus.

Thorax dark brown to black, and pale gray pollinose. Mesonotum and scutellum with some black hairs (on lateral margin before suture, postalar ridge, and posterior part of scutellum) and with dense golden yellow recumbent hairs [which were probably rubbed off except antero-lateral part of mesonotum]; pleuron with pale hairs. Legs yellow; coxa dark brown and concolorous with pleuron; trochanter dark brown; base of fore and mid femora blackish; tarsus brown to dark brown, but tarsomere 1 (except apical portion) paler. Hairs on legs black; coxa with black hairs, femur with chiefly pale hairs. Wing hyaline; stigma brown to dark brown, reaching or nearly reaching to wing margin; veins brown to dark brown; basal portion of M2 1.2 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, knob (except for base) brown to dark brown.

Abdomen dark brown to black, and pale gray pollinose; apical portion of tergite 1



Figs. 130–131. *Chrysopilus pinxianganus* C.YANG et D.YANG, female. 130, Wing; 131, basal portion of abdomen, dorsal view.

brownish yellow, tergite 4 (except base) and tergite 5 yellow. Hairs on abdomen pale.

Male. Unknown.

Specimen examined. Holotype , Pingxiang, Guangxi, 11. v. 1963, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species would be similar to *yunnanensis* (if mesonotum, scutellum and abdomen sooty in *pingxianganus*), but may be separated from the latter as shown in the key (couplet 17). It would be similar to *shaanxiensis* (if mesonotum, scutellum and abdomen not sooty in *pingxianganus*), but may be separated from the latter by having the palpus with black hairs.

Chrysopilus poecilopterus BEZZI

Chrysopilus poecilopterus BEZZI, 1912, Ann. Mus. Nat. Hung., 10: 450. Type locality: Toyenomgai or Fuhosho, Taiwan.

Chrysopilus amamiensis NAGATOMI, 1968, Mushi, 42: 33. Type locality: Amami Oshima.

For taxonomic notes on this species, see NAGATOMI (1968, 1978, 1986c) and NAGATOMI & KANMIYA (1968).

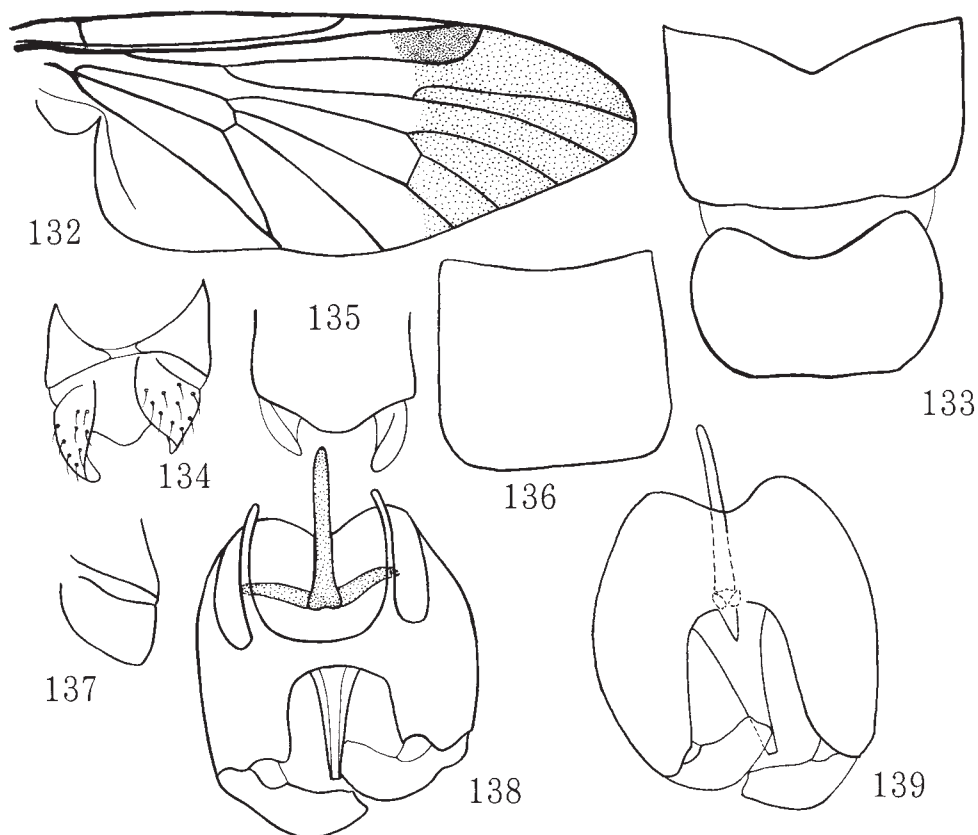
Distribution. China (Taiwan), Japan.

Chrysopilus ruii C.YANG et D.YANG
(Figs. 132–139)

Chrysopilus ruii C.YANG et D.YANG, 1990b, Zool. Res., 11: 280. Type locality: Ruili, Yunnan.

Male. Apical part of wing (distad from the line between stigma and base of M3) darker. Antenna, palpus, thorax, coxa and abdomen dark brown to black.

Male. Body length 6.0 mm, wing length 5.0 mm. Head black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle and upper occiput with relatively long black hairs; frons, upper face, parafacial (except lower portion with short black hairs) and clypeus bare. Antenna black; scape bare, pedicel black haired; flagellum and arista minutely pale pubescent. Flagellum not wider than pedicel; arista roughly 3 times as long as rest of antenna. Proboscis brownish yellow with pale hairs; palpus black with chiefly pale hairs. Head (excluding protruded clypeus) 1.5 times higher than long; eye with contiguous portion 1.7 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 2.2 times width of frons just above antennae, and 1.1 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.5 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view, and 3.9 times width of frons at median ocellus; distance from proboscis to antennae 0.8 times that from antennae to median ocellus; clypeus



Figs. 132–139. *Chrysopilus ruiienseis* C. YANG et D. YANG, male. 132, Wing; 133, tergites 8–9; 134, tergite 10 and cerci, dorsal view; 135, sternite 10 and cerci, ventral view; 136, sternite 8; 137, cercus, dorso-lateral view; 138, genital capsule, dorsal view; 139, genital capsule, ventral view.

0.9 times as wide as long, 2.0 times as wide as parafacial on a mid line, and 0.5 times width of face at upper margin of clypeus.

Thorax black, and pale gray pollinose. Hairs on thorax pale; mesonotum and scutellum with some longer black hairs and sparse golden yellow chiefly recumbent hairs. Legs brown to dark brown; coxa darker and concolorous with pleuron; tibia brownish yellow. Hairs on legs black; coxa with longer pale hairs; femur with chiefly pale hairs and with scale-like pale dorsal hairs. Wing hyaline; stigma short and broad, dark brown, reaching or nearly reaching to wing margin; apical portion entirely brownish; veins brown to dark brown; basal portion of M2 0.8 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, knob dark brown.

Abdomen slender, black, and pale gray pollinose. Hairs on abdomen chiefly pale and those on dorsum long; tergites 1–3 with some golden yellow recumbent hairs. Male genitalia (Figs. 133–139): Tergite 8 distinctly wider than long, with a nearly V-shaped anterior incision; sternite 8 quadrate; tergite 9 distinctly wider than long, with a distinct anterior

incision; stergite 10 with apex distinctly narrow and obtuse; cercus somewhat acute apically in dorsal view; gonocoxites with a distinct anterior incision on fused ventral portion; gonostylus somewhat curved, with apex truncate; gonocoxal apodemes nearly parallel, slightly curved inwards apically; ejaculatory apodeme somewhat wider basally.

Female. Unknown.

Specimen examined. Holotype , Ruili, Yunnan, 29. iv. 1981, Chi-kun YANG.

Distribution. China (Yunnan).

Remarks. Among the Chinese species whose pleuron is dark brown to black, *C. ruiensis* is characterized by having the apical part of wing (distad from stigma) darker.

Chrysopilus sauteri BEZZI

Chrysopilus sauteri BEZZI, 1907, Ann. Mus. Nat. Hung., 5: 564. Type locality: Takao, Taiwan.

Leptis basalis MATSUMURA, 1915, Kontyu-bunruigaku, part 2, p. 39. Type locality: Sapporo, Hokkaido (preoccupied by *Leptis basalis* PHILIPPI, 1865 from Chile and *Chrysopilus basalis* WALKER, 1860 from Mexico).

Chrysopilus matsumurai NAGATOMI, 1968, Mushi, 42: 42 (new name for *Leptis basalis* MATSUMURA, 1915).

For taxonomic notes on *sauteri* (= *basalis*; *matsumurai*), see NAGATOMI (1968, 1978, 1986c) and NAGATOMI & KANMIYA (1968).

Distribution. China (Taiwan), Japan.

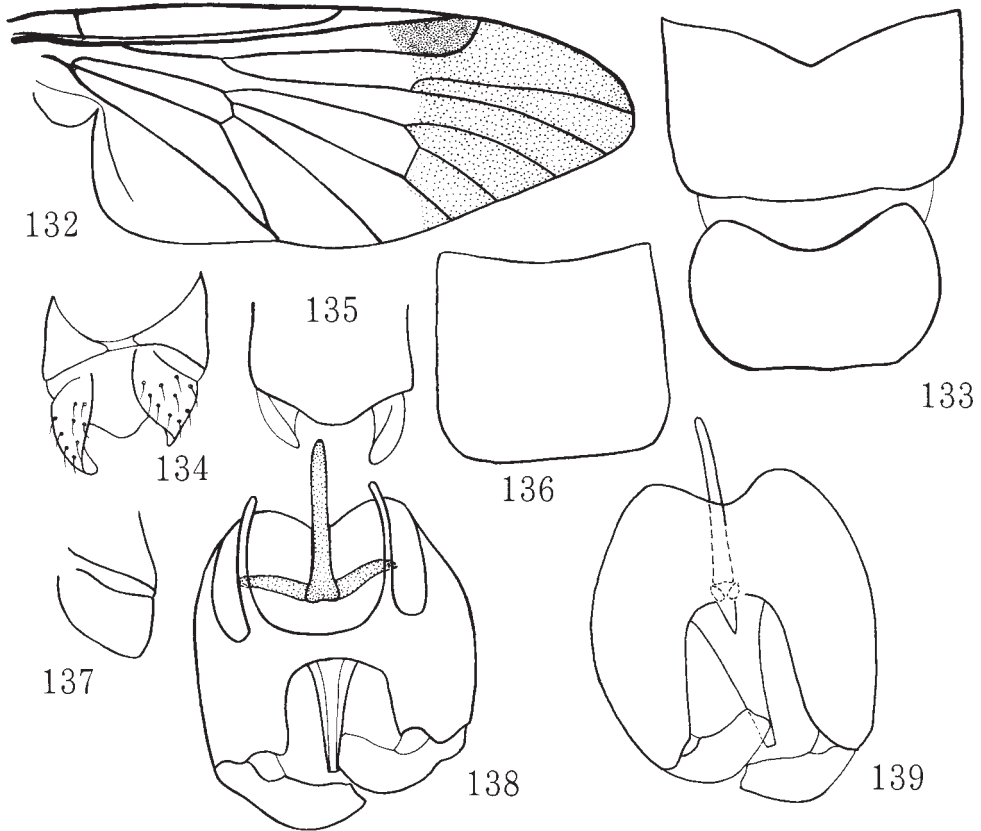
Chrysopilus shaanxiensis D.YANG et C.YANG
(Figs. 140–147)

Chrysopilus shaanxiensis D.YANG et C.YANG, 1989, Entomotaxon., 11: 244. Type locality: Chang'an, Shaanxi.

Male and female. Antenna, palpus, thorax, coxa and abdomen black. Femur and tibia yellow. Mesonotum, scutellum and abdominal dorsum with golden yellow recumbent hairs. Stigma short, truncate at both ends and not reaching to wing margin. Female frons somewhat wider than one eye.

Male. Body length 5.9–7.5 mm, wing length 6.4–6.5 mm. Head dark brown to black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle black haired; frons, parafacial (except lower portion) and clypeus bare. Antenna dark brown to black; scape bare, pedicel black haired, flagellum pale pubescent. Pedicel longer than scape and flagellum; arista roughly 3 times as long as rest of antenna. Proboscis yellow with pale hairs; palpus dark brown to black with chiefly black hairs. Head (excluding protruded clypeus) 1.4–1.6 times higher than long; eye with contiguous portion 1.7–2.0 times as long as ocellar triangle;

width of one eye on a mid line in direct frontal view 0.9–1.0 times as long as distance from antennae to median ocellus, 1.7–1.8 times width of frons at median ocellus, and 1.1–1.3 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.5 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view, and 7.4–7.6 times width of frons at median ocellus; distance from proboscis to antennae 0.6–0.7 times that from antennae to median ocellus; clypeus 0.9–1.0



Figs. 132–139. *Chrysopilus ruliensis* C. YANG et D. YANG, male. 132, Wing; 133, tergites 8–9; 134, tergite 10 and cerci, dorsal view; 135, sternite 10 and cerci, ventral view; 136, sternite 8; 137, cercus, dorso-lateral view; 138, genital capsule, dorsal view; 139, genital capsule, ventral view.

times as wide as long, 1.8–1.9 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus. [N = 3].

Thorax dark brown to black, and pale gray pollinose. Mesonotum and scutellum with recumbent golden yellow hairs and with some black hairs. Legs yellow, coxa dark brown and concolorous with pleuron; tibia brownish yellow; tarsus dark brown, but tarsomere 1 (except for apex) brownish yellow. Hairs on legs black, but coxa and femur with pale hairs which are scale-like on dorsal surface of the latter. Wing hyaline; stigma pale yellow, short, truncate at both ends, and not reaching to wing margin; veins brownish to dark brown; basal section of M2 1.2 times as long as crossvein m; petiole of anal cell usually longer than m-cu crossvein. Halter pale yellow, knob (except base) dark brown.

Abdomen dark brown to black, and pale gray pollinose. Abdominal dorsum with golden yellow recumbent hairs and at side with longer erect ones; venter and some posterior tergites with black hairs. Male genitalia (Figs. 141–147): Tergite 8 wider than long, with anterior margin distinctly concave; sternite 8 nearly quadrate; tergite 9 wider than long, with a deep anterior incision; cercus more or less acute apically; gonocoxites with a distinct mid-anterior incision on fused ventral portion; gonocoxal apodemes long and weakly convergent apically; dorsal plate narrow and tapering toward apex; gonostylus thick and curved.

Female. Body length 5.0–7.0 mm, wing length 5.2–7.2 mm. Similar to male except as follows: Frons chiefly pale haired. Palpus with chiefly or wholly pale hairs. Mesonotum and scutellum sometimes without black hairs (it may be so in). Abdomen pale haired. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.7 times distance from antennae to median ocellus, 0.7 times width of frons just above antennae, and 0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.9 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view; distance from ridge below proboscis to antennae 1.2 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 2.0 times as wide as parafacial, and 0.5 times as wide as face at upper margin of clypeus. [N = 1].

Specimens examined. Holotype , Chang'an, Shaanxi, viii. 1957, Io CHOU; 3 , Miaofengshan, Beijing, 7–9. vii. 1964, Chi-kun YANG and Yu LIU; 1 , Miaofengshan, Beijing, vi. 1955, Chi-kun YANG; 1 , Miaofengshan, Beijing, 27. vi. 1955, Xuezhu XIA; 4 , 3 , Xianshan, Beijing, 5–26. vii. 1962, Chi-kun YANG and Fasheng LI.

Distribution. China (Shaanxi, Beijing).

Remarks. This species may be easily separated from *neimongolicus* as shown in the key (couplet 39).

Chrysopilus trimaculatus D.YANG et C.YANG

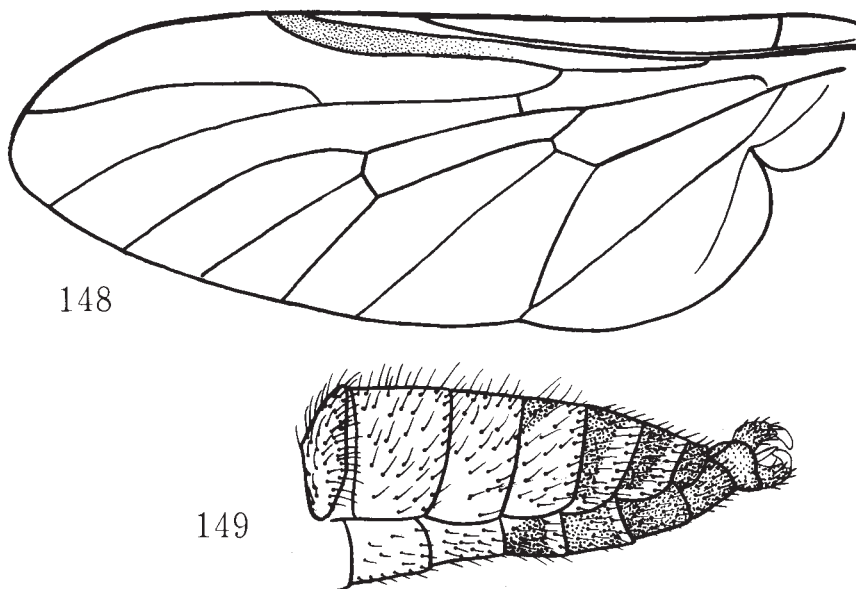
(Figs. 148–156)

Chrysopilus trimaculatus D.YANG et C.YANG, 1989, Entomotaxon., 11: 245. Type locality:

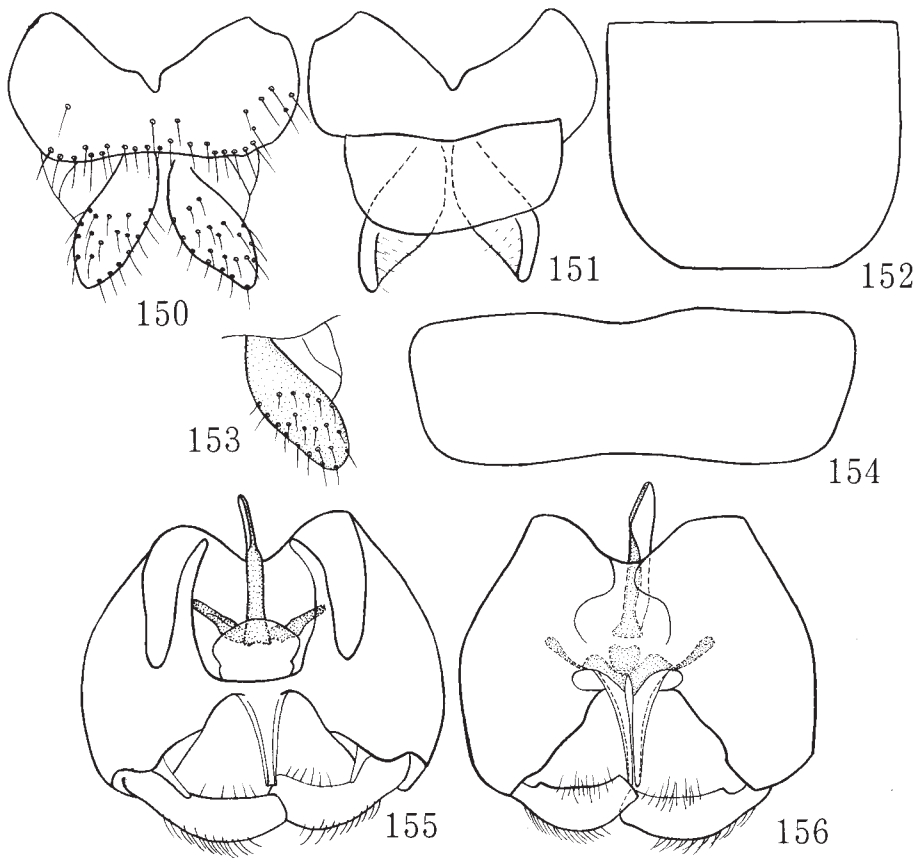
Lupan Mountain, Ningxia.

Male and female. Wing below stigma with a large darker area whose boundary is indistinct. Antenna, palpus, clypeus, coxa and femur dark yellow. Mesonotum and scutellum dark brown to black. abdominal tergites 1–3 or 1–4 largely dark yellow. abdomen largely either dark yellow or dark brown. frons wider than one eye. flagellum distinctly longer than pedicel.

Male. Body length 6.7–6.9 mm, wing length 6.1–6.3 mm. Head brownish black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle with black hairs; frons, mid-upper part of occiput, upper face and clypeus bare. Antenna yellow; scape bare, pedicel black haired, flagellum minutely pale pubescent; arista dark brown. Flagellum about as wide as pedicel; arista roughly 2.5 times as long as rest of antenna. Proboscis and palpus yellow with pale hairs. Head (excluding protruded clypeus) 1.4 times higher than long; eye with contiguous portion 1.0–1.3 times as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.0–1.1 times distance from antennae to median ocellus, 1.9–2.1 times width of frons just above antennae, and 1.0–1.1 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.5 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view, and 4.3–4.6 times width of frons at median ocellus; distance from proboscis to antennae 0.7–0.8 times



Figs. 148–149. *Chrysopilus trimaculatus* D. YANG et C. YANG, male. 148, Wing; 149, abdomen, lateral view.



Figs. 150–156. *Chrysopilus trimaculatus* D. YANG et C. YANG, male. 150, Tergites 9–10 and cerci, dorsal view; 151, tergite 9, sternite 10 and cerci, ventral view; 152, sternite 8; 153, cercus, dorso-lateral view; 154, tergite 8; 155, genital capsule, dorsal view; 156, genital capsule, ventral view.

that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.5–1.6 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Thorax brownish yellow to yellow, and pale brown pollinose; mesonotum with three broad darker longitudinal spots; scutellum somewhat darker dorsally. Hairs on thorax pale; mesonotum and scutellum with many golden yellow recumbent hairs. Legs yellow; tarsus brown to dark brown except tarsomere 1 somewhat pale. Hairs on legs chiefly black; coxa and femur with pale hairs. Wing tinged with brown, particularly on anterior field; stigma elongate and brown (sometimes dark yellow), reaching to wing margin; veins brown to dark brown; basal section of M2 0.3 times as long as crossvein m; anal cell closed before wing margin. Halter yellow, but knob (except base) dark brown.

Abdomen yellow to dark yellow, and gray pollinose; base of tergites 2–6 (or 4–6) darker; sternites 4–6 (except posterior border) and segments 7–8 may be also darker. Abdomen with pale hairs which are longer, erect and partly black. Male genitalia (Figs. 150

–156): Tergite 8 much wider than long, with anterior margin slightly concave medially; sternite 8 nearly quadrate, with apex somewhat narrow; tergite 9 longer than wide, with a deep anterior incision; sternite 10 nearly transversely quadrate; cercus long and band-shaped; gonocoxites with a distinct mid-anterior incision on fused ventral portion; gonocoxal apodemes long and weakly convergent apically; dorsal plate narrow and tapering toward apex; gonostylus weakly curved with apex wide.

Female. Body length 6.8–7.1 mm, wing length 6.7–7.1 mm. Similar to male except as follows: Upper occiput and frons with black hairs. Head (excluding protruded clypeus) 1.4–1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.3 times distance from antennae to median ocellus, 0.7–0.8 times width of frons just above antennae, and 0.6 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.7 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 0.8 times width of frons at median ocellus; distance from proboscis to antennae 1.7–1.8 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.5–1.7 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus. Flagellum wider and longer than pedicel; arista 2.3–2.6 times as long as rest of antenna (almost as in). [N = 3]. Wing: R4 sometimes with a basal appendage very reduced; basal section of M2 0.3–0.6 times as long as crossvein m. Abdomen largely dark yellow or dark brown; hairs on dorsum shorter (than in) and chiefly recumbent.

Specimens examined. Paratypes 3 , 2 , Lupan Mountain (2,100 m), Ningxia, 14. vii. 1980, Chi-kun YANG; 1 , Jiexiu (1,300 m), Shanxi, 28. vii. 1981, Chi-kun YANG.

Distribution. China (Shaanxi, Shanxi, Ningxia, Gansu, Beijing).

Remarks. This species is closely related to *hubeiensis* but may be separated from the latter as shown in the key (couplet 8).

Chrysopilus trypetopterus BEZZI

Chrysopilus marmoratus trypetopterus BEZZI, 1912, Ann. Mus. Nat.Hung., 10: 449. Type locality: Toyenmongai or Fuhosho, Taiwan.

For redescription of this species, see NAGATOMI (1986c).

Distribution. China (Taiwan).

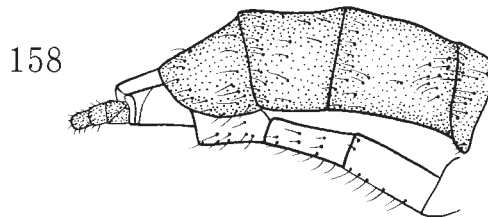
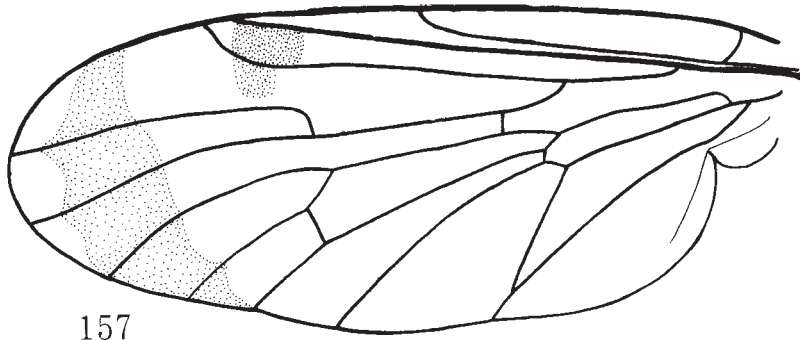
Remarks. This species is characterized by having the wing mottled and a sinuate R4 vein.

Chrysopilus xanthocromus C.YANG et D.YANG (Figs. 157–158)

Chrysopilus xanthocromus C.YANG et D.YANG, 1990b, Zool. Res., 11: 280. Type locality: Menghai, Yunnan.

Female. Wing with a darker band near apex (which is pale). Pterostigma truncate at both ends and apical portion of marginal cell widely pale. Flagellum, arista, and apex of palpus black. Thorax and abdomen dark brown to black. Coxa, femur and tibia yellow. Frons narrower than (but over 1/2 as wide as) one eye.

Female. Body length 5.5 mm, wing length 4.8 mm. Head black, and pale gray pollinose. Hairs on head pale; frons with some short black (and pale) hairs; upper face, parafacial and clypeus bare. Antennal scape and pedicel yellow, flagellum and arista black; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Flagellum about as wide as pedicel, pedicel longer than scape (even in outer view); arista roughly 3 times as long as rest of antenna. Proboscis yellow with pale hairs; palpus yellow except for apex black, and with pale hairs. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.3 times distance from antennae to median ocellus, 1.1 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.1 times distance from antennae to median ocellus, 0.8 times width of face at lowest point in direct frontal view, and 1.1 times width of frons at median ocellus; distance from proboscis to antennae 1.2 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.7 times as



Figs. 157–158. *Chrysopilus xanthocromus* C. YANG et D. YANG, female. 157, Wing; 158, abdomen, lateral view.

wide as parafacial on a mid line, and 0.6 times as wide as face at upper margin of clypeus. Upper face distinctly shorter than clypeus.

Thorax black, and pale gray pollinose. Hairs on thorax yellow; mesonotum and scutellum with some sparse golden yellow recumbent hairs [which are largely rubbed off]. Legs yellow; tibia brownish yellow, tarsus brown to dark brown. Hairs on legs black; coxa and femur with pale hairs; hind femur with some short black hairs in addition to pale ones. Wing hyaline with a brown transverse band near apex and a small brown spot just below stigma, which is short and broad, black, not reaching to wing margin; veins brown; basal portion of M2 as long as crossvein m; anal cell closed before wing margin. Halter yellow.

Abdomen dark brown to black, and pale gray pollinose; venter, segments 5–7, and cercus yellow. Hairs on abdomen pale; dorsum may have chiefly recumbent golden yellow hairs and some black ones.

Male. Unknown.

Specimen examined. Holotype , Menghai (1,160 m), Yunnan, 18. iv. 1981, Fasheng Li.

Distribution. China (Yunnan).

Remarks. This species may be easily separated from *nigrimarginatus* as shown in the key (couplet 24).

Chrysopilus xizangensis D.YANG et C.YANG
(Figs. 159–166)

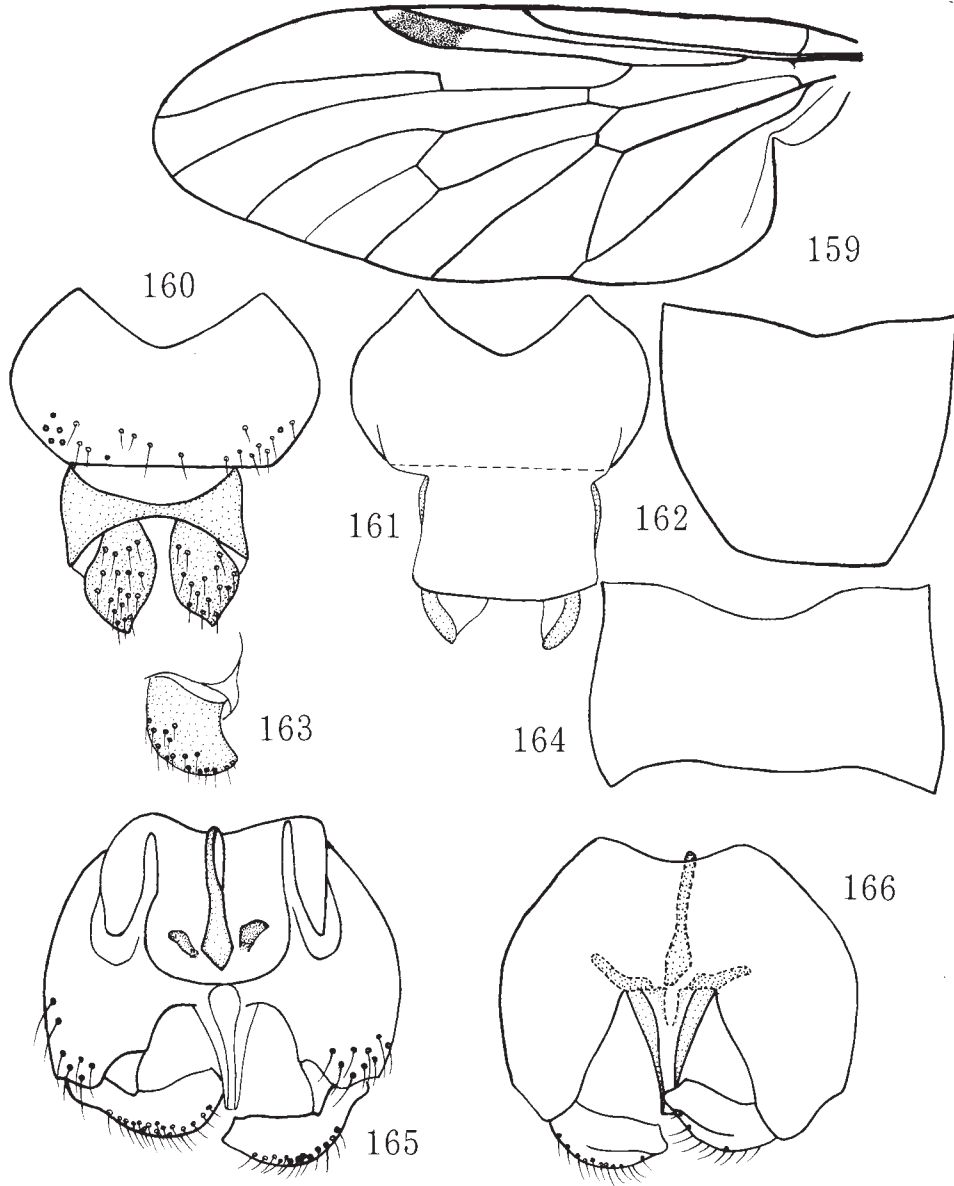
Chrysopilus xizangensis D.YANG et C.YANG, 1991, Acta. Agric. Univ. Pekin., 17: 93. Type locality: Lhasa, Xizang.

Male and female. Antenna, palpus, thorax, coxa and abdomen dark brown to black. eyes narrowly separated or contiguous. frons much wider than one eye. face parallel-sided.

Male. Body length 5.6–5.9 mm, wing length 5.6–5.7 mm. Head black, and pale gray pollinose. Hairs on head pale, but those on ocellar tubercle sometimes black; frons, upper face, parafacial, and clypeus bare. Antenna black; scape bare, pedicel black haired, flagellum and arista minutely pale pubescent. Pedicel larger than scape; flagellum not wider than pedicel; arista roughly 3 times as long as rest of antenna. Proboscis yellow with pale hairs; palpus dark brown with pale hairs. Head (excluding protruded clypeus) 1.5–1.6 times higher than long. Eyes narrowly separated or sometimes contiguous (their contiguous portion 0.6 times as long as ocellar triangle). Width of one eye on a mid line in direct frontal view 1.3–1.5 times distance from antennae to median ocellus, 2.0–2.2 times width of frons just above antennae, and 1.0–1.2 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.6–0.7 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view, and 4.7–5.0 times width of frons at median ocellus; distance from proboscis to antennae 0.8–0.9

times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 2.0–2.1 times as wide as parafacial on a mid line, and 0.5–0.6 times as wide as face at upper margin of clypeus. [N = 3]. Upper face shorter than clypeus.

Thorax black, and pale gray pollinose. Mesonotum and scutellum with many golden



Figs. 159–166. *Chrysopilus xizangensis* D. YANG et C. YANG, male. 159, Wing; 160, tergites 9–10 and cerci, dorsal view; 161, tergite 9, sternite 10 and cerci, ventral view; 162, sternite 8; 163, cercus, dorso-lateral view; 164, tergite 8; 165, genital capsule, dorsal view; 166, genital capsule, ventral view.

yellow recumbent hairs and without black hairs; pleuron with pale hairs. Legs blackish and yellow, coxa black and concolorous with pleuron; trochanter yellow to dark yellow; base of fore and mid femora and basal portion of hind femur yellow; tibia brownish yellow; tarsus brown to dark brown. Hairs on legs black; coxa with longer pale hairs; femur with pale scale-like dorsal hairs. Wing hyaline; stigma brown, short, not reaching to wing margin; veins dark brown; basal section of M2 1.2–1.3 times as long as crossvein m; anal cell closed before wing margin. Halter yellow; knob dark brown.

Abdomen slender, black, and pale gray pollinose; dorsum with many golden yellow recumbent hairs, venter with pale hairs. Male genitalia (Figs. 160–166): Tergite 8 wider than long, with distinct anterior incision; sternite 8 somewhat narrow apically, with a weak basal incision; tergite 9 with a nearly V-shaped anterior incision; sternite 10 nearly quadrate; cercus long and acute apically in dorsal view; gonocoxites with a weak anterior incision on fused ventral portion; gonostylus curved, and somewhat narrow and truncate apically; gonocoxal apodemes nearly parallel; ejaculatory apodeme flattened apically.

Female. Body length 6.5 mm, wing length 6.8 mm. Similar to male except as follows: Frons and face much wider than one eye respectively; frons with short black hairs. Head (excluding protruded clypeus) 1.6 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 0.5 times width of frons just above antennae, and 0.45 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.8 times distance from antennae to median ocellus, 0.9 times width of face at lowest point in direct frontal view, and 0.9 times width of frons at median ocellus; distance from proboscis to antennae 1.4 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.8 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus. Scape in ventral or outer view about as long as pedicel (scape longer than in). Wing: Basal section of M2 as long as crossvein m.

Specimens examined. Holotype , paratypes 2 , 1 , Lhasa (3,700 m), Xizang, 16–17. v. 1978, Fasheng LI; paratype 1 , Nyingchi (3,050 m), Xizang, 7. vi. 1978, Fasheng LI.

Distribution. China (Xizang).

Remarks. This species may be separated from *apicimaculatus* and *mojiangensis* as shown in the key (couplet 27).

Chrysopilus yunnanensis C.YANG et D.YANG
(Figs. 167–175)

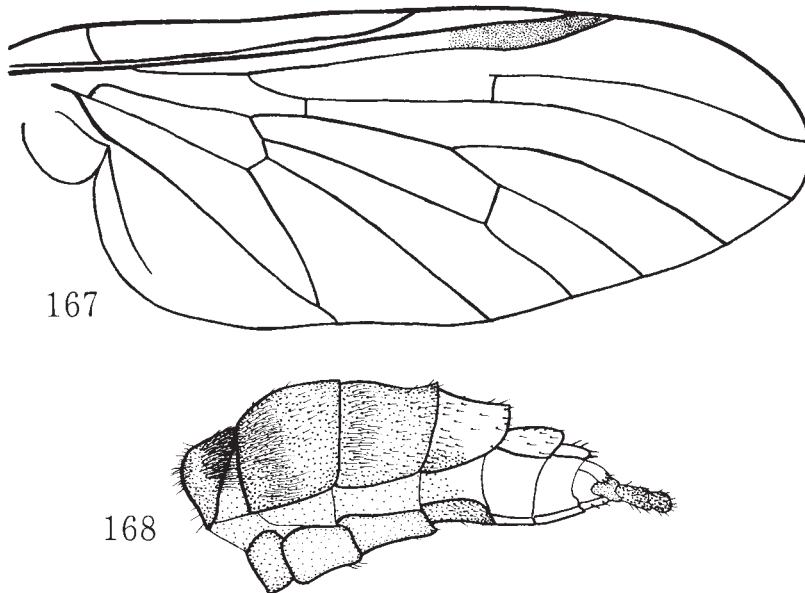
Chrysopilus yunnanensis C.YANG et D.YANG, 1990b, Zool. Res., 11: 279. Type locality: Ruili, Yunnan.

Male and female. Mesonotum, scutellum and abdomen sooty black. Antenna, palpus, pleuron and coxa black. frons wider than one eye and wholly not shining. face nearly

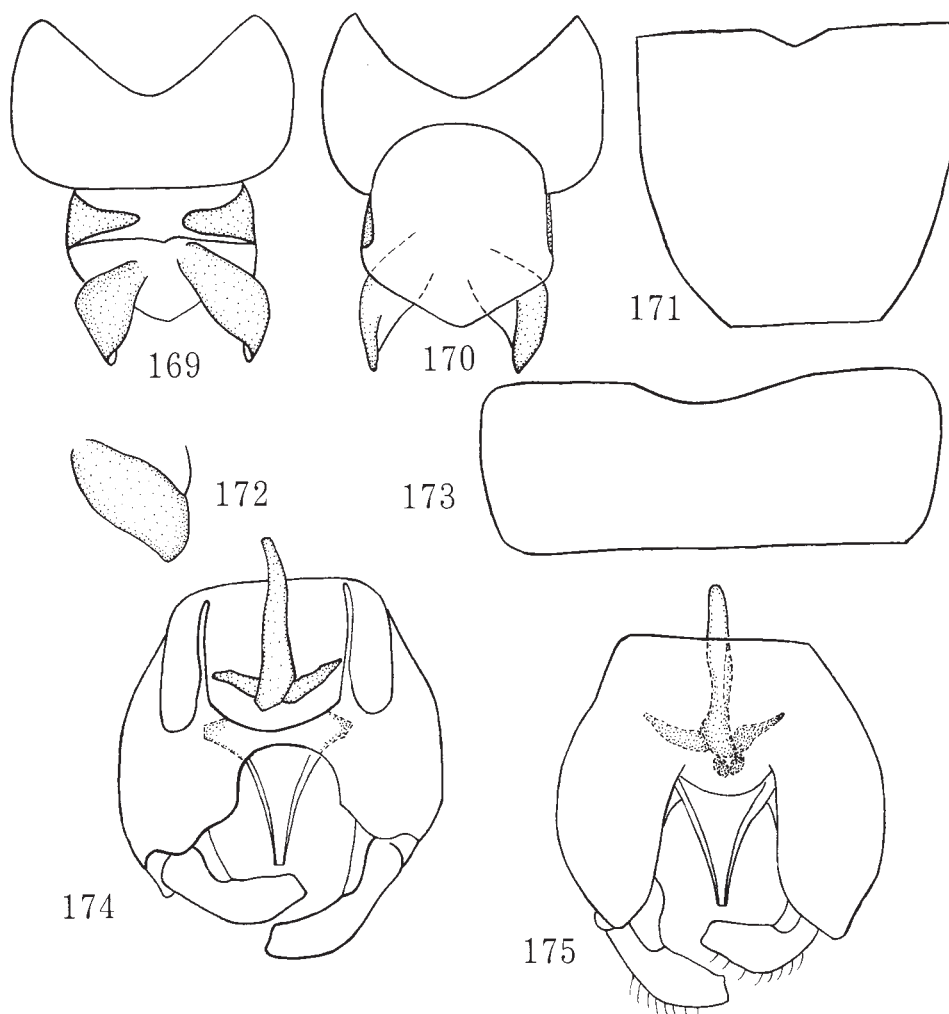
parallel-sided.

Male. Body length 7.0 mm, wing length 6.9 mm. Head black, and pale gray pollinose. Hairs on head chiefly pale; frons, upper face, parafacial and clypeus bare. Antenna dark brown to black; scape bare, pedicel black haired, flagellum minutely pale pubescent. In dorsal or inner view, pedicel longer than scape or flagellum; flagellum not wider than pedicel; arista roughly 3.5 times as long as rest of antenna. Proboscis brown with pale hairs; palpus black with black hairs. Head (excluding protruded clypeus) 1.3 times higher than long; eye with contiguous portion as long as ocellar triangle; width of one eye on a mid line in direct frontal view 1.2 times distance from antennae to median ocellus, 1.3 times width of frons just above antennae, and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antenna 0.9 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view, and 6.6 times width of frons at median ocellus; distance from proboscis to antennae 0.9 times that from antennae to median ocellus; clypeus as wide as long, 2.1 times as wide as parafacial on a mid line, and 0.5 times as wide as face at upper margin of clypeus.

Mesonotum and scutellum velvety black [probably with hairs as in]; pleuron dark brown to black with pale hairs. Legs yellow, coxa darker and concolorous with pleuron; trochanter, basal portion of femur and tip of hind femur brown to dark brown; tarsus brown to dark brown except for tarsomere 1 paler basally. Hairs on legs chiefly black; femur with pale scale-like dorsal hairs. Wing hyaline, weakly tinged with yellow on anterior field;



Figs. 167–168. *Chrysopilus yunnanensis* C. YANG et D. YANG, female. 167, Wing; 168, abdomen, lateral view.



Figs. 169–175. *Chrysopilus yunnanensis* C. YANG et D. YANG, male. 169, Tergites 9–10 and cerci, dorsal view; 170, tergite 9, sternite 10 and cerci, ventral view; 171, sternite 8; 172, cercus, dorso-lateral view; 173, tergite 8; 174, genital capsule, dorsal view; 175, genital capsule, ventral view.

stigma elongate, brownish, nearly reaching to wing margin; veins brown to dark brown; R4 with a very short basal appendage; basal section of M2 1.3 times as long as crossvein m; anal cell closed before wing margin. Halter stem yellow, knob brown.

Abdomen velvety black. Hairs on abdomen pale; posterior portion of tergite 1 and anterior portion of tergite 2 with white recumbent hair tufts; anterior part of tergite 1 with pale erect longer hairs. Male genitalia (Figs. 169–175): Tergite 8 much wider than long with a mid-anterior incision; sternite 8 much longer than wide, with apical portion somewhat narrow; tergite 9 distinctly wider than long, with a deep and nearly V-shaped anterior

incision; sternite 10 somewhat acute apically; cercus somewhat acute apically; gonocoxites with straight anterior margin on fused ventral portion; gonostylus curved, with truncate apical margin; gonocoxal apodemes thin and nearly parallel; ejaculatory apodeme thick basally and slightly curved apically.

Female. Body length 8.0–8.3 mm, wing length 8.2–8.9 mm. Similar to male except as follows: Occiput and gena with stiff black hairs which are sometimes pale near proboscis and which may be sometimes so in ; frons with short black hairs. Head (excluding protruded clypeus) 1.4–1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9–1.0 times distance from antennae to median ocellus, 0.7–0.8 times width of frons just above antennae, and 0.6–0.7 times width of face at lowest point in direct frontal view; width of frons just above antenna 1.2–1.3 times distance from antennae to median ocellus, 0.7–0.8 times width of face at lowest point in direct frontal view, and 0.7–0.8 times width of frons at median ocellus; distance from proboscis to antennae 1.1–1.2 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 2.3–2.5 times as wide as parafacial on a mid line, and 0.5–0.6 times as wide as face at upper margin of clypeus. [N = 4]. Mesonotum with 3 golden yellow recumbent hair bands on posterior part (except sides) and before suture. Abdominal tergite 4 and segments 5–7 yellow; tergite 3 with white recumbent haired anterior band; erect hairs on tergite 1 confined to sides.

Specimens examined. Holotype , paratype 1 , Ruile (750 m), Yunnan, 3. v. 1981, Fasheng LI. Paratypes 3 , Ruili, Yunnan, 2–4. v. 1981, Fasheng LI and Chi-kun YANG.

Distribution. China (Yunnan).

Remarks. This species may be separated from *choui* and *lii* as shown in the key (couplet 16). It would be similar to *pingxianganus* (if the latter is sooty black), but may be separated from the latter as shown in the key (couplet 17).

Genus *Desmomyia* BRUNETTI

Desmomyia BRUNETTI, 1912, Rec. Ind. Mus., 7: 462. Type species: *Desmomyia thereviformis* BRUNETTI, 1912 (by monotypy).

Diagnosis. Male eyes holoptic, with upper facets weakly enlarged (the dividing line between lower and upper facets indistinct); female frons parallel-sided and wider than one eye. Face wider toward proboscis; parafacial haired, swollen especially in male and wide. Clypeus ending far below antennae and mid-upper face flat. Antennae narrowly separated from each other at base; scape much longer than pedicel; flagellum subglobose with a long arista. Palpus 1-segmented. Metapleuron haired on anterior portion. Tibial spurs 0–2–2. Male hind tibia and hind tarsomere 1 swollen. Wing: Rs arising at middle of basal cells; R2 + 3 curved forward and ending near R1; R5 ending at wing margin behind wing apex; anal cell closed. Male genitalia: Sternite 9 and tergite 10 present.

Remarks. Previously the genus *Desmomyia* contained 1 known species from the highlands

of India. It is recorded from China for the first time, and contains 1 new species.

Literature: BRUNETTI (1920).

Desmomyia sinensis D.YANG et C.YANG sp. nov.

(Figs. 176–184)

Male and female. Antenna, palpus, thorax, legs, halter and abdomen dark brown to black, but tibia (except apical portion) and knee somewhat paler. In , scape, pedicel, parafacial,

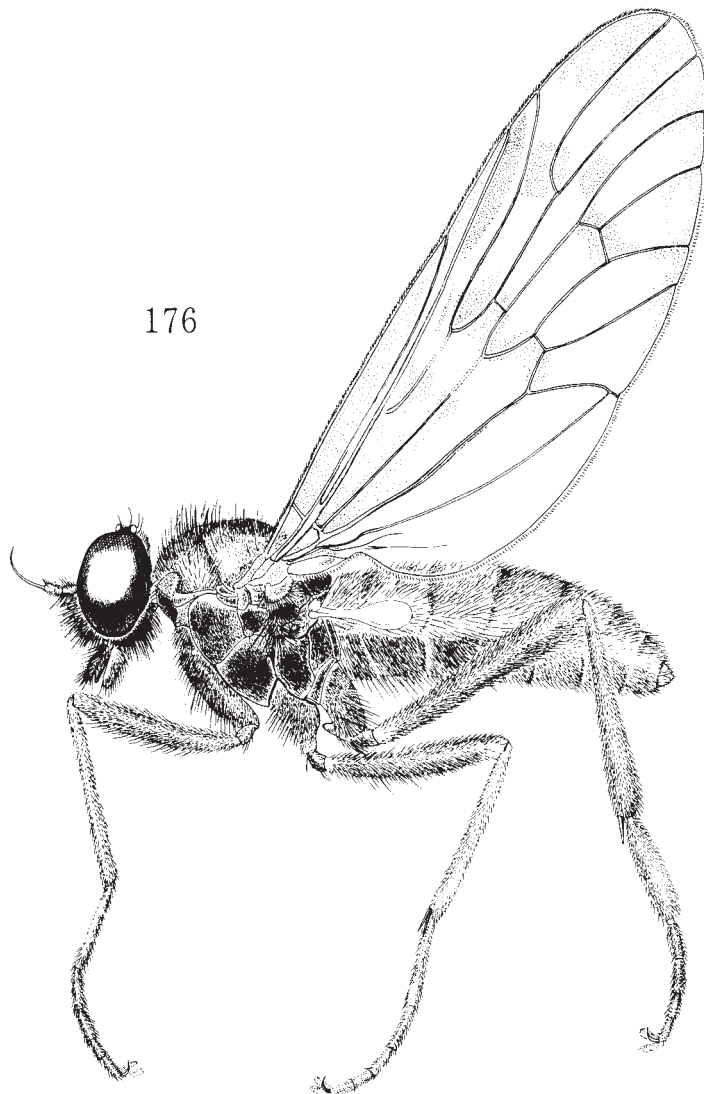


Fig. 176. *Desmomyia sinensis* D. YANG et C. YANG sp. nov., male, lateral view.

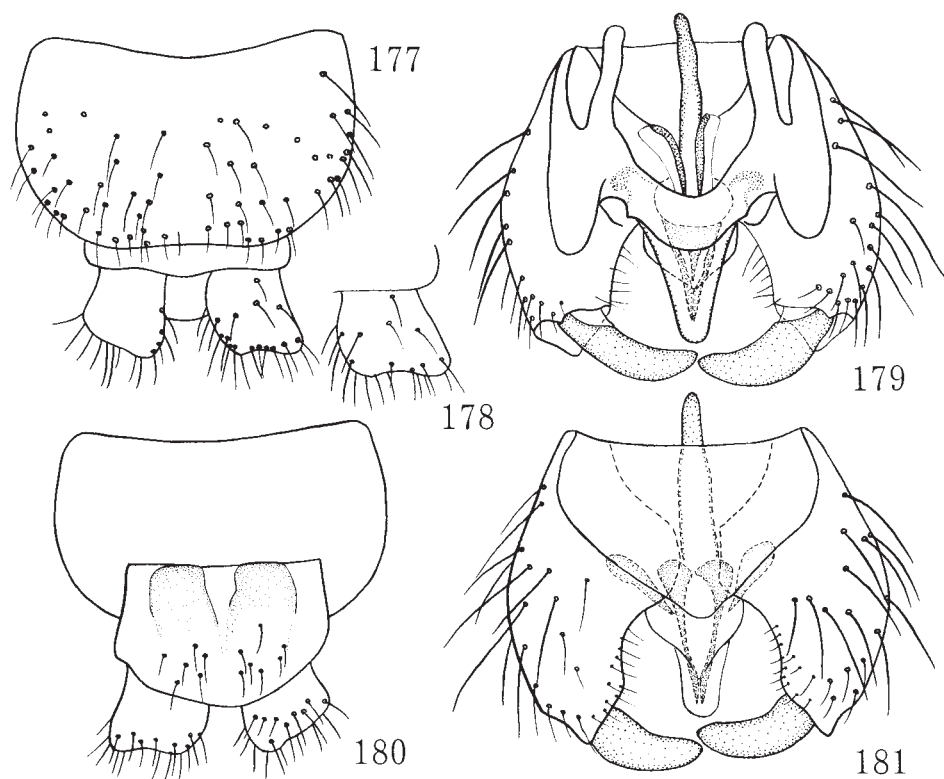
palpus, gena, ocellar tubercle, mesonotum, scutellum, coxa, fore and mid femora, and abdomen (except middle of dorsum) long haired. frons subequal in width to one eye.

Male. Body length 6.3–6.7 mm, wing length 5.9–6.6 mm. Head black, and pale gray pollinose. Hairs on head long and black, but absent on mid-upper face, clypeus and frons; upper occiput with short hairs, lower occiput with chiefly pale hairs. Antenna black; scape and pedicel with black hairs. Proboscis brown to dark brown with pale hairs; palpus black with long black hairs. Eye with contiguous portion 1.4–1.5 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.3–1.4 times distance from antennae to median ocellus, 0.7–0.8 times width of face at lowest point in direct frontal view, and 1.4–1.9 times width of frons just above antenna; width of frons just above antennae 0.7 times distance from antennae to median ocellus, 5.7–6.3 times width of frons at median ocellus and 0.4 times width of face at lowest point in direct frontal view; distance from ridge below proboscis to antennae about 1.0–1.1 times that from antennae to median ocellus; clypeus 1.0–1.1 times as wide as long, 0.35–0.4 times as wide as face at upper margin of clypeus, and 0.9–1.0 times as wide as parafacial on a mid line. [N = 4].

Thorax black, and pale gray pollinose; mesonotum with three darker wide longitudinal spots, of which median one is divided by a pale line. Mesonotum and scutellum with long black hairs but in the former anterior part (including humerus) bare; pleuron with pale hairs. Legs dark brown to black; coxa concolorous with pleuron; tip (including knee) of femur and tibia (except for apex) brownish yellow or brown. Hairs on legs short and black, but coxa with long and chiefly pale hairs, and fore and mid femora with some long pale or black hairs. Wing is tinged with brown and may have several paler parts; stigma dark brown, not reaching to wing margin. Halter dark yellow, but knob darker.

Abdomen black, and pale gray pollinose. Hairs on abdomen pale, and those on sides of dorsum long. Male genitalia (Figs. 177–181): Tergite 9 wider than long, with anterior margin weakly concave; sternite 10 widely rounded apically; cercus broad, with apical margin weakly concave; gonocoxal apodemes slightly convergent; gonostylus curved and somewhat tapering; dorsal plate rounded apically, ventral plate with sclerotized lateral ridge thin and distinctly curved; ejaculatory apodeme long and somewhat thin anteriorly.

Female. Body length 6.2–6.3 mm, wing length 6.2–7.2 mm. Similar to male except as follows: Hairs on body, scape, palpus and coxa shorter than in . Hairs on proboscis black (this may be sometimes so in). Head 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view, and 0.7 times width of frons just above antennae; width of frons just above antennae 1.4 times distance from antennae to median ocellus, 1.4 times width of frons at median ocellus and 0.6 times width of face at lowest point in direct frontal view; distance from ridge below proboscis to antennae about 1.4 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 0.5 times as wide as face at upper margin of clypeus, and 1.2 times as wide as parafacial on a mid line. [N = 1]. Basal portion of hind femur brownish yellow; pale portion of fore tibia



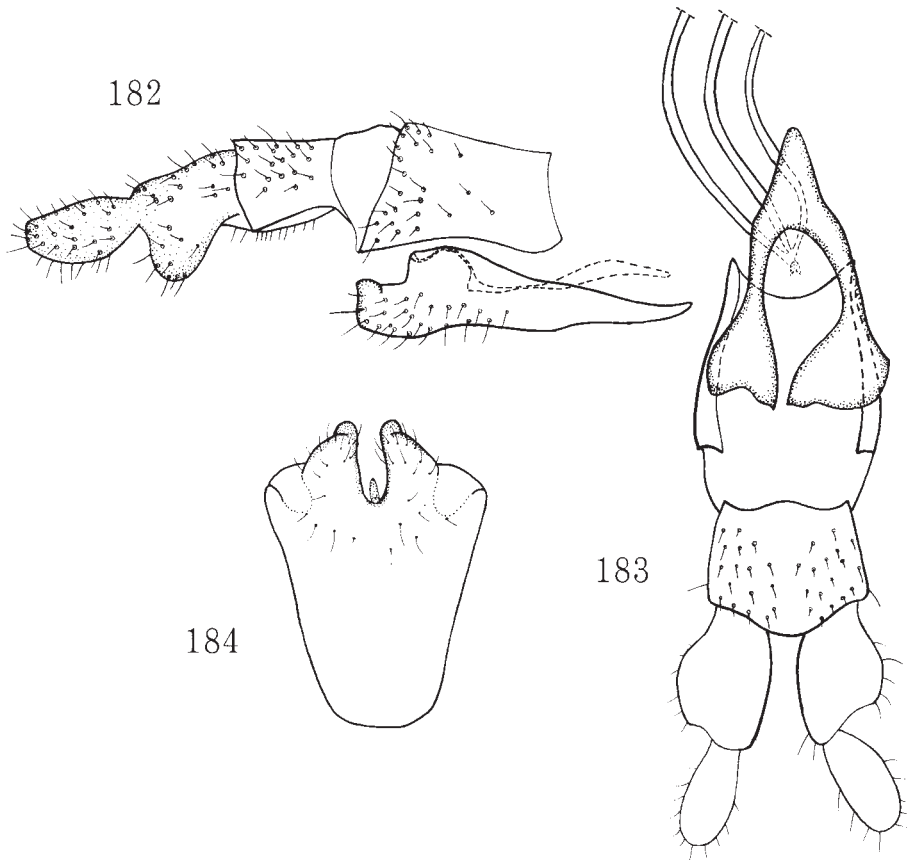
Figs. 177–181. *Desmomyia sinensis* D. YANG *et* C. YANG sp. nov., male. 177, Tergites 9–10 and cerci, dorsal view; 178, cercus, dorso-lateral view; 179, genital capsule, dorsal view; 180, tergite 9, sternite 10 and cerci, ventral view; 181, genital capsule, ventral view.

yellowish.

Holotype ♂, paratypes 12 ♀, 1 ♂, Nyingchi (3,050 m), Xizang, 2–7. v. 1978, Fasheng LI. Paratypes 2 ♀, Nyingchi (3,400 m), Xizang, 10. vi. 1978, Fasheng LI; 2 ♀, Bomi (2,700 m), Xizang, 19. vi. 1978, Fasheng LI; 1 ♀, Mainling (2,950 m), Xizang, 5. vi. 1978, Fasheng LI.

Distribution. China (Xizang).

Remarks. This species may be separated from *D. thereviformis* BRUNETTI, 1912 from India (Uttar Pradesh) by the following characters: femur dark brown to black, but tibia (except apex) brownish yellow to yellow in both sexes [basal portion of hind femur also brownish yellow]. In *thereviformis* (), "Legs black; knees and femora more or less brownish yellow at base, the colour on the fore pair extending beyond the middle" (after Brunetti, 1920: 108). *D. thereviformis* was "described from 2 ♀, in the Indian Museum from Badrinath, Garhwal District, 10,200 ft., 27. v. 1910 (Dr. A. D. Imms)." Further comparative study is necessary between *sinensis* and *thereviformis*, however.



Figs. 182–184. *Desmomyia sinensis* D. YANG et C. YANG sp. nov., female. 182, Genitalia, lateral view; 183, genitalia (excluding sternite 8), ventral view; 184, sternite 8, ventral view.

Genus *Rhagina* MALLOCH

Rhagina MALLOCH, 1932, *Stylops*, 1: 117. Type species: *Leptis incurvata* de MEIJERE, 1911, from Java (by original designation).

Diagnosis. Male eyes holoptic, facets of the same size; female frons somewhat convergent toward vertex and much narrower than one eye. Clypeus much wider than parafacial. Antennal scape and pedicel subglobose and subequal in size; flagellum smaller than pedicel, rounded and with a long terminal arista. Palpus 1-segmented. Metapleuron haired on anterior portion. Tibial spurs 0–2–2. Hind femur often with a distinct apico-ventral hump; fore tarsomere 1 not longer than tarsomeres 2–5 together, mid and hind tarsomere 1 longer than tarsomeres 2–5. Wing: Rs arising at middle of basal cells; R2 + 3 strongly sinuate and

ending near R1; R5 ending at wing margin behind wing tip; anal cell open. Male genitalia: Tergite 10 absent; sternite 9 present.

Remarks. This genus is distributed in the Oriental region and contains 5 known species. Two species were recorded from China by YANG & NAGATOMI (1992).

Literature: YANG & NAGATOMI (1992).

Key to species of Chinese *Rhagina*
(From D.YANG & NAGATOMI, 1992)

1. Wing brownish yellow and in part nearly hyaline, with distinct brownish to dark brownish markings; abdomen wholly or largely brown to dark brown *sinensis*
- Wing wholly yellow; abdomen yellow, but basal third of tergites 2–5 brown, tergites 4–5 with a brown median spot, and tergites 6–7 brown

Rhagina sinensis D.YANG et NAGATOMI
(Fig. 185)

Rhagina sinensis D.YANG et NAGATOMI, 1992, Entomologist's Mon. Mag., 128: 88. Type locality: Longzhou, Guangxi.

Distribution. China (Guangxi).

Rhagina sp.

Rhagina sp., D.YANG et NAGATOMI, 1992, Entomologist's Mon. Mag., 128: 90.

Distribution. China (Hainan).

Genus *Rhagio* FABRICIUS

Rhagio FABRICIUS, 1775, Syst. Ent., p.761. Type species: *Musca scolopacea* LINNAEUS, 1758 (by designation of LATREILLE, 1810).

Leptis FABRICIUS, 1805, Syst. Antliat., p.69 (unjustified new name for *Rhagio* FABRICIUS).

Diagnosis. Male eyes holoptic, but sometimes narrowly separated. Clypeus usually extending or nearly extending to antennae. Antennal scape and pedicel small and subequal in size; flagellum with a slender terminal arista. Palpus 1-segmented with apical portion more or less tapering toward tip. Subcutellum absent. Metapleuron haired on anterior portion. Tibial spurs 0–2–2. Hind coxa with a ventral knob. Wing: Rs arising at middle of basal cells; R2 + 3 weakly curved apically; R5 ending at wing margin behind wing tip; anal cell

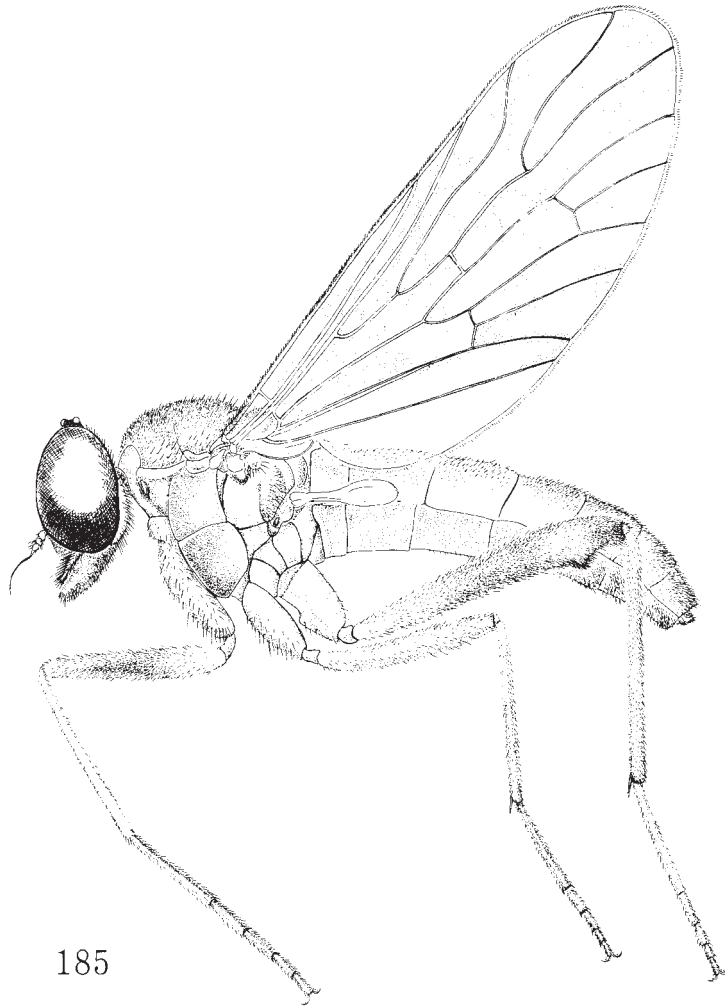


Fig. 185. *Rhagina sinensis* D.YANG et NAGATOMI, male, lateral view.

narrowly open or closed. Male genitalia: Sternite 9 and tergite 10 present.

Remarks. The genus *Rhagio* is distributed in the Palaearctic, Nearctic, Oriental and Neotropical regions, and contained about 150 species in the past. Twenty species were known from China. Here 13 new species are added to the Chinese fauna.

Literature: CHILLCOTT (1965); JAMES (1964, 1965); SZILÁDY (1934b); C.YANG & D.YANG (1989, 1991, 1993a, 1993b, 1993c); D.YANG & C.YANG (1992, 1994).

Key to species of Chinese *Rhagio*

1. Wing dark brown with pale markings (darker area much larger than the paler) 2
 - Wing hyaline or nearly so, usually with darker markings (paler area larger than or roughly half as large as the darker) 4
- 2(1). Pale spot on 1st and 2nd basal cells not elongate; face at lowest point in direct frontal view less than 1/2 as wide as one eye on a mid line, and parafacial very thin 3
 - The above pale spot extending through 1st and 2nd basal cells elongate; face at lowest point in direct frontal view over 1/2 as wide as one eye on a mid line; [unknown]; South China *albus* sp. nov.
- 3(2). Pale spot on 2nd basal cell small and confined to anterior part of the cell; South China *longzhouensis*
 - Pale spot on 2nd basal cell larger and nearly extending to posterior margin of the cell; [unknown]; South China *basiflavus*
- 4(1). One of the following wing conditions is seen: with apical darker part; with two or three darker bands (including apical part of wing); with veins R5, M1, M2, M3, CuA, etc. bordered with brown to dark brown; uniformly or almost uniformly (in *singularis*) hyaline or brown fumose (except darker stigma, if present) 5
 - Wing with darker parts as follows: apical band having three paler area along or near wing margin; middle band reaching to wing margin along vein M4; costal cell and larger part of 1st basal cell yellow (not paler); apical part of discal cell pale; m-cu crossvein bordered with pale; (Szilády, 1934: fig. on p. 8); [unknown]; Taiwan *shirakii*
- 5(4). Wing with three distinct darker bands (including apical darker part of wing) 6
 - Wing not as above 9
- 6(5). Outer median band on wing not interrupted medially 7
 - Outer median band on wing interrupted medially; [unknown]; South China *guizhouensis*
- 7(6). Flagellum yellow 8
 - Flagellum dark brown to black; South China *sinensis*
- 8(7). Palpus dark brown to black; basal half of hind femur yellow; mid femur yellow at base and apex; fore tibia rather whitish with apex distinctly dark brown to black; North China *choui* sp. nov.
 - Palpus yellow; femur (except apex) dark brown to black but mid and hind femora usually entirely yellow; fore tibia probably not whitish but yellow, with apex darker (after FREY, 1954); South China (Fujian) and Burma (Kambaiti) *perdicaceus*
- 9(5). Wing with a transverse median darker band (besides apical darker part of wing)

- 10
- Wing not as above..... 14
- 10(9). Pleuron wholly yellow 11
- Pleuron largely dark brown to black 12
- 11(10). Mesonotum (except sides) dark brown to black; [unknown]; South China
centrimaculatus
- Mesonotum wholly yellow; [unknown]; South China; (see couplets 20 and
28) *singularis* sp. nov.
- 12(10). Side of mesonotum (or humeral and postalar calli) and scutellum (except mid
base) yellow; abdomen at least partly yellow 13
- Mesonotum, scutellum and abdomen wholly dark brown to black; [unknown];
South China *jinxiensis*
- 13(12). Coxa, side of mesonotum (except humeral and postalar calli), and knob of halter
dark brown to black; abdominal tergites 2–8 black with apical portion yellow;
hind femur with a ventral hump near apex; [unknown]; South China; (see
couplet 17) *hainanensis* sp. nov.
- Coxa (except base of mid coxa), side of mesonotum (except humeral and
postalar calli) and knob yellow; abdomen [partly broken] apparently largely
yellow; hind femur without a ventral hump; [unknown]; South China; (see
couplet 16) *bisectus* sp. nov.
- 14(9). At least veins R5, M1, M2, M4 and CuA bordered with brown to dark brown
..... 15
- Wing not as above..... 19
- 15(14). hind femur without ventral hump; abdominal tergites not (in *guangxiensis*) or
probably not (in *bisectus*) as below 16
- hind femur with a ventral hump near apex; abdominal tergites each with a
basal darker or black spot or band (which is often absent or indistinct on tergites
1–4 in *maolanus*) 17
- 16(15). Wing with a darkened band around base of discal cell; thorax largely dark brown
to black; abdomen probably not as below; [unknown]; South China; (see
couplet 13) *bisectus* sp. nov.
- Wing without a darkened band around base of discal cell; thorax yellow; abdomi-
nal tergites 2–7 (or 3–5) each with a median narrow longitudinal dark brown to
black spot; South China *guangxiensis*
- 17(15). Pleuron, coxa and femur yellow; wing without a darkened band around base of
discal cell 18
- Pleuron (except yellow band from above coxa to wing base), coxa and hind
femur (except base and apex) dark brown to black; wing with a darkened band
around base of discal cell; [unknown]; South China; (see couplet 13)
hainanensis sp. nov.
- 18(17). Mesonotum yellow; scutellum wholly yellow; stigma distinct, wide, truncate at
apex and ending well before wing margin; [unknown]; South China

- *maolanus*
- Mesonotum (except side) dark brown to black; mid base of scutellum dark brown to black; stigma absent; [unknown]; South China
- *tuberculatus* sp. nov.
- 19(14). Apical portion of wing darker (in *shaanxiensis*, *singularis* and *stimosus*, darker apical part is indistinct [if present], and these species fall in both couplets 20 and 27)
- 20
- Wing (except stigma, if present) hyaline, nearly hyaline, uniformly with a brown tinge, or with some small darker areas
- 27
- 20(19). Mesonotum wholly or largely dark brown to black
- 21
- Mesonotum wholly yellow; [unknown]; South China; (see couplets 11 and 28)
- singularis* sp. nov.
- 21(20). Darkened stigma absent or short (less than 3 times as long as wide)
- 22
- Darkened stigma elongate (at least 3 times as long as wide)
- 23
- 22(21). Darkened stigma absent (although apex of marginal cell darker); ptero- and metapleuron black; coxa black (coxa yellow, except base of mid coxa); South China.....
- asticta*
- Distinct small darkened stigma present; ptero- (except base) and metapleuron yellow; coxa yellow; [unknown]; South China
- pseudasticta*
- 23(21). Coxa dark brown to black (in *pilosus*, fore coxa sometimes with a yellow tinge); mesonotum wholly dark brown to black; antenna, palpus and proboscis either largely dark brown to black or largely yellow
- 24
- Coxa (except base of mid coxa) yellow; side of mesonotum yellow; antenna (except arista), palpus, and proboscis wholly yellow; [unknown]; North China
- gansuensis* sp. nov.
- 24(21). Abdominal tergites 2–4 (or 2–5) dark brown to black with yellow posterior margin (or spot); apical portion of fore femur (except apex) dark brown; palpus yellow (in *meridionalis*) or maybe partly so (in *pilosus*); pterostigma wide, shorter, and truncate at base
- 25
- Abdominal tergites 1–4 (or 1–3) yellow with dark brown to black lateral margin and large median spot; fore femur wholly yellow; palpus black; pterostigma elongate, and acute at base.....
- 26
- 25(24). Body larger (wing length 8–9 mm or so); eyes broadly contiguous; antenna (except arista and scape which are dark brown) and palpus yellow; [unknown]; South China
- meridionalis*
- Body smaller (wing length 5.5 mm or so); eyes narrowly but distinctly separated; flagellum and palpal segment 2 dark yellow and paler than rest of antenna and palpus; [unknown]; North China
- pilosus* sp. nov.
- 26(24). Abdominal segments 1–4 largely dark brown to black; pterostigma wide apically; knob of halter with a black tinge; anal cell narrowly open; [unknown]; North China; (see couplet 38)
- stimosus* sp. nov.
- Abdominal segments 1–4 largely yellow; pterostigma acute apically; halter

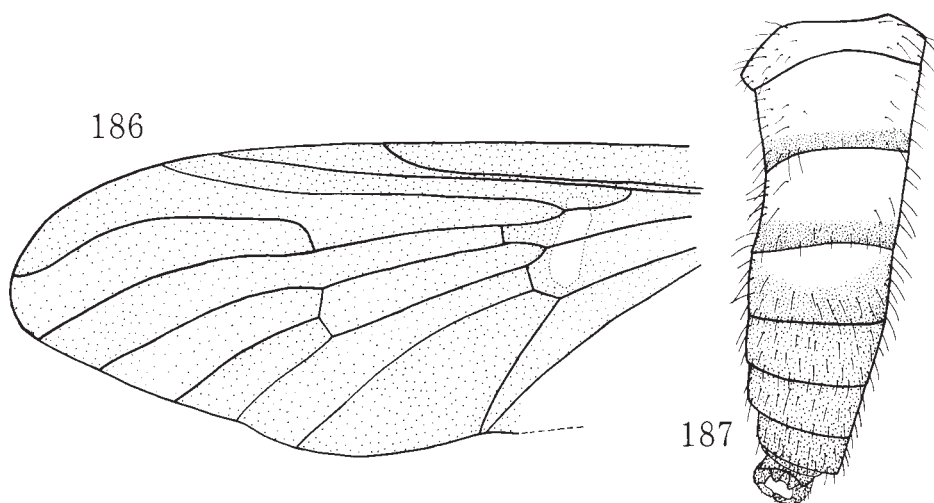
- entirely yellow; anal cell closed at wing margin; [unknown]; North China; (see couplet 38) *shaanxiensis* sp. nov.
- 27(19). Pleuron yellow 28
- Pleuron dark brown to black or largely so 30
- 28(27). Wing uniformly hyaline or with brown tinge (except stigma) 29
- Wing with a darker spot around apex of 1st basal cell; apical margin of discal cell bordered with brown; apical part of wing somewhat darker (this may easily be overlooked); [unknown]; South China; (see couplets 11 and 20) *singularis* sp. nov.
- 29(28). Abdominal tergites 2–4 with median smaller dark brown to black spots which are widely separated both from anterior and posterior margins; eyes broadly contiguous; North China *nagatomii* sp. nov.
- Anterior part of tergites 3–5 and mid-anterior and antero-lateral spots on tergite 2 dark brown to black (tergites 6–7, except posterior border, dark brown to black as in *nagatomii*; eyes narrowly separated (narrowest part of frons less than width of median ocellus); [unknown]; Taiwan *formosus*
- 30(27). Coxa (or at least fore coxa) yellow and not concolorous with pleuron 31
- Coxa dark brown to black and concolorous with pleuron 34
- 31(30). Palpus yellow..... 32
- Palpus black 33
- 32(31). Body larger (wing length 8.0 mm or so); abdominal venter with wide median dark brown to black longitudinal stripe; apical portion of hind femur darkened; fore tibia yellow; face over 1/2 as wide as one eye; [unknown]; South China *apiciflavus*
- Body smaller (wing length 5.1–5.6 mm or so); abdominal venter without longitudinal stripe; femur wholly yellow; fore tibia rather whitish; face less than 1/2 as wide as one eye; frons less than 1/2 as wide as one eye; South China *longshengensis*
- 33(31). Femur wholly yellow; frons with large shining black median part (without pollen) connected with lateral margin of frons; frons at narrowest point 0.5 times as wide as one eye; [unknown]; South China *basimaculatus*
- Fore femur (except apex and basal part) and hind femur (except basal part) dark brown to black; frons may have a pair of small shining black patch which are separated from lateral margin of frons; frons at narrowest point 0.8 times or so as wide as one eye; [unknown]; South China *shennonganus*
- 34(30). Palpal segment 2 and antennal flagellum yellow 35
- Palpus and antenna dark brown to black 36
- 35(34). Fore femur wholly yellow; abdomen wholly dark brown (or brown) to black; knob of halter dark brown; pterostigma elongate and reaching to wing margin; [unknown]; North China *huashanensis* sp. nov.
- Fore femur (except apex and basal part) dark brown to black; abdominal sternites

- 1–2 and posterior border (or part) of tergites 1–7 yellow; halter wholly yellow; pterostigma wide, shorter and not reaching to wing margin; [unknown]; South China· *hanzhouensis*
- 36(34). Hind femur largely dark brown to black; abdomen with yellow parts· 37
- Hind femur wholly yellow; abdomen wholly black; abdominal tergites 4–6 with narrow yellow posterior margin; frons at narrowest point less than 1/2 as wide as one eye; South China..... *zhejiangensis*
- 37(36). Abdominal tergites 1–3 or 1–4 yellow with wide longitudinal dark brown to black stripe; eyes contiguous or so (frons at narrowest point less than width of median ocellus)· 38
- Abdominal tergites 2–7 dark brown to black with yellow apical margin; eyes widely separated (frons at narrowest point wider than median ocellus); [unknown]; North China *separatus* sp. nov.
- 38(37). See upper branch of couplet 26 *stigmosus* sp. nov.
- See lower branch of couplet 26 *shaanxiensis* sp. nov.

Rhagio albus D.YANG, C.YANG et NAGATOMI sp. nov.
(Figs. 186–190)

Male. Wing dark brown with an elongate pale spot extending through 1st and 2nd cells. Fore tibia pale yellow or whitish.

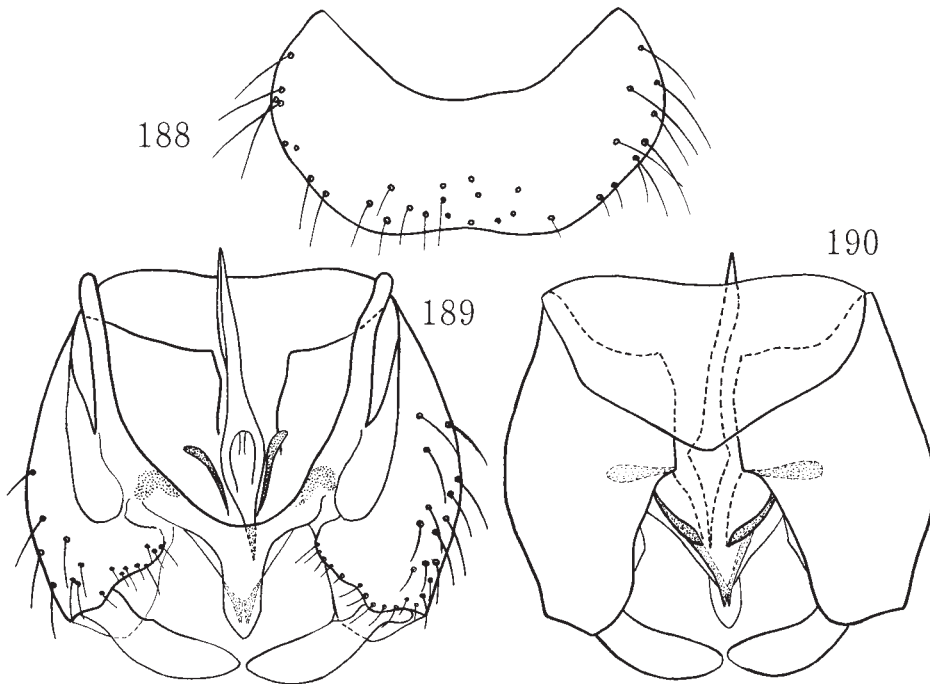
Male. Body length 6.6 mm, wing length 7.2 mm. Head black, and pale gray pollinose. Hairs on head pale; ocellar tubercle and upper margin of occiput with black hairs, gena with some black hairs; frons, parafacial and clypeus bare. Antenna yellow; scape somewhat dark, arista dark brown; scape and pedicel black haired; flagellum and arista minutely pale pubes-



Figs. 186–187. *Rhagio albus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 186, Wing; 187, abdomen, dorsal view.

cent. Proboscis brownish yellow with black hairs; palpus dark brownish yellow, pale haired except basal portion with black hairs. Eye with contiguous portion 1.9 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 3.4 times width of frons just above antenna and 1.2 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 2.4 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.7 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 5.5 times as wide as parafacial on a mid line and 1.1 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; pleuron somewhat paler; humerus yellow; mesonotum with 3 broad longitudinal darker spots; scutellum brownish yellow. Mesonotum black haired; scutellum and metapleuron partly pale haired. Legs yellow to brownish yellow; fore femur (except base and apex) and middle (or rather subbasal) portion of hind femur darker; tibia pale yellow, but hind tibia (except apical portion) dark brown; tarsus [hind tarsus broken off] brown to dark brown. Hairs on legs black; coxa, fore tibia and pale apical portion of hind tibia with some pale hairs. Wing dark brown; basal cells each with a pale spot near discal cell; veins brown to dark brown; anal cell narrowly



Figs. 188–190. *Rhagio albus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 188, Tergite 9; 189, genital capsule, dorsal view; 190, genital capsule, ventral view.

open. Halter brownish yellow, knob brown.

Abdomen black, and weakly pale gray pollinose; tergites 1–4 brownish yellow except narrow or wide apical margins of tergites 2–4 blackish; sternites 1–5 brownish yellow to blackish. Male genitalia (Figs. 188–190) [sternite 10 and cerci broken off apically]; Tergite 9 much wider than long with anterior margin widely incised; gonocoxal apodemes somewhat divergent; gonostylus weakly curved; ejaculatory apodeme slender, but thick near acute base; dorsal plate more or less acute apically; ventral plate long and broad with distinct sclerotized lateral ridge.

Female. Unknown.

Holotype , Tianlin, Guangxi, 28. v. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species is similar to *basiflavus* and *longzhouensis* but is easily separated from them as shown in couplet 2 of the key.

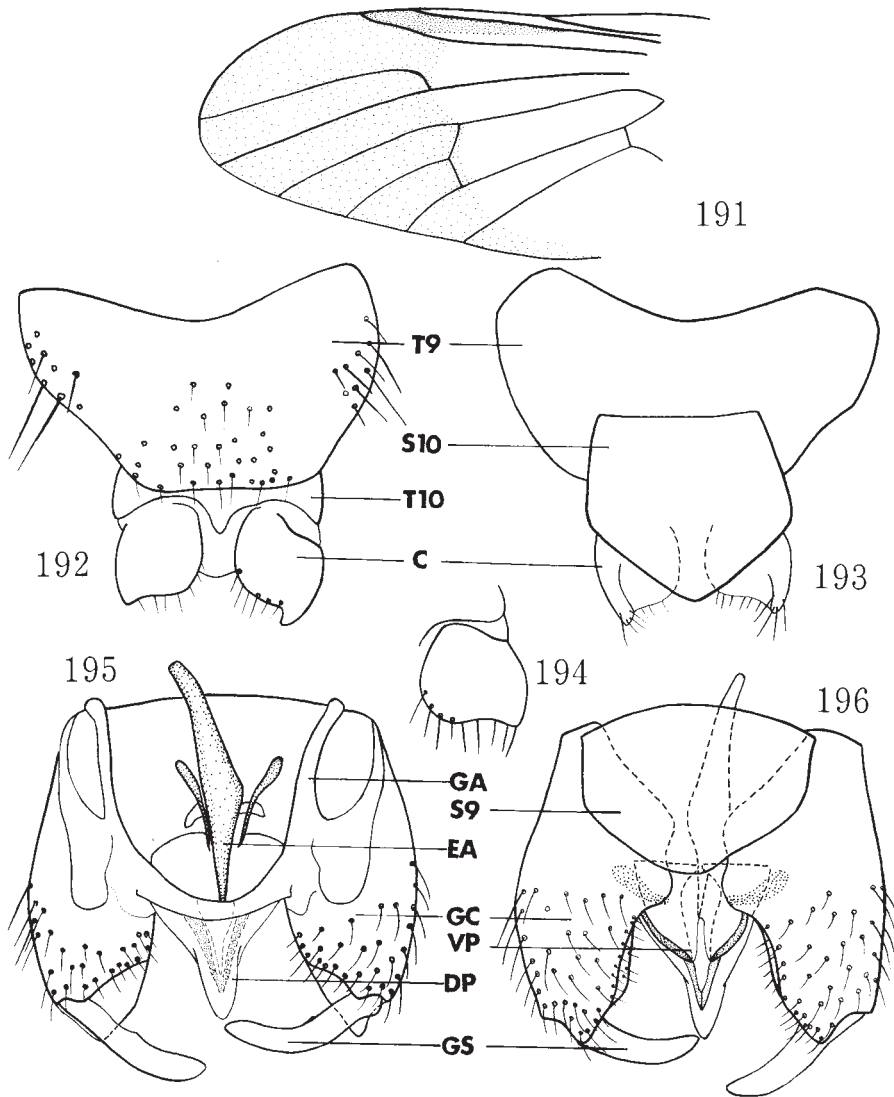
Rhagio apiciflavus C.YANG et D.YANG
(Figs. 191–196)

Rhagio apiciflavus C.YANG et D.YANG, 1991, J. Hubei Univ. (Nat. Sci.), 13: 275. Type locality: Shennongjia, Hubei.

Male. Abdominal venter with wide median dark brown to black longitudinal stripe. Antenna (except arista), palpus and coxa yellow.

Male. Body length 8.0 mm, wing length 8.0 mm. Head black, pale gray pollinose, pale haired, but upper occiput and ocellar tubercle black haired, frons and clypeus bare, and parafacial pale haired on lower portion. Antenna yellow with yellow or black hairs; arista dark brown. Proboscis brown with black hairs; palpus yellow with yellow hairs. Eye with contiguous portion 2.2 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 3.4 times width of frons just above antenna and 1.8 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 2.0 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.6 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 3.2 times as wide as parafacial on a mid line and 1.0 times as wide as face at upper margin of clypeus.

Thorax black, and pale gray pollinose; humerus, lateral portion of mesonotum, prosternum, area behind anterior spiracle and anterior portion of metapleuron yellow; posterior part of scutellum paler. Hairs on thorax wholly yellow. Legs yellow; apical portion of hind femur and apex of hind tibia black; tarsus dark brown to black. Hairs on legs black; coxa with wholly yellow hairs, femur with some yellow hairs basally. Wing hyaline, wholly tinged with brown; stigma indistinct and brownish; veins brown; anal cell narrowly open.



Figs. 191–196. *Rhagio apiciflavus* C. YANG et D. YANG, male. 191, Wing; 192, tergites 9–10 and cerci, dorsal view; 193, tergite 9, sternite 10 and cerci, ventral view; 194, cercus, dorso-lateral view; 195, genital capsule, dorsal view; 196, genital capsule, ventral view. S9, sternite 9.

Halter yellow.

Abdomen yellow, and weakly pale gray pollinose; each tergite with a large black basal spot; venter with a black median longitudinal spot. Hairs on abdomen black, but dorsum with yellow hairs laterally. Male genitalia (Figs. 192–196): Tergite 9 wider than long with posterior portion somewhat narrow and anterior margin weakly concave; sternite 10 with apical portion distinctly tapering; cercus broad with wide posterior margin; gonocoxal apodemes divergent; gonostylus somewhat slender and slightly curved; ejaculatory

apodeme somewhat narrow and curved basally; dorsal plate acute apically, ventral plate short and broad with sclerotized lateral ridge distinct.

Female. Unknown.

Specimen examined. Holotype , Shennongjia (1,700 m), Hubei, 29. vi. 1984, Chi-kun YANG.

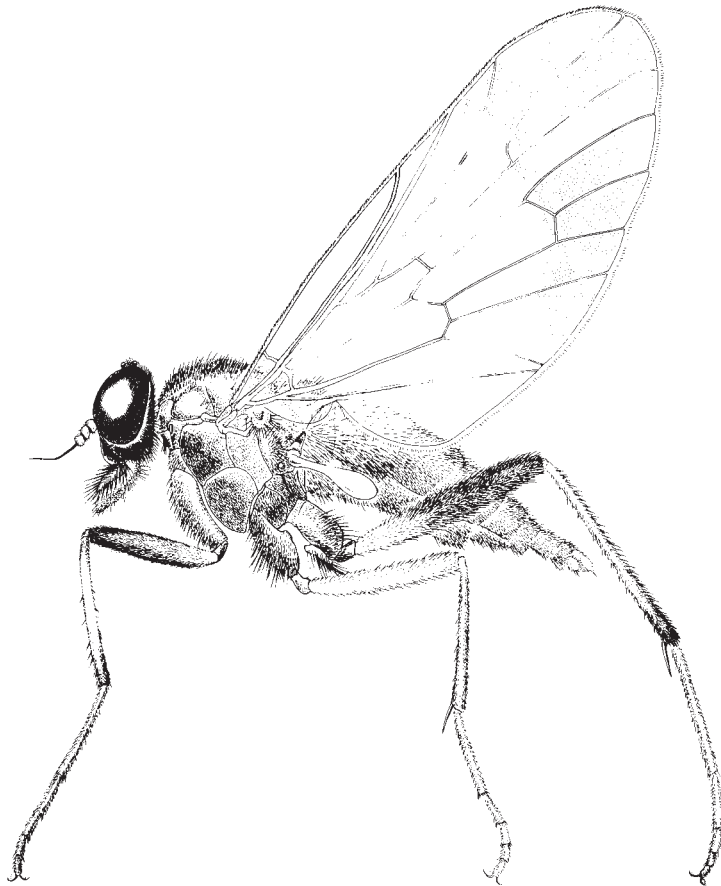
Distribution. China (Hubei).

Remarks. This species is similar to *longshengensis* but may be separated from the latter as shown in the key (couplet 32).

Rhagio asticta D.YANG et C.YANG

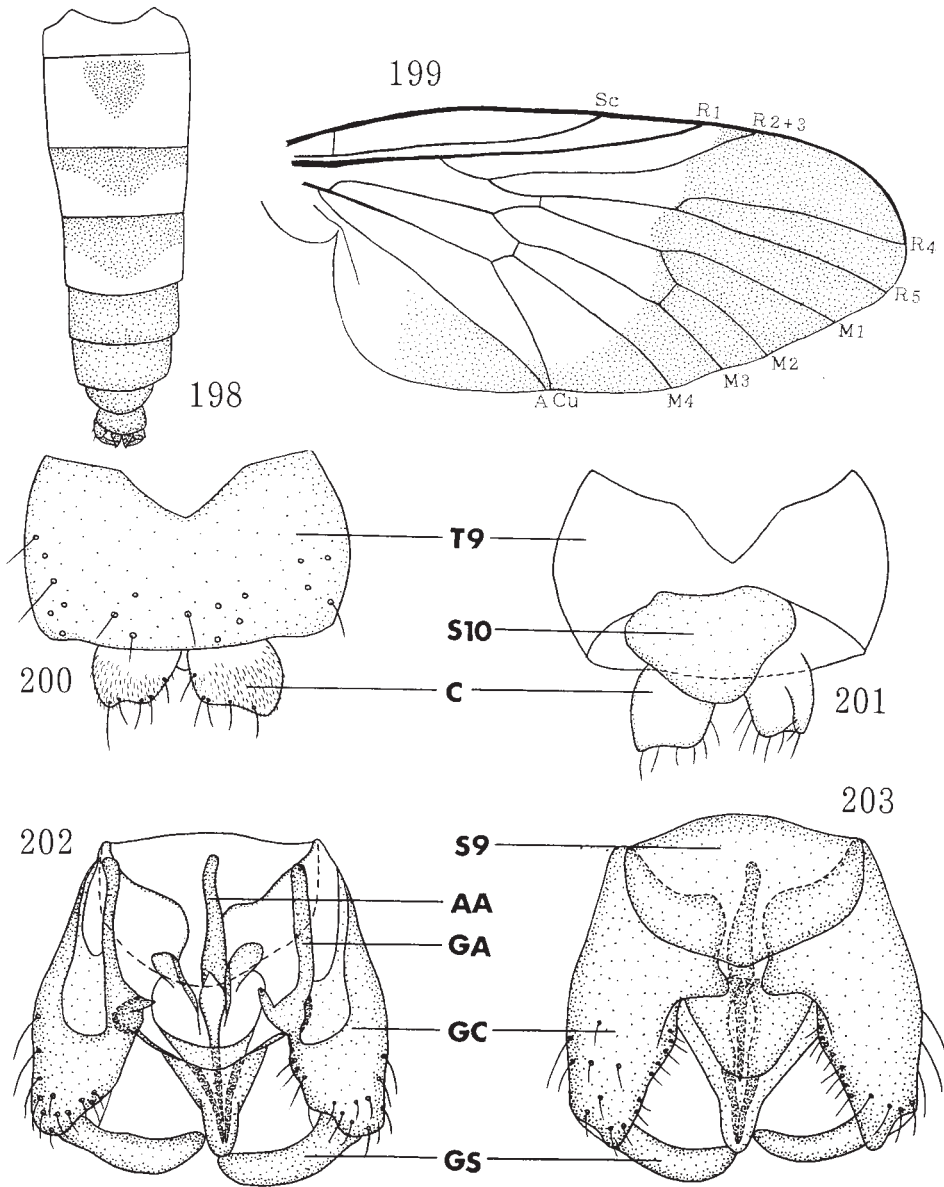
(Figs. 197–203)

Rhagio asticta D.YANG et C.YANG, 1994, Guangxi Sci., 1(3): 32, 33. Type locality: Maoer Mountain, Guangxi.



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Fig. 197. *Rhagio asticta* D. YANG et C. YANG, female, lateral view.



Figs. 198–203. *Rhagio asticta* D. YANG et C. YANG, male. 198, Abdomen, dorsal view; 199, wing; 200, tergite 9 and cerci, dorsal view; 201, tergite 9, sternite 10 and cerci, ventral view; 202, genital capsule, dorsal view; 203, genital capsule, ventral view. AA, aedeagal apodeme (=EA, ejaculatory apodeme). (From D.Yang and C.Yang, 1994)

Male and female. Apical part of wing darker. Darkened pterostigma absent. Antenna (except arista), palpus, postalar callus, scutellum, and halter yellow. Arista arising near ventral side of flagellum. coxa (except base of mid coxa) yellow but coxa wholly black. frons at narrowest point about 1/2 as wide as one eye.

The original description of this species is repeated below.

Body length 5.1–5.5 mm, wing length 5.3–7.3 mm. Head black with pale gray pollinosity; hairs on head chiefly black, but face with yellow hairs. Antenna yellow, arista brown. Proboscis yellow with black hairs; palpus yellow with black hairs.

Thorax brownish black with pale gray pollinosity; humeri, postalar calli and scutellum yellow. Pteropleuron brownish. Mesonotum and scutellum black haired; metapleuron yellow haired. Legs yellow; mid coxa and base of hind coxa brownish; fore and mid femora tinged with brown subapically, apical half of hind femur brownish black; fore and hind tibiae brown at apex; tarsi dark brown; legs chiefly black haired, but coxae chiefly yellow haired. In female, coxae entirely brownish black, and fore tibia pale yellow (except for apex darker) with chiefly pale yellow hairs. Wing yellowish, apical portion and posterior margin black, without stigma. Halter yellow.

Abdomen brownish black with pale gray pollinosity; tergites 1–2 yellow, tergite 2 with a median black spot; posterior portions of tergites 3–4 yellow; sternites 1–3 entirely yellow, posterior margin of sternite 4 yellow. Hairs on abdomen chiefly black. Male genitalia (Figs. 200–203): Tergite 9 (T9) wider than long, with distinct basal incision; cercus (C) with latero-apical corner distinct and obtuse; sternite 10 (S10) rounded apically; sternite 9 (S9) large and rounded apically; gonocoxite (GC) large and long; gonostylus (GS) weakly curved with obtuse apex; gonocoxal apodemes (GA) long and thin, nearly parallel; aedeagal apodeme (AA) very slender.

Specimens examined. Holotype ♂, allotype ♀, paratypes 2 ♂, 2 ♀, Guangxi: Maoer Mountain (1,400–1,700 m), 1992–08–18/24, YANG Chikun, YANG Chunqing, ZHENG Leyi.

Distribution. China (Guangxi).

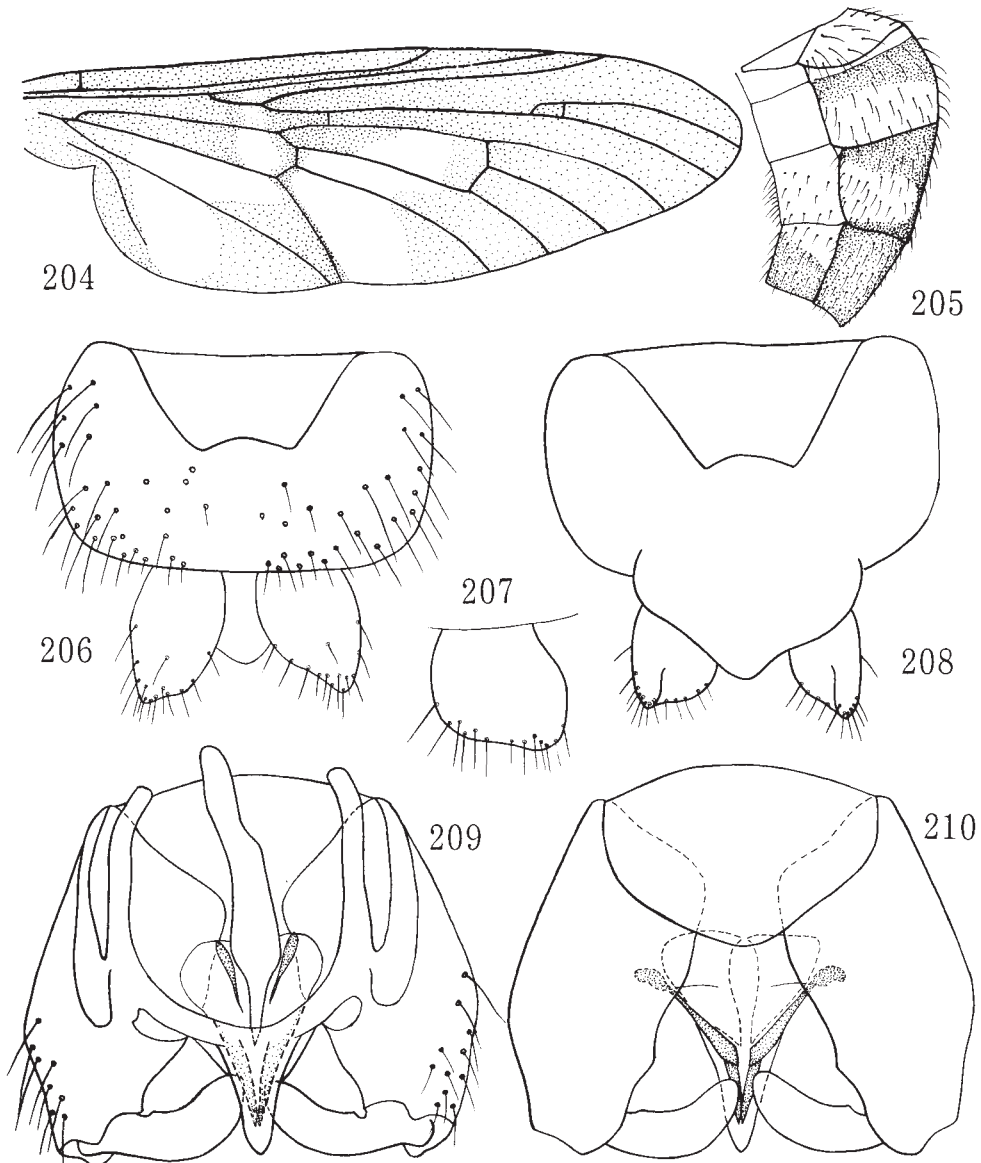
Remarks. This species may be separated from *pseudasticta* as shown in the key (couplet 22).

Rhagio basiflavus C.YANG et D.YANG
(Figs. 204–210)

Rhagio basiflavus C.YANG et D.YANG, 1993a, J. Guangxi. Acad. Sci., 9: 48. Type locality: Longjin, Guangxi.

Male. Wing dark brown, but discal cell, 5th posterior cell, anal cell, and axillary largely pale, and apex of 2nd basal cell and base of 4th posterior cell also pale. Face small and parafacial very thin.

Male. Body length 8 mm, wing length 8.7 mm. Head black, pale gray pollinose, and pale haired, but upper occiput and ocellar tubercle black haired; frons, parafacials and clypeus bare. Antenna brownish yellow with black hairs; arista dark brown. Proboscis brownish yellow with pale and black hairs; palpus yellow with pale hairs. Eye with contiguous portion 2.9 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 3.9 times width of frons just above antenna and 1.9 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in



Figs. 204–210. *Rhagio basiflavus* C. YANG et D. YANG, male. 204, Wing; 205, basal portion of abdomen, lateral view; 206, tergite 9 and cerci, dorsal view; 207, cercus, dorso-lateral view; 208, tergite 9, sternite 10 and cerci, ventral view; 209, genital capsule, dorsal view; 210, genital capsule, ventral view.

direct frontal view and 1.6 times width of frons at median ocellus; distance from ridge below proboscis to antennae 0.5 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 8.5 times as wide as parafacial on a mid line and 1.3 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; pronotum, humerus, propleuron, prosternum, and area behind anterior spiracle yellow; postalar callus dark yellow. Upper part of pteropleuron and anterior portion of metapleuron dark yellow. Mesonotum and

scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow, but mid and hind coxae dark brown; median portion of hind femur dark brown; tibia brownish yellow, but hind tibia somewhat darker; tarsus brown to dark brown. Hairs on legs chiefly black, but coxa with pale hairs. Wing dark brown with large pale markings on postero-basal portion; veins brown to dark brown; anal cell narrowly open. Halter brownish yellow, but knob dark brown.

Abdomen dark brown to black; tergites 1–2 yellow, but tergite 2 with a blackish basal spot; tergite 3 with two yellow lateral spots; sternites 1–3 and basal portion of sternites 4 yellow. Hairs on abdomen chiefly black, but tergite 1 with wholly pale hairs. Male genitalia (Figs. 206–210): Tergite 9 wider than long, with a trapezoid basal incision; sternite 10 with apex somewhat acute; cercus broad and rounded in dorso-lateral view; gonocoxal apodemes nearly parallel; gonostylus distinctly curved; ejaculatory apodeme thick and long with anterior portion flattened laterally; dorsal plate acute apically; ventral plate with rather wide sclerotized lateral ridge.

Female. Unknown.

Specimen examined. Holotype , Longjin, Guangxi, 15. v. 1963, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species is similar to *longzhouensis* but may be separated from the latter as shown in the key (couplet 3).

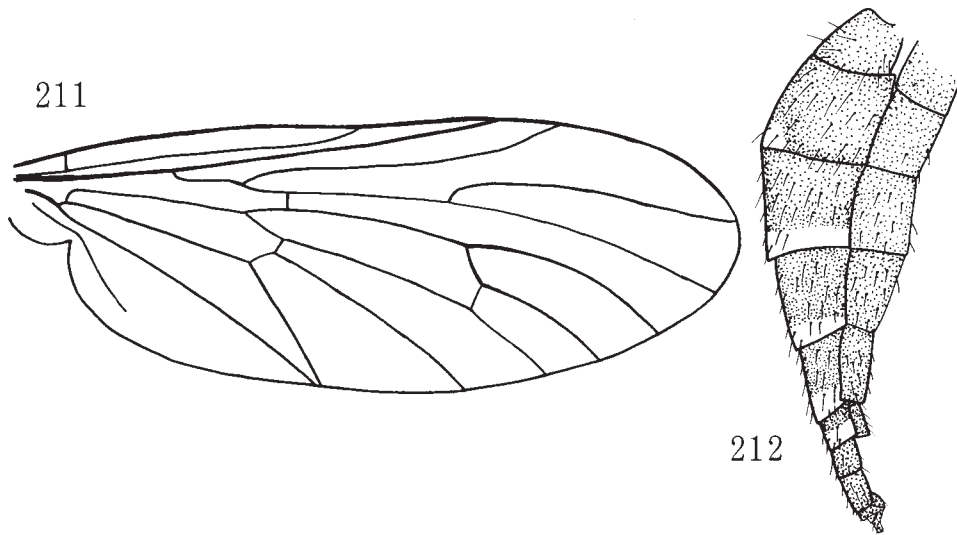
Rhagio basimaculatus C.YANG et D.YANG

(Figs. 211–212)

Rhagio basimaculatus C.YANG et D.YANG, 1993a, J. Guangxi Acad, Sci., 9: 48. Type locality: Tianlin, Guangxi.

Female. Frons at narrowest point 0.5 times as wide as one eye and with large shining black median part (without pollen) connected with lateral margin of frons. Coxa and femur yellow. Fore tibia whitish.

Female. Body length 7.2 mm, wing length 7.2 mm. Head black, pale gray pollinose, and pale haired, but black haired on upper occiput and ocellar tubercle and bare on frons, clypeus and parafacial; frons with median area polished. Antenna [flagellum broken off] dark brown, with black hairs. Proboscis brownish yellow (except apical portion dark brown) with black hairs; palpus dark brown with black hairs. Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 1.4 times width of frons just above antenna and 0.9 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.7 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.6 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.9 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 2.4 times as wide as parafacial on a mid line and



Figs. 211–212. *Rhagio basimaculatus* C. YANG et D. YANG, female. 211, Wing; 212, abdomen, lateral view.

0.7 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose. Mesonotum black haired; scutellum pale haired. Propleuron and anterior portion of metapleuron pale haired. Legs yellow; fore tibia whitish; basal portion of hind tibia black; fore tarsus dark brown; mid and hind tarsi brownish yellow, but darker apically. Legs black haired, but coxa, femur, and fore tibia chiefly pale haired. Wing hyaline, slightly tinged with yellow; stigma very indistinct, yellowish; veins brownish yellow to brownish; anal cell narrowly open. Halter yellow.

Abdomen dark brown to black, and weakly pale gray pollinose; mid-apical margin of tergite 2 and apical margin of tergites 3–7 yellow. Hairs on abdomen pale.

Male. Unknown.

Specimen examined. Holotype , Tianlin (1,500 m), Guangxi, 31. v. 1982, Fasheng LI.

Distribution. China (Guangxi).

Remarks. This species is similar to *shennonganus* but may be separated from the latter as shown in the key (couplet 33).

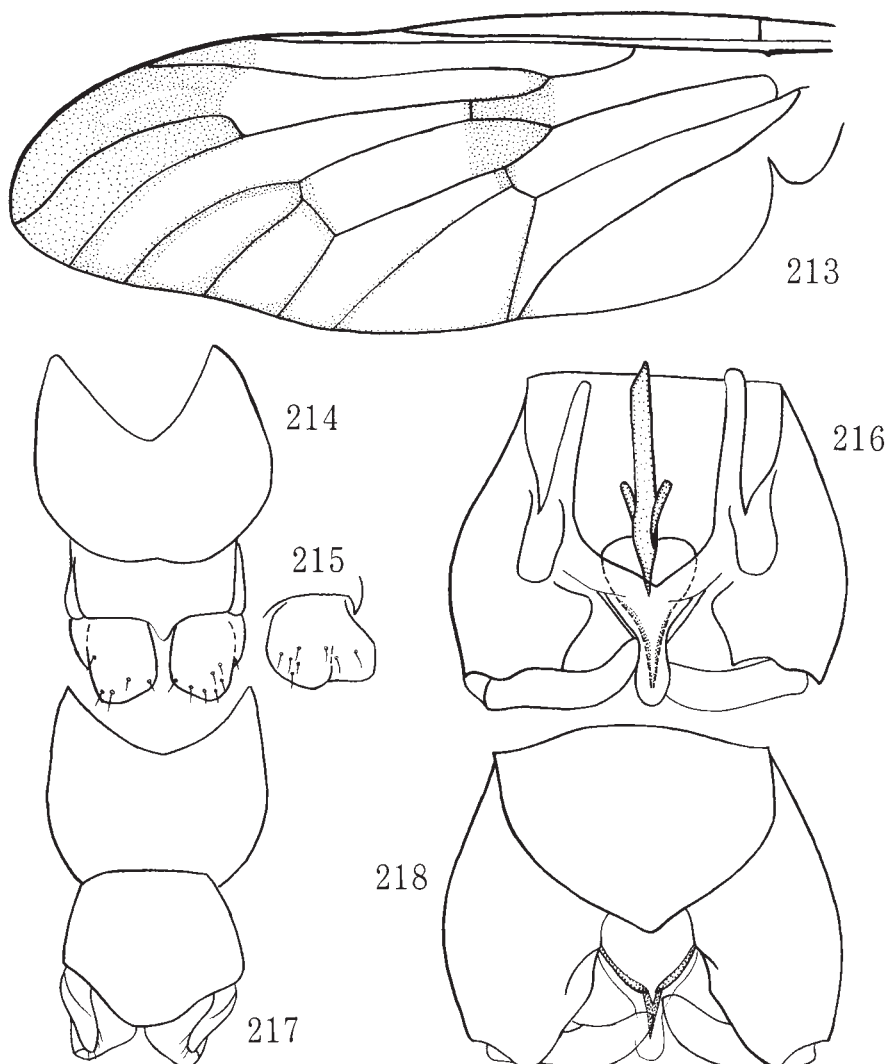
Rhagio bisectus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 213–218)

Male. Wing with darker parts as follows: antero-apical portion; bordering along veins M1 to M4 and CuA; a spot around base of discal cell. Pterostigma absent. Antenna, palpus and thorax (except side of mesonotum, scutellum, metapleuron, etc.) dark brown to black.

Coxa, femur, tibia and halter yellow. Arista arising near ventral side of flagellum. Cercus with a flap extended outwards.

Male. Body length 13.3 mm, wing length 14.8 mm. Head black, and pale gray pollinose. Head pale haired but upper occiput and ocellar tubercle with black hairs; gena intermixed with some black hairs; frons, clypeus and upper portion of parafacial bare. Antenna dark brown to black; pedicel, dorsal surface of scape and flagellum black haired; arista dark brown. Proboscis dark brownish yellow with blackish hairs; palpus brownish yellow with



Figs. 213–218. *Rhagio bisectus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 213, Wing; 214, tergites 9–10 and cerci, dorsal view; 215, cercus, dorso-lateral view; 216, genital capsule, dorsal view; 217, tergite 9, sternite 10 and cerci, ventral view; 218, genital capsule, ventral view.

chiefly black hairs. Eye with contiguous portion 1.6 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 3.0 times width of frons just above antenna and 1.2 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 4.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae 0.6 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.7 times as wide as parafacial on a mid line and 0.9 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; side of mesonotum, a pair of longitudinal stripes on mesonotum, scutellum (except mid base), pteropleuron (except lower part) and metapleuron yellow. Mesonotum and scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow; tarsus brown to dark brown. Hairs on legs black. Wing with a yellow tinge particularly on anterior field and with brown parts: 2nd submarginal cell, apical portion of marginal and 1st submarginal cell, bordering along veins M1 to M4 and CuA, and a spot around base of discal cell; stigma absent; veins brownish yellow; basal section of M2 0.3 times as long as crossvein m; anal cell narrowly open. Halter yellow.

Abdomen [tergites 1–5 partly broken] yellow with black spots on dorsum, and pale gray pollinose; segments 6–9 black. Hairs on abdomen chiefly black, but tergite 1 wholly pale haired. Male genitalia (Figs. 214–218): Tergite 9 wider than long with a deep V-shaped incised anterior margin; sternite 10 with apical portion somewhat tapering and obtuse apically; cercus very broad with a flap extended outward; gonocoxal apodemes nearly parallel; gonostylus somewhat slender and curved apically; ejaculatory apodeme somewhat narrow and curved basally; dorsal plate obtuse apically, ventral plate short and broad with sclerotized lateral ridge rather thin.

Female. Unknown.

Holotype , Sangan, Fujian, 27. v. 1981, Jiang WANG.

Distribution. China (Fujian).

Remarks. This species is easily separated from *hainanensis* and *guangxiensis* as shown in the key (couplets 13 and 16).

Rhagio centrimaculatus C.YANG et D.YANG
(Figs. 219–225)

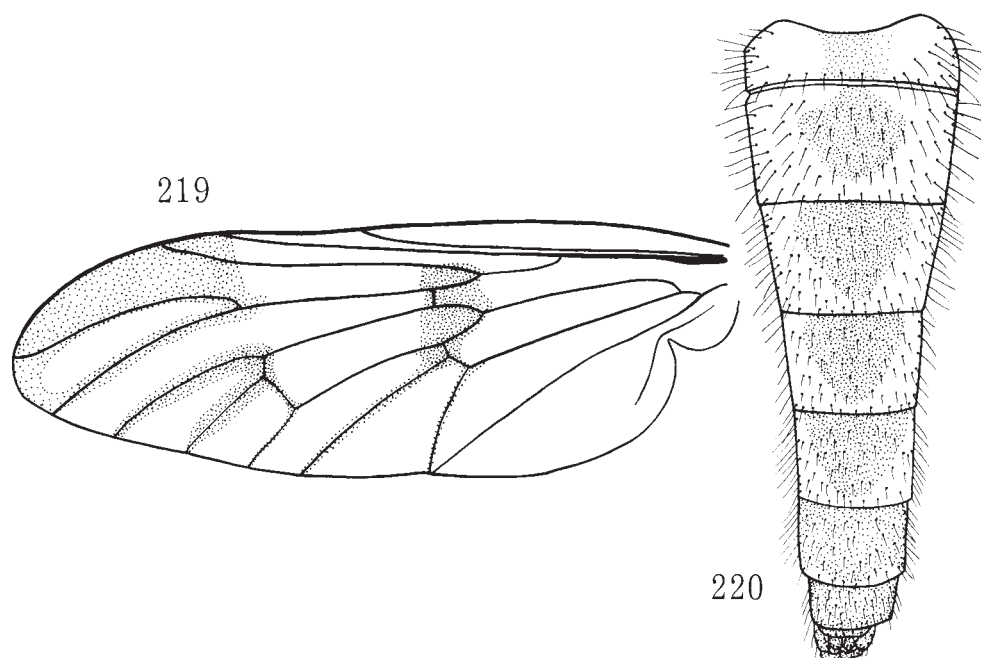
Rhagio centrimaculatus C.YANG et D.YANG, 1993a, J. Guangxi Acad. Sci., 9: 47. Type locality: Jinxiu, Guangxi.

Male. Wing with a transverse median darker band (besides apical darker part of wing). Antenna (except arista), palpus, pleuron, coxa and femur yellow.

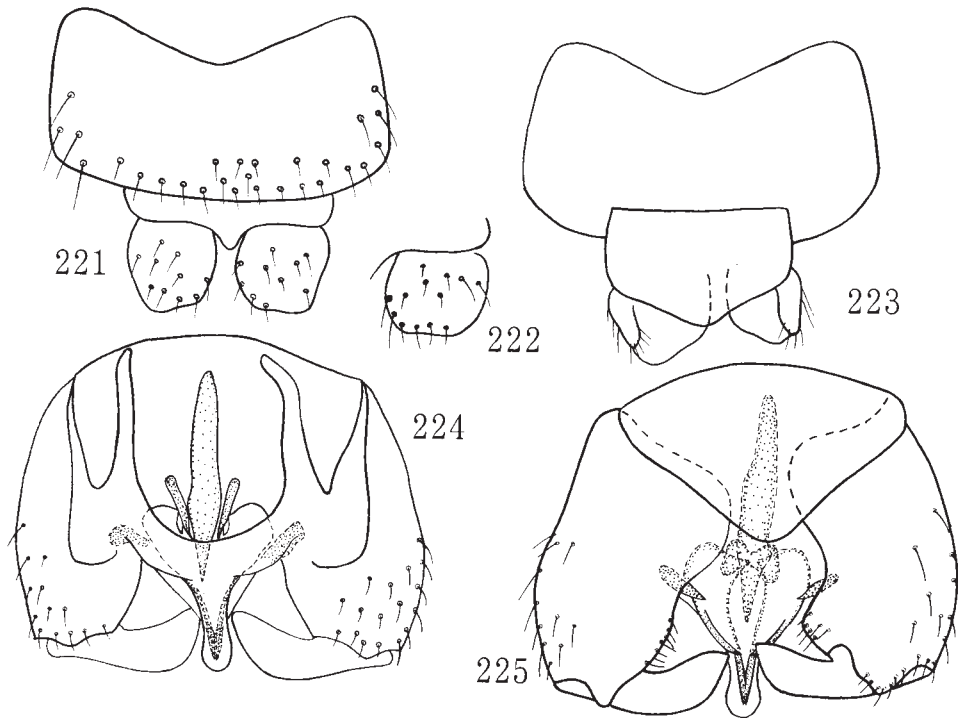
Male. Body length 10.5–12 mm, wing length 9.2–11 mm. Head dark brown to black, and

pale gray pollinose; pale haired, but upper occiput and ocellar tubercle black haired; frons and clypeus bare, gena with some black hairs; parafacial with chiefly pale hairs. Antenna yellow with black hairs; arista dark brown with yellow base. Proboscis brownish yellow with black and pale hairs; palpus yellow with black and pale hairs. Eye with contiguous portion 2.3–2.4 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.6–1.8 times higher than long; width of one eye on a mid line in direct frontal view 0.9–1.0 times distance from antennae to median ocellus, 3.0–3.3 times width of frons just above antenna and 1.0–1.1 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.3 times width of face at lowest point in direct frontal view and 3.2–3.6 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.1–2.2 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus. [N = 4].

Thorax yellow, and pale gray pollinose; mesonotum with three wide black spots; scutellum yellow, but largely black mid-basally. Mesonotum and scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow, but median portion of hind femur blackish; tarsus brown to dark brown. Hairs on legs chiefly black, but fore coxa chiefly pale haired. Wing hyaline, but tinged with yellow on anterior field, and brown on narrow median area crossing basal portion of discal cell, and apical portion of wing (particularly along veins); veins brownish yellow to brown; anal cell narrowly open.



Figs. 219–220. *Rhagio centrimaculatus* C. YANG et D. YANG, male. 219, Wing; 220, abdomen, dorsal view.



Figs. 221–225. *Rhagio centrimaculatus* C. YANG et D. YANG, male. 221, Tergites 9–10 and cerci, dorsal view; 222, cercus, dorso-lateral view; 223, tergite 9, sternite 10 and cerci, ventral view; 224, genital capsule, dorsal view; 225, genital capsule, ventral view.

Halter yellow.

Abdomen yellow, and slightly pale gray pollinose; tergite 1 with a small black spot; tergites 2–5 each with a large black mid-basal spot; tergites 6–7 and sternites 6–7 largely brownish black. Hairs on abdomen chiefly black. Male genitalia (Figs. 221–225): Tergite 9 distinctly wider than long, with V-shaped basal incision; sternite 10 with apex somewhat acute; cercus somewhat quadrate; gonocoxal apodemes nearly parallel; gonostylus weakly curved; ejaculatory apodeme narrow posteriorly (= basally); dorsal plate rounded apically; ventral plate with rather narrow sclerotized lateral ridge.

Female. Unknown.

Specimens examined. Holotype , paratypes 2 , Jinxiu, Guangxi, 12–15. vi. 1982, Chi-kun YANG and Fasheng LI; 1 , Jinxiu, 13. vi. 1982, Fasheng LI.

Distribution. China (Guangxi).

Remarks. This species is similar to *jinxiuensis* but is separated from the latter as shown in the key (couplets 10–12).

Rhagio choui D.YANG et C.YANG sp. nov.

(Figs. 226–231)

Male and female. Wing with three distinct darker bands (including apical darker part of wing). Antenna (except flagellum), palpus, coxa, thorax and abdomen black. Flagellum yellow. Parafacial wide and abundantly pale pilose. Mid-upper face present or differentiated from clypeus. frons at narrowest point distinctly over 1/2 as wide as one eye.

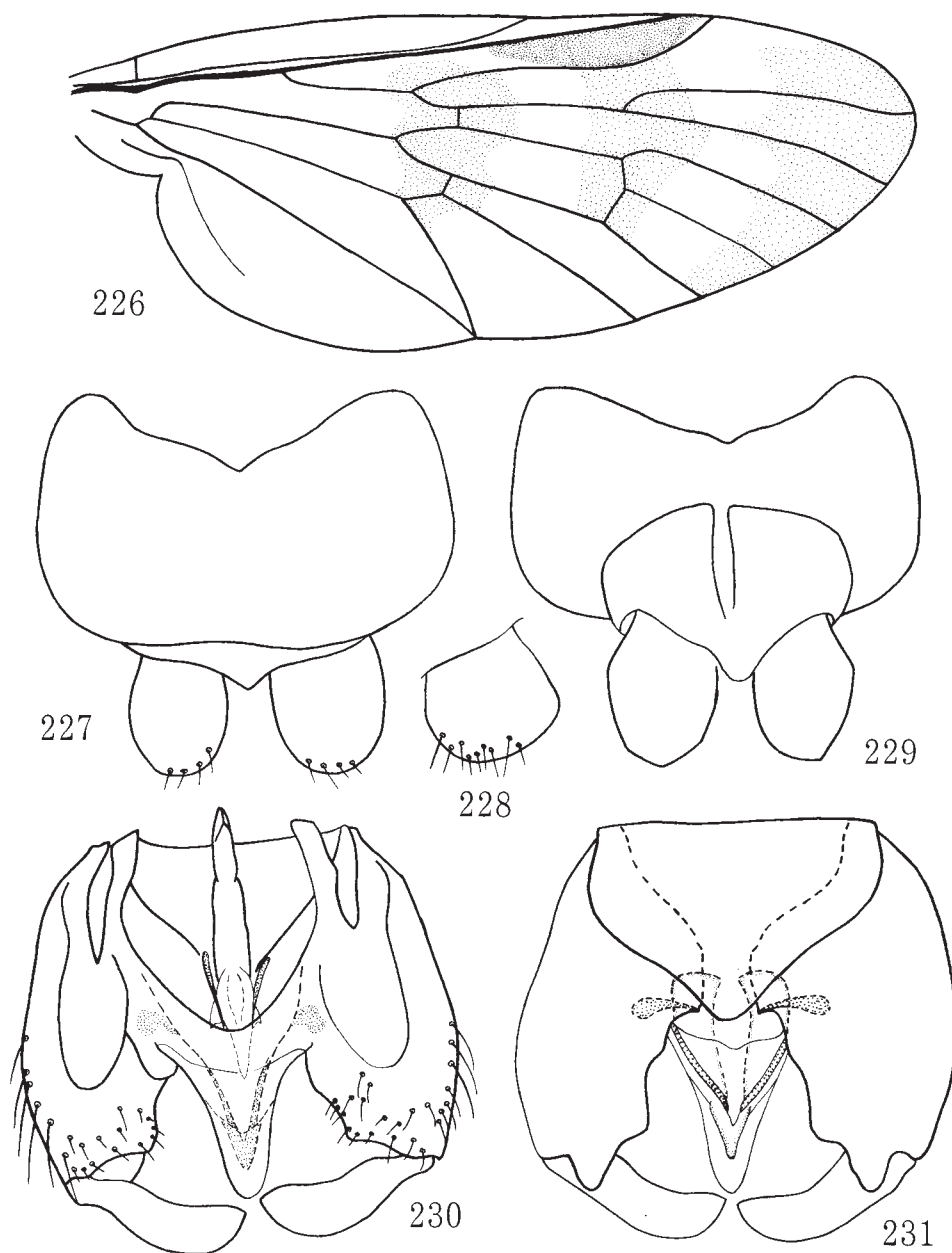
Male. Body length 7.3–7.7 mm, wing length 7.0–8.1 mm. Head black, and pale gray pollinose. Hairs on head pale; ocellar tubercle and upper margin of occiput black haired; frons and clypeus bare; parafacial long pale haired. Antennal scape and pedicel black; flagellum brownish yellow to brown; arista dark brown; scape and pedicel black haired; flagellum minutely pale haired. Proboscis largely dark brown, with pale hairs; palpus black with chiefly pale hairs. [Head not measured].

Thorax black, and pale gray pollinose; mesonotum with 3 distinct (or indistinct) longitudinal darker spots interrupted at the suture. Mesonotum and scutellum black haired; pleuron pale haired. Legs [hind tibia and tarsus broken off] dark brown to black; coxa concolorous with pleuron; apex of fore femur, base and apex of mid femur, basal half and tip of hind femur yellow; tibia yellow except apex of fore tibia; mid tarsomere 1 rather yellow. Hairs on legs black, but coxa wholly pale haired, and femur partly pale haired. Wing hyaline with two black transverse bands on median portion, and apical portion more or less blackish; stigma black, very elongate, and reaching to wing margin; veins brown to dark brown; anal cell closed. Halter yellow.

Abdomen wholly black, and pale gray pollinose. Hairs on abdomen pale, but dorsum with some black hairs medially. Male genitalia (Figs. 227–231): Tergite 9 wider than long, with a nearly V-shaped anterior incision; sternite 10 somewhat acute apically; cercus short and broad; gonocoxal apodemes somewhat convergent; gonostylus thick and weakly curved; ejaculatory apodeme somewhat narrow basally; dorsal plate distinctly obtuse apically; ventral plate with thin and long sclerotized lateral ridge.

Female. Body length 5.8–7.3 mm, wing length 6.3–7.2 mm. Similar to male except as follows: Head (excluding protruded clypeus) 1.5–1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.0–1.1 times distance from antennae to median ocellus, 0.8–0.9 times width of frons just above antenna and 0.5–0.7 times width of face at lowest point in direct frontal view; width of frons just above antennae 1.1–1.3 times distance from antennae to median ocellus, 0.6–0.7 times width of face at lowest point in direct frontal view and 1.2–1.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 1.1–1.2 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.6 times as wide as parafacial on a mid line and 0.5–0.6 times as wide as face at upper margin of clypeus. [N = 2]. Apex of hind femur darkened [this may be so in].

Holotype ♂, paratype 1 ♀, Chang'an, Shaanxi, 15. v. 1980, Io CHOU and Longcheng XIANG. Paratypes 2 ♂, Chang'an, Shaanxi, 15–18. v. 1980, Tong CHENG; 1 ♀, Longde



Figs. 226–231. *Rhagio choui* D. YANG et C. YANG, sp. nov., male. 226, Wing; 227, tergites 9–10 and cerci, dorsal view; 228, cercus, dorso-lateral view; 229, tergite 9, sternite 10 and cerci, ventral view; 230, genital capsule, dorsal view; 231, genital capsule, ventral view.

(2,180 m), Ningxia, 16. vii. 1980, Chi-kun YANG.

Distribution. China (Shaanxi, Ningxia).

Remarks. This species is apparently most closely related to *perdicaceus* (judging from Frey, 1954), but may be separated from the latter as shown in the key (couplet 8). It is also

similar to *sinensis* and *guizhouensis* but may be distinguished from them by the yellow flagellum.

Rhagio formosus BEZZI

Rhagio formosus BEZZI, 1912, Ann. Nat. Mus. Hung., 10: 445. Type locality: Kosempo, Taiwan.

Distribution. China (Taiwan).

For redescription of this species, see NAGATOMI (1986c).

Rhagio gansuensis D.YANG et C.YANG sp. nov.

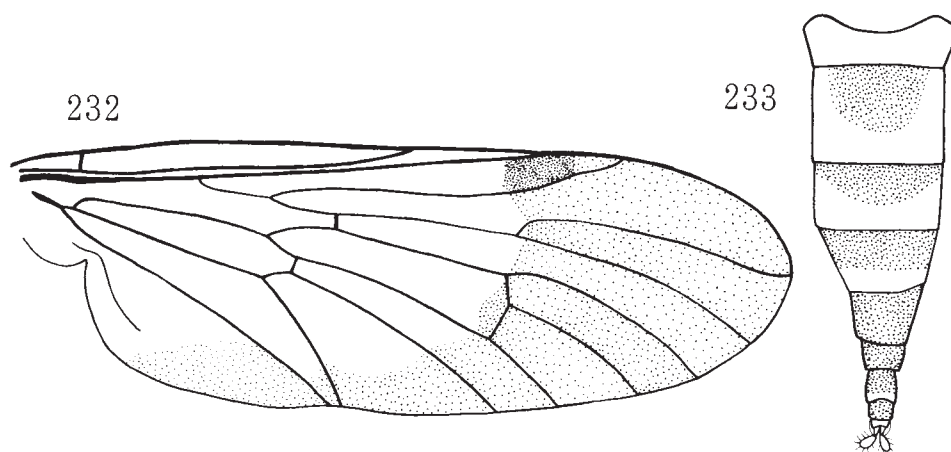
(Figs. 232–233)

Female. Apical part of wing darker. Antenna (except arista), palpus, coxa (except base of mid coxa), side of mesonotum and halter yellow. Frons at narrowest point less than 1/2 as wide as one eye on a mid line in direct frontal view. Arista arising near ventral side of flagellum (not at its middle).

Female. Body length 7.4 mm, wing length 8.6 mm. Head black, and pale gray pollinose, pale haired, but upper occiput and ocellar tubercle stout black haired; frons sparsely pale haired, parafacial pale haired, clypeus bare. Antenna yellow with pale and black hairs; arista dark brown. Proboscis brownish yellow, and black haired; palpus yellow, and with pale and black hairs. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 1.5 times width of frons just above antenna and 0.7 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.7 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view and 1.4 times width of frons at median ocellus; distance from ridge below proboscis to antennae 0.9 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.2 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; humerus and lateral portion of mesonotum yellow; mesonotum with three indistinct darker spots, of which the median one is divided by a pale line; scutellum yellow. Area behind anterior spiracle, upper part of pteropleuron, and metapleuron yellow. Mesonotum and scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow, but subapical portion of fore femur dark brown; apical half of hind femur and apex of hind tibia black; tarsus dark brown to black, but base of mid tarsomere 1 paler. Hairs on legs chiefly black, but coxa chiefly with pale hairs. Wing tinged with yellow, particularly on anterior field; its apical portion and posterior margin brown to dark brown; stigma short, dark brown; veins brownish to dark brown; anal cell narrowly open. Halter yellow.

Abdomen black, and weakly pale gray pollinose; tergites 1–2 yellow with a large median



Figs. 232–233. *Rhagio gansuensis* D. YANG et C. YANG, sp. nov., female. 232, Wing; 233, abdomen, dorsal view.

black spot on tergite 2; apical margins of tergites 3–4 and 7 yellow; apical margins of sternites 1–3 and 7 pale. Hairs on abdomen chiefly black, but venter with pale hairs.

Male. Unknown.

Holotype ♂, Kanxiang (800 m), Gansu, 30. vii. 1980, Chi-kun YANG.

Distribution. China (Gansu).

Remarks. This species (♂) is similar to *meridionalis* (♂), *pilosus* (♂), *shaanxiensis* (♂), and *stigmus* (♂) by having the darker apex of wing but may be separated from them as shown in the key (couplets 23–26).

Rhagio guangxiensis C. YANG et D. YANG

(Figs. 234–240)

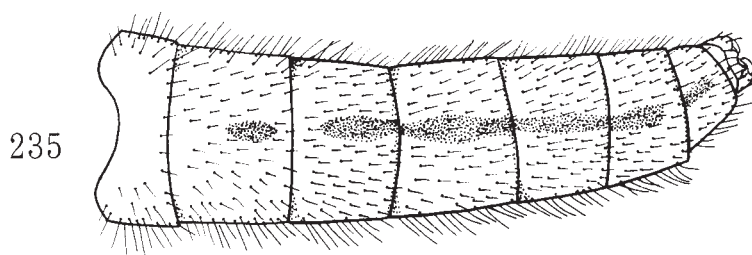
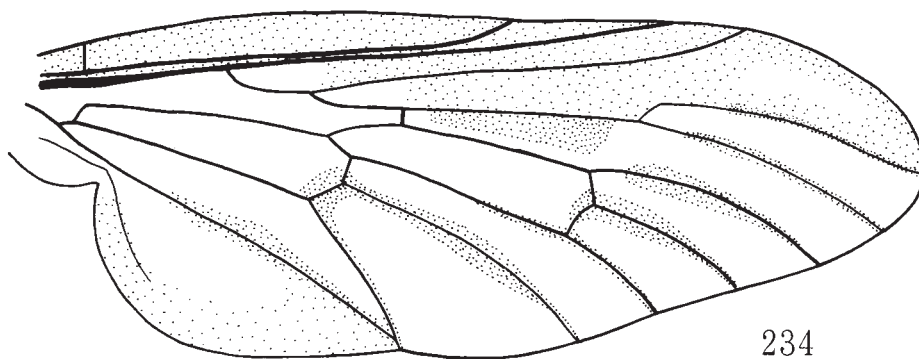
Rhagio guangxiensis C. YANG et D. YANG, 1993a, J. Guangxi Acad. Sci., 9: 46. Type locality: Longsheng, Guangxi.

Male and female. Veins R4, R5, M1, M2, M3, M4, CuA, A1 and m-cu crossvein bordered with brown to dark brown. Antenna (except arista), palpus, thorax, legs (except apical portion of tarsus), and halter yellow. Abdominal tergites 2–7 (or 3–5) each with a longitudinal dark brown to black spot. face small and parafacial very thin. frons at narrowest point less than 1/2 as wide as one eye.

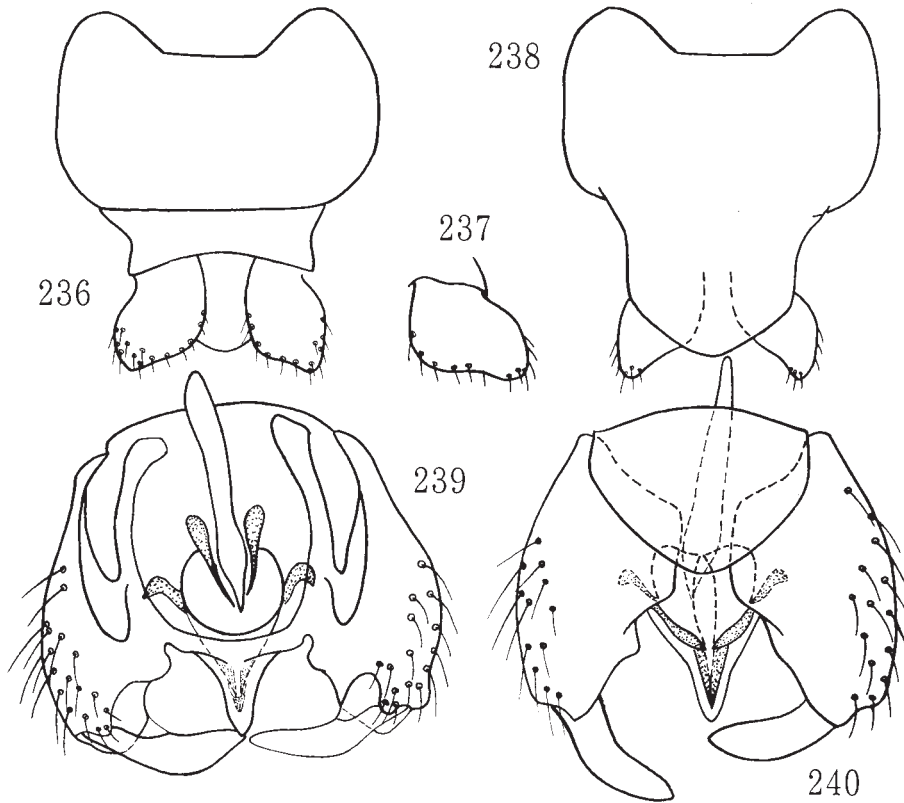
Male. Body length 9.4–9.7 mm, wing length 9.7–10.3 mm. Head dark brown to black, and pale gray pollinose; clypeus brown; head pale haired, but upper occiput and ocellar tubercle partly black haired; frons, parafacial and clypeus bare. Antenna yellow, with chiefly pale hairs; arista dark brown. Proboscis yellow with chiefly black hairs; palpus

yellow with pale hairs. Eye with contiguous portion 2.6–2.9 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.6–1.7 times higher than long; width of one eye on a mid line in direct frontal view 0.8–0.9 times distance from antennae to median ocellus, 3.8–4.3 times width of frons just above antenna and 1.6–1.8 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 1.4–1.7 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5–0.6 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 6.6–6.8 times as wide as parafacial on a mid line and 1.1–1.3 times as wide as face at upper margin of clypeus. [N = 3].

Thorax yellow, and pale gray pollinose; mesonotum with three distinct or indistinct dark brown spots. Mesopleuron and sternopleuron may have brown tinge. Mesonotum chiefly black haired; scutellum, propleuron and anterior part of metapleuron pale haired. Legs yellow, but tarsus somewhat darker toward apex. Hairs on legs black, but those on coxa pale and those on fore and mid femora chiefly so. Wing tinged with brown especially on anterior field and along veins of apical and posterior portions; veins brownish yellow to dark brown; anal cell closed at or just before wing margin or narrowly open. Halter yellow, but knob may have brown tinge.



Figs. 234–235. *Rhagio guangxiensis* C. YANG et D. YANG, male. 234, Wing; 235, abdomen, dorsal view.



Figs. 236–240. *Rhagio guangxiensis* C. YANG et D. YANG, male. 236, Tergites 9–10 and cerci, dorsal view; 237, cercus, dorso-lateral view; 238, tergite 9, sternite 10 and cerci, ventral view; 239, genital capsule, dorsal view; 240, genital capsule, ventral view.

Abdomen yellow, and weakly pale gray pollinose; tergites 2–7 (or 3–7) with a narrow black median stripe; basal (or latero-basal) margins of tergites 2–4 (or 2–5) darker. Hairs on abdomen black, but segment 1 with pale hairs. Male genitalia (Figs. 236–240): Tergite 9 with a trapezoid anterior incision; sternite 10 somewhat acute apically; cercus with apex narrow and somewhat acute; gonocoxal apodemes somewhat convergent; gonostylus weakly curved; ejaculatory apodeme flattened anteriorly; dorsal plate distinctly acute apically; ventral plate with sclerotized lateral ridge somewhat wide.

Female. Body length 7.8–9.9 mm, wing length 7.2–9.4 mm. Similar to male except as follows: Head (excluding protruded clypeus) 1.5–1.7 times higher than long; width of one eye on a mid line in direct frontal view 0.8–0.9 times distance from antennae to median ocellus, 1.5–1.7 times width of frons just above antenna and 0.9–1.0 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5–0.6 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.5–1.6 times width of frons at median ocellus; distance from ridge below

proboscis to antennae about 0.6–0.7 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long, 2.8–2.9 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus. [N = 4]. Hairs on scutellum black (this may be sometimes so in).

Specimens examined. Holotype , paratypes 1 , 2 , Longsheng, Guangxi, 5. vi. 1963, Chi-kun YANG. Paratypes 1 , Longsheng, Guangxi, 6. vi. 1963, Chi-kun YANG; 2 , 1 , Longsheng, Guangxi, 21–25. vi. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species is similar to *maolanus* but is easily separated from the latter as shown in the key (couplet 15).

Rhagio guizhouensis D.YANG et C.YANG

(Fig. 241)

Rhagio guizhouensis D.YANG et C.YANG, 1992, In: Insects of Wuling Mountains Area, Southwestern China, p. 587. Type locality: Fangjingshan, Guizhou.

Female. Wing with three distinct darker bands (including apical darker part of wing), of which middle one is interrupted medially. [Flagellum broken off]. Parafacial, mid-upper face and frons are similar to *choui* and *sinensis*.

Female. Body length 6.0 mm, wing length 6.5 mm. Head black, and pale gray pollinose. Hairs on head pale; ocellar tubercle and upper margin of occiput with black hairs, frons with short black hairs, parafacial (except upper area) with pale and black hairs, clypeus bare. Antenna [flagellum broken off] dark brown, with black hairs. Proboscis dark brown with black hairs; palpus black with chiefly black hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times

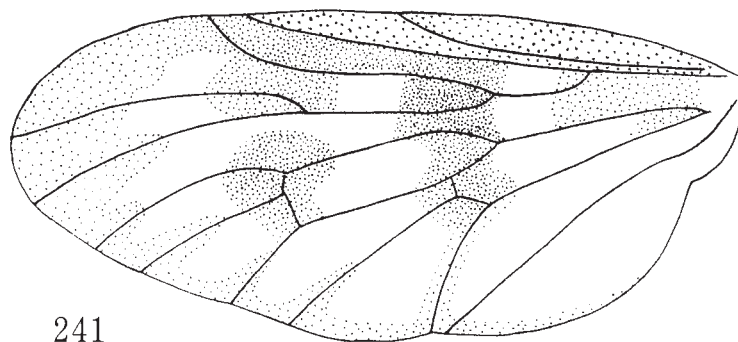


Fig. 241. *Rhagio guizhouensis* D. YANG et C. YANG, female wing. (From D. Yang and C. Yang, 1992)

distance from antennae to median ocellus, 0.9 times width of frons just above antenna and 0.6 times width of face at lowest point in direct frontal view; width of frons just above antennae 1.0 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view and 1.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 1.1 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.4 times as wide as parafacial on a mid line and 0.5 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; mesonotum with 3 darker longitudinal spots, of which the lateral is widely interrupted just behind suture. Mesonotum and scutellum with black hairs; propleuron and anterior portion of metapleuron with pale hairs. Legs dark yellow to brownish yellow; coxa brownish black and concolorous with pleuron; fore femur black except apex; tarsus brown to dark brown except tarsomere 1 somewhat paler. Hairs on legs black, but those on fore and hind coxae longer and chiefly pale. Wing hyaline, tinged blackish on anterior, apical and posterior margins, and with two broad transverse blackish spots (of which outer one is interrupted). Halter yellow.

Abdomen dark brown, and pale gray pollinose. Hairs on abdomen pale.

Male. Unknown.

Specimen examined. Holotype , Fanjingshan, Guizhou, 15. v. 1988, Hong WU.

Distribution. China (Guizhou).

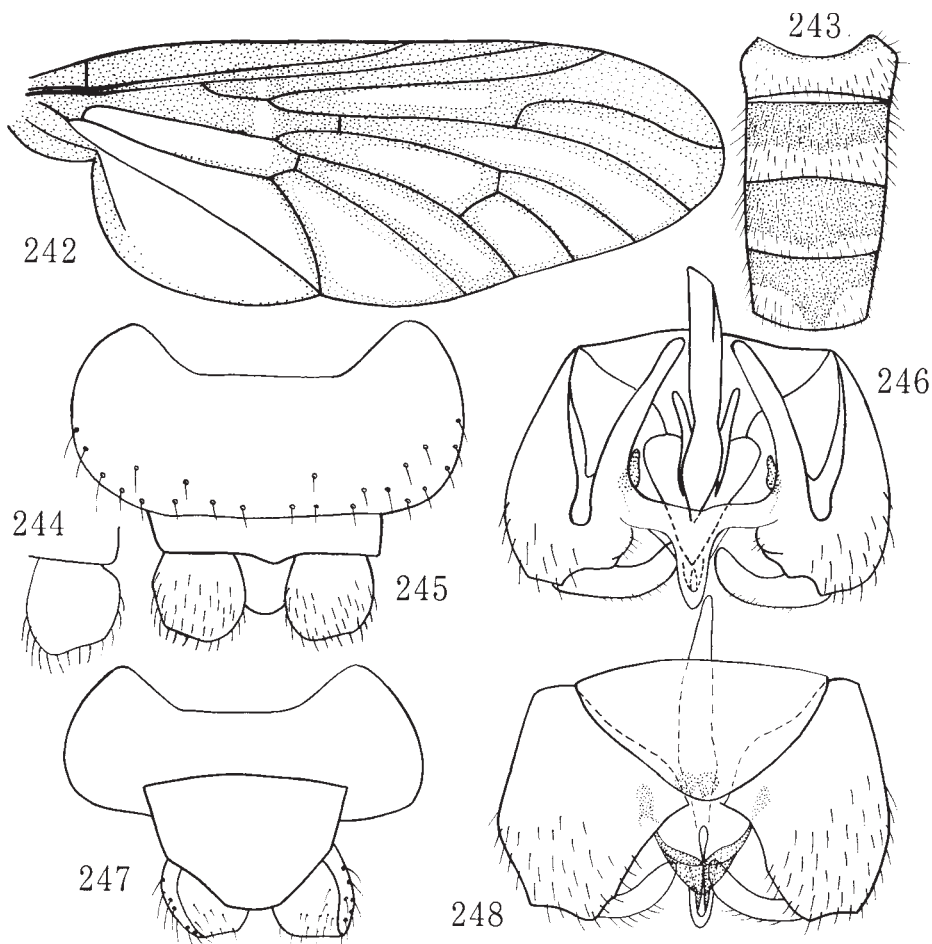
Remarks. This species is very similar to *choui*, *perdicaceus*, and *sinensis*, but may be separated from them as shown in the key (couplets 6–8).

Rhagio hainanensis D.YANG et C.YANG sp. nov.

(Figs. 242–248)

Male. Wing with a darkened band around base of discal cell. Veins R4, R5, M1 to M4, and CuA bordered with brown to dark brown. Thorax, coxa, and knob of halter dark brown to black, but humeral and postalar calli and scutellum (except mid base) yellow. Arista arising near ventral side of flagellum. Hind femur with a ventral hump near apex.

Male. Body length 9.0 mm, wing length 10.8 mm. Head black, and pale gray pollinose. Hairs on head pale, but upper occiput and ocellar tubercle black haired; frons, parafacial and clypeus bare. Antenna yellow with flagellum dark yellow and arista dark brown; scape bare, pedicel black haired, flagellum minutely pale pubescent. Proboscis dark yellow with chiefly pale hairs; palpus brown to dark brown with pale hairs. Eye with contiguous portion 1.5 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.9 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 3.2 times width of frons just above antenna and 1.9 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view and 3.4 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.7 times that from antennae to median ocellus; clypeus 0.9 times as wide



Figs. 242–248. *Rhagio hainanensis* D. YANG et C. YANG sp. nov., male. 242, Wing; 243, basal portion of abdomen, dorsal view; 244, cercus, dorso-lateral view; 245, tergites 9–10 and cerci, dorsal view; 246, genital capsule, dorsal view; 247, tergite 9, sternite 10 and cerci, ventral view; 248, genital capsule, ventral view.

as long, 6.0 times as wide as parafacial on a mid line and as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; humerus yellow, postalar area yellow. Scutellum yellow but black basally; pleuron with a yellow band extending from above mid coxa to base of wing. Thorax chiefly pale haired; pronotum and anterior portion of metapleuron wholly pale haired. Legs yellow; coxa black and concolorous with pleuron; hind femur (except base and apex) black, with a hump near apex; fore tibia pale; tarsus brown apically. Hairs on legs pale and black, but coxa and fore tibia with pale hairs. Wing hyaline, with dark brown on anterior field and along veins of apical portion and wing margin; veins dark brown, basal section of M2 0.5 times as long as crossvein m; anal cell closed at wing margin. Halter yellow, knob black.

Abdomen yellow; basal margin of tergite 1 brown to dark brown, tergites 2–8 black with apical portion yellow; venter brown to black, but sternites 1–3 yellow to brownish yellow. Hairs on abdomen black and pale, but those on tergite 1 wholly pale. Male genitalia (Figs. 244–248): Tergite 9 much wider than long with trapezoid incised anterior margin; sternite 10 with apical portion contracted; cercus broad with wide posterior margin; gonocoxal apodemes convergent; gonostylus curved apically; ejaculatory apodeme somewhat narrow and curved basally; dorsal plate obtuse apically, ventral plate short and broad with sclerotized lateral ridge distinct.

Female. Unknown.

Holotype , Hainan, 16. iii. 1934, Chi Ho.

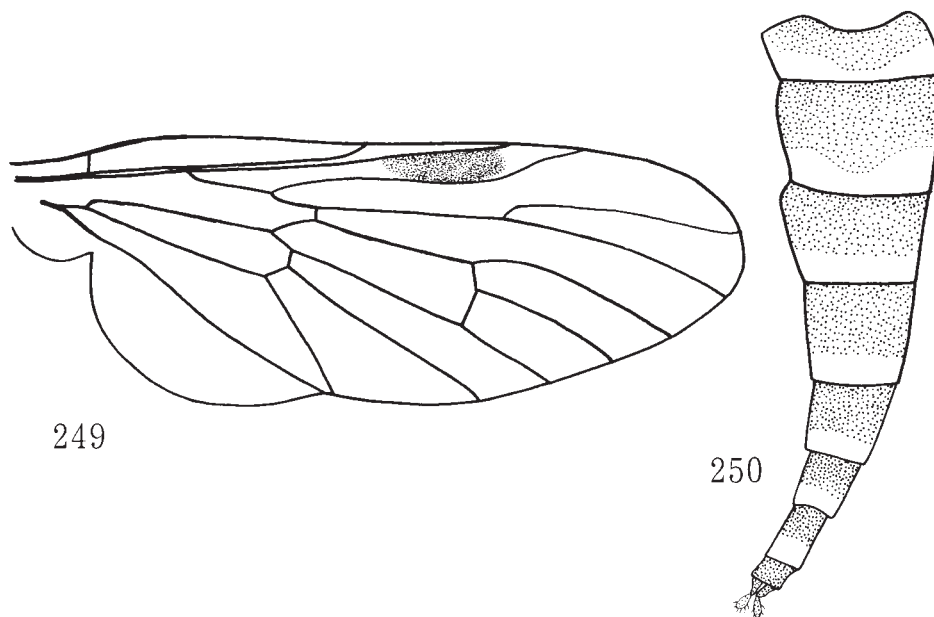
Distribution. China (Hainan).

Remarks. This species is easily separated from *maolanus* and *tuberculatus* as shown in the key (couplet 17).

Rhagio hangzhouensis C.YANG et D.YANG
(Figs. 249–250)

Rhagio hangzhouensis C.YANG et D.YANG, 1989, J. Zhejiang Forest. Coll., 6: 291. Type locality: Hangzhou, Zhejiang.

Female. Pterostigma relatively short and broad, truncate at apex and not reaching to wing



Figs. 249–250. *Rhagio hangzhouensis* C. YANG et D. YANG, female. 249, Wing; 250, abdomen, dorsal view.

margin. Antennal flagellum, palpal segment 2 and halter yellow. Frons at narrowest point over 1/2 as wide as one eye. Arista arising near ventral side of flagellum.

Female. Body length 7.3–8.7 mm, wing length 7.0–7.4 mm. Head dark brown to black, pale gray pollinose, and pale haired, but black haired on upper occiput and ocellar tubercle; frons sparsely pale haired, parafacial pale haired, clypeus bare. Antenna dark brown to black, but flagellum yellow with dark brown arista; chiefly black haired. Proboscis brown to dark brown, and chiefly black haired; palpus yellow except for basal portion brown to dark brown, and pale haired. Head (excluding protruded clypeus) 1.3–1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 1.4 times width of frons just above antenna and 0.7–0.8 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.7 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view and 0.8–1.1 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.9–1.0 times that from antennae to median ocellus; clypeus 0.9–0.95 times as wide as long, 2.4–2.5 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus. [N = 2].

Thorax dark brown to black, and pale gray pollinose; mesonotum with three darker longitudinal spots, of which median one is divided by a pale line. Mesonotum and scutellum black haired. Propleuron and anterior portion of metapleuron pale haired. Legs yellow; coxa black and concolorous with pleuron, trochanter dark brown to black; fore femur dark brown with basal portion and apex yellow; hind femur dark brown to black with basal portion yellow; apex of hind tibia, and tarsus brown to dark brown. Hairs on legs chiefly black, but coxa chiefly pale haired. Wing nearly hyaline; stigma distinct, dark brown, not reaching to wing margin; veins dark brown; anal cell narrowly open. Halter yellow.

Abdomen dark brown to black, and weakly pale gray pollinose; apical portion of tergites 1–7 yellow; sternites 1–2 yellow. Dorsum chiefly black haired; venter pale haired.

Male. Unknown.

Specimens examined. Holotype , Hangzhou, Zhejiang, 11. vi. 1980, Chi-kun YANG; 1 , Tianmushan Mountain, Zhejiang, 26. vi. 1957, Fasheng LI.

Distribution. China (Zhejiang).

Remarks. This species is similar to *huashanensis* but may be separated from the latter as shown in the key (couplet 35).

Rhagio huashanensis D.YANG et C.YANG sp. nov.

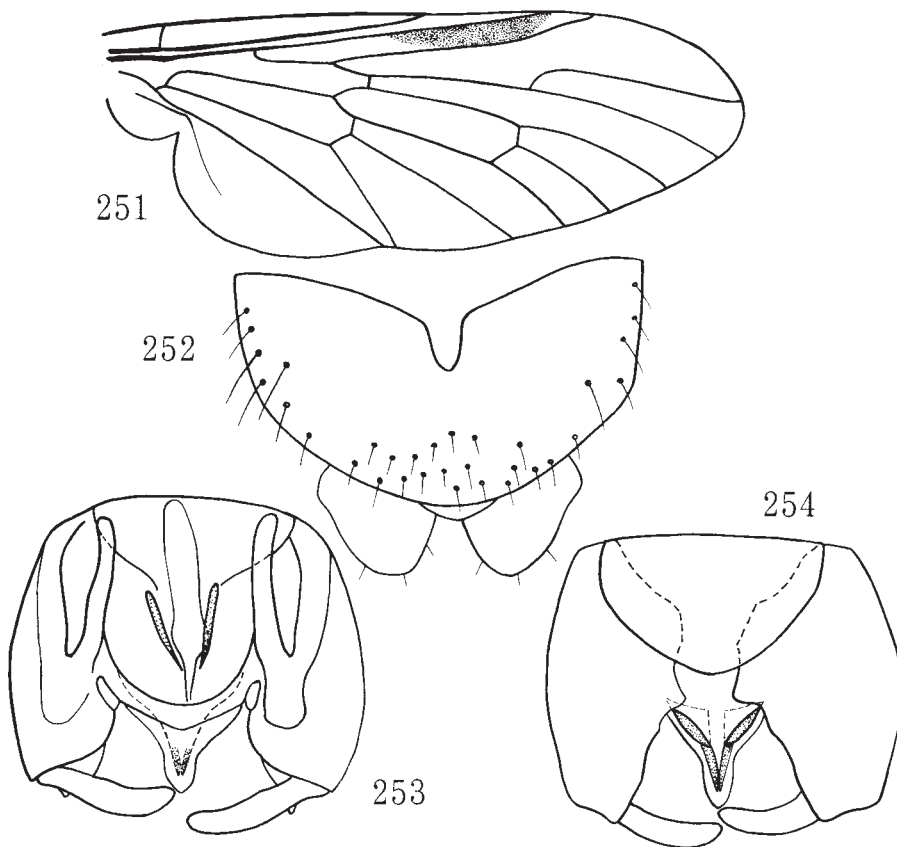
(Figs. 251–254)

Male. Pterostigma elongate and reaching to wing margin. Antennal flagellum and palpal segment 2 yellow.

Male. Body length 6.5–7.0 mm, wing length 6.2–6.7 mm. Head dark brown to black, pale gray pollinose, and pale haired, but upper occiput and ocellar tubercle with black hairs; arista dark brown. Proboscis and palpus yellow with pale hairs. Eye with contiguous portion

1.6–1.7 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.6–1.8 times higher than long; width of one eye on a mid line in direct frontal view 0.9–1.0 times distance from antennae to median ocellus, 2.7–2.8 times width of frons just above antenna and 0.8–0.9 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3–0.4 times distance from antennae to median ocellus, 0.3–0.35 times width of face at lowest point in direct frontal view and 2.7–2.9 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5–0.6 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 1.8–1.9 times as wide as parafacial on a mid line and 0.7 times as wide as face at upper margin of clypeus. [N = 2].

Thorax dark brown to black, and pale gray pollinose; mesonotum with three darker spots, of which median one is divided by a pale line. Mesonotum and scutellum pale haired, but mesonotum with sparse black hairs; propleuron and anterior portion of metapleuron pale



Figs. 251–254. *Rhagio huashanensis* D. YANG et C. YANG, sp. nov., male. 251, Wing; 252, tergites 9–10 and cerci, dorsal view; 253, genital capsule, dorsal view; 254, genital capsule, ventral view.

haired. Legs yellow; coxa dark brown and concolorous with pleuron; hind femur somewhat darker with basal portion yellow; tarsus somewhat darker apically. Hairs on legs chiefly black, but coxa with pale hairs. Wing nearly hyaline or tinged with brown; stigma distinct, elongate, brownish; veins brownish yellow; anal cell narrowly open. Halter yellow, but knob brown to dark brown apically.

Abdomen brown to dark brown, and apical portion somewhat darker. Hairs on abdomen pale. Male genitalia (Figs. 252–254): Tergite 9 wider than long, with a deep mid-anterior incision; cercus obtuse apically; gonocoxal apodeme nearly parallel; gonostylus weakly curved; ejaculatory apodeme thick with acute posterior portion; dorsal plate somewhat acute; ventral plate short and broad with distinct lateral ridge.

Female. Unknown.

Holotype ♂, paratype 1 ♂, Huashan Mountain, 22. viii. 1962, Chi-kun YANG.

Distribution. China (Shaanxi).

Remarks. This species is similar to *hangzhouensis* but may be separated from the latter as shown in the key (couplet 35).

Rhagio jinxiuensis C.YANG et D.YANG
(Fig. 255)

Rhagio jinxiuensis C.YANG et D.YANG, 1993a, J. Guangxi. Acad. Sci., 9: 50. Type locality: Jinxiu, Guangxi.

Female. Wing with a transverse median darker band (besides apical darker part of wing). Thorax, abdomen and palpus black. Frons at narrowest point less than 1/2 as wide as one eye.

Female. Body length 10.5 mm, wing length 11 mm. Head black, pale gray pollinose, and black haired, but lower occiput chiefly pale haired; frons with some very short black hairs, parafacial with sparse black hairs, clypeus bare. Antenna dark brown to black with black hairs; flagellum yellow, arista dark brown. Proboscis and palpus black with pale hairs. Head

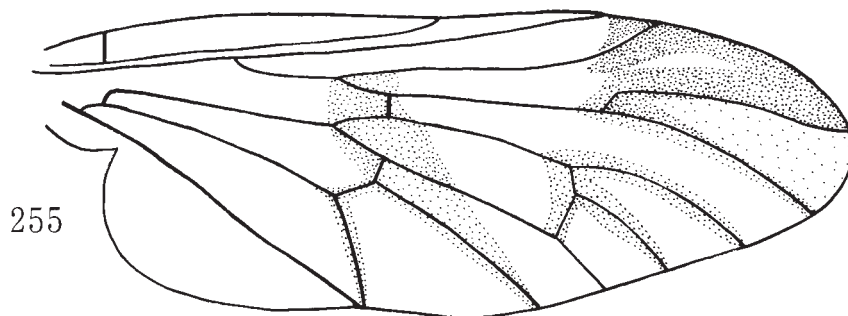


Fig. 255. *Rhagio jinxiuensis* C. YANG et D. YANG, female wing.

(excluding protruded clypeus) 1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 2.1 times width of frons just above antenna and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view and 1.5 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.8 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.6 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, but mesonotum and scutellum darker with black hairs; propleuron and anterior portion of metapleuron with pale hairs. Legs yellow; coxa tinged with brown; median portion of hind femur and hind tibia (except extreme base) brown to dark brown; tarsus brown to dark brown. Hairs on legs chiefly black. Wing hyaline, tinged with yellow on anterior field, brown along veins of apical half, etc. Halter brownish, but basal portion yellow.

Abdomen black with chiefly black hairs.

Male. Unknown.

Specimen examined. Holotype , Jinxiu, Guangxi, 14. vi. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species is similar to *centrimaculatus* but is easily separated from the latter as shown in the key (couplets 10–11).

Rhagio longshengensis C.YANG et D.YANG
(Figs. 256–262)

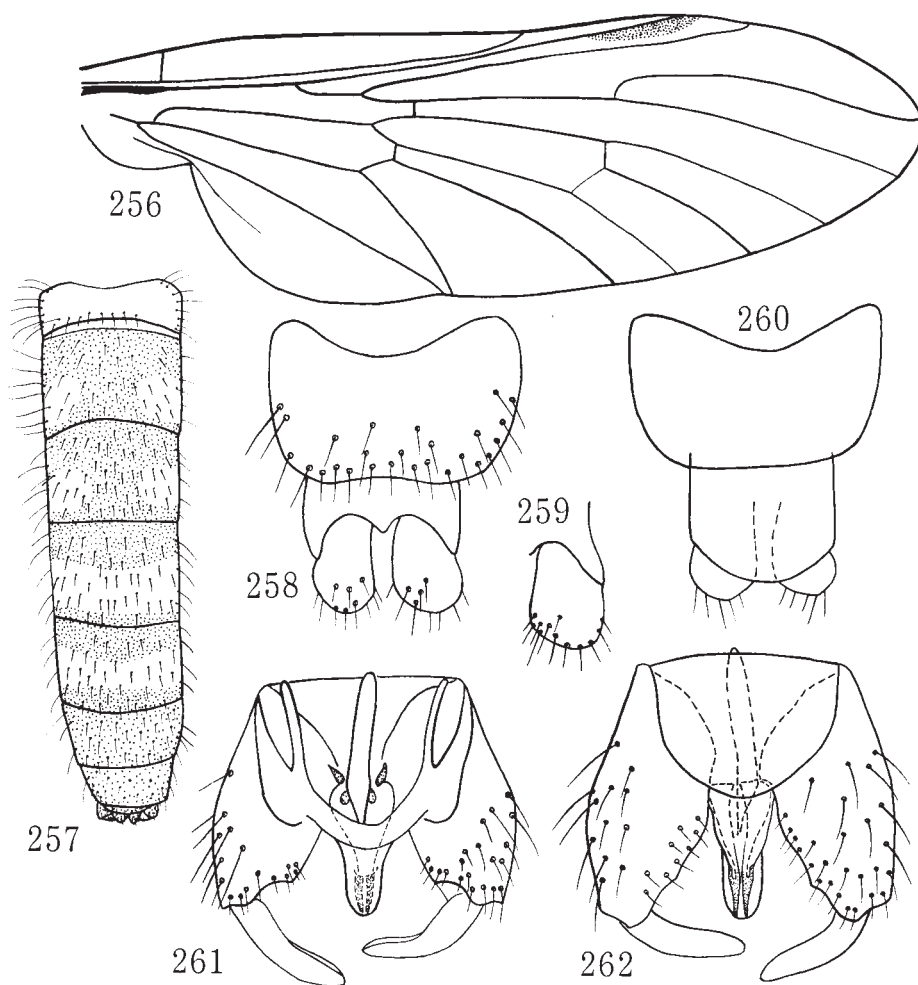
Rhagio longshengensis C.YANG et D.YANG, 1993a, J. Guangxi Acad. Sci., 9: 50. Type locality: Longsheng, Guangxi.

Male and female. Palpus, proboscis and legs (except apical portion of tarsus) yellow. Thorax black. face small and parafacial very thin. frons less than 1/2 as wide as one eye.

Male. Body length 4.2–4.4 mm, wing length 5.1–5.6 mm. Head black, pale gray pollinose, and pale haired, but upper occiput and ocellar tubercle black haired; frons and clypeus bare, parafacial pale haired. Antenna brown to dark brown with black hairs; arista dark brown. Proboscis yellow with black hairs; palpus yellow with yellow hairs. Eye with contiguous portion 2.3–2.5 times as long as ocellar triangle. Head 1.5–1.6 times higher than long; width of one eye on a mid line in direct frontal view 0.8–0.9 times distance from antennae to median ocellus, 3.8–4.1 times width of frons just above antenna and 1.5–1.6 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 0.9–1.0 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5–0.6 times that from antennae to median

ocellus; clypeus 0.9 times as wide as long, about 7 times as wide as parafacial on a mid line and 0.9–1.0 times as wide as face at upper margin of clypeus. [N = 2].

Thorax dark brown to black, and pale gray pollinose; lower portion of pleuron somewhat paler; mesonotum and scutellum darker with pale hairs, the former with some black hairs; propleuron and anterior portion of metapleuron with pale hairs. Legs yellow, but tarsus somewhat darker. Hairs on legs black; coxa and fore and mid femora with pale hairs. Wing nearly hyaline or slightly tinged with brown; stigma narrow, indistinct, reaching to wing margin; veins brown; anal cell narrowly open. Halter yellow, knob brown to dark brown.



Figs. 256–262. *Rhagio longshengensis* C. YANG et D. YANG, male. 256, Wing; 257, abdomen, dorsal view; 258, tergites 9–10 and cerci, dorsal view; 259, cercus, dorso-lateral view; 260, tergite 9, sternite 10 and cerci, ventral view; 261, genital capsule, dorsal view; 262, genital capsule, ventral view.

Abdomen yellow, and weakly pale gray pollinose; tergite 1 brownish yellow, basal portion and apical margin of tergites 2–5 black, tergites 6–7 almost wholly black. Hairs on abdomen pale on venter but chiefly black on dorsum. Male genitalia (Figs. 258–262): Tergite 9 wider than long, with shallowly incised anterior margin; sternite 10 with apex widely rounded; cercus quadrate in dorso-lateral view, widely rounded apically; gonocoxal apodemes weakly divergent; gonostylus curved; ejaculatory apodeme acute posteriorly; dorsal plate somewhat rounded apically, ventral plate as long as dorsal plate.

Female. Body length 4.3 mm, wing length 5.0 mm. Similar to male except as follows: Frons without hairs (as in male). Head 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 1.9 times width of frons just above antenna and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.9 times that from antennae to median ocellus; clypeus 0.6 times as wide as long, 4.0 times as wide as parafacial on a mid line and 0.9 times as wide as face at upper margin of clypeus. Mesonotum and scutellum wholly black haired.

Specimens examined. Holotype ♂, paratypes 1 ♀, 1 ♂, Longsheng, Guangxi, 25. vi. 1982, Chi-kun YANG; 1 ♀, Jinxiu (720 m), Guangxi, 11. vi. 1982, Fasheng LI.

Distribution. China (Guangxi).

Remarks. This species is similar to *apiciflavus* but is easily separated from the latter as shown in the key (couplet 32).

Rhagio longzhouensis C.YANG et D.YANG

(Figs. 263–269)

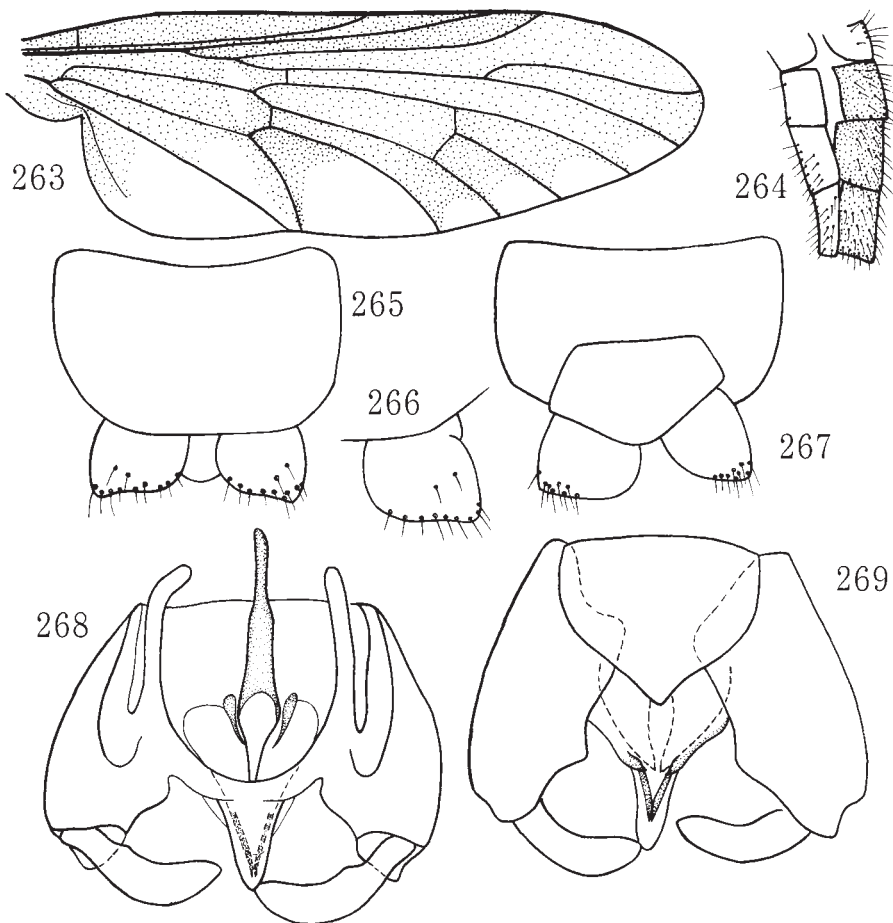
Rhagio longzhouensis C.YANG et D.YANG, 1993a, J. Guangxi Acad. Sci., 9: 49. Type locality: Longzhou, Guangxi.

Male and female. Wing dark brown, but 1st and 2nd basal cells, 2nd to 5th posterior cells, anal cell, and axillary partly pale. Thorax and coxa black. Fore tibia whitish. face small and parafacial very thin. frons at narrowest point less than 1/2 as wide as one eye.

Male. Body length 7.2 mm, wing length 7.0 mm. Head black, pale gray pollinose, and pale haired, but upper occiput and ocellar tubercle black haired; frons, parafacial and clypeus bare. Scape and pedicel brown to dark brown and flagellum yellow; antenna with pale hairs; arista dark brown. Proboscis and palpus brown to dark brown and chiefly black haired. Eye with contiguous portion 2.9 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.7 times higher than long; width of one eye on a mid line in direct frontal view 0.8 times distance from antennae to median ocellus, 4.5 times width of frons just above antenna and 1.7 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2 times distance from antennae to median ocellus, 0.4 times

width of face at lowest point in direct frontal view and 1.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 7 times or so as wide as parafacial on a mid line and 1.2 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; pronotum, humerus and postalar callus yellow. Mesonotum and scutellum black haired; humerus and propleuron pale haired; anterior portion of metapleuron pale and black haired. Legs yellow, but coxa darker and concolorous with pleuron; hind femur black with base and apex yellow; hind tibia dark brown with basal and apical portions yellow; tarsus brown to dark brown toward apex.



Figs. 263–269. *Rhagio longzhouensis* C. YANG et D. YANG, male. 263, Wing; 264, basal portion of abdomen, lateral view; 265, tergite 9 and cerci, dorsal view; 266, cercus, dorso-lateral view; 267, tergite 9, sternite 10 and cerci, ventral view; 268, genital capsule, dorsal view; 269, genital capsule, ventral view.

Hairs on legs chiefly black, but fore coxa with pale hairs. Wing dark brown, with a narrow pale area near apices of both basal cells and large pale areas on posterior portion; veins brown to dark brown; anal cell narrowly open. Halter yellow, but knob dark brown.

Abdomen yellow, and more or less pale gray pollinose; dorsum dark brown to black except for tergite 1 yellow. Hairs on abdomen black, but those on tergite 1 wholly pale. Male genitalia (Figs. 265–269): Tergite 9 wider than long, with anterior margin nearly straight; sternite 10 with apex somewhat acute; cercus somewhat quadrate in dorso-lateral view; gonocoxal apodemes nearly parallel; gonostylus curved; ejaculatory apodeme thin apically; dorsal plate somewhat acute apically; ventral plate with sclerotized lateral ridge distinct and acute apically.

Female. Body length 5.0 mm, wing length 5.2 mm. Similar to male except as follows: Head (excluding protruded clypeus) 1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 2.1 times width of frons just above antenna and 1.3 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.5 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.8 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, about 7.0 times or so as wide as parafacial on a mid line and 1.0 times as wide as face at upper margin of clypeus. Hairs on metapleuron black. Abdomen brownish yellow, but segments 3–4 and 8 dark brown to black.

Specimens examined. Holotype , paratype 1 , Longzhou, Guangxi, 20. v. 1982, Chi-kun YANG.

Distribution. China (Guangxi).

Remarks. This species is very similar to *basiflavus* but may be separated from the latter as shown in the key (couplet 3).

Rhagio maolanus C.YANG et D.YANG
(Figs. 270–276)

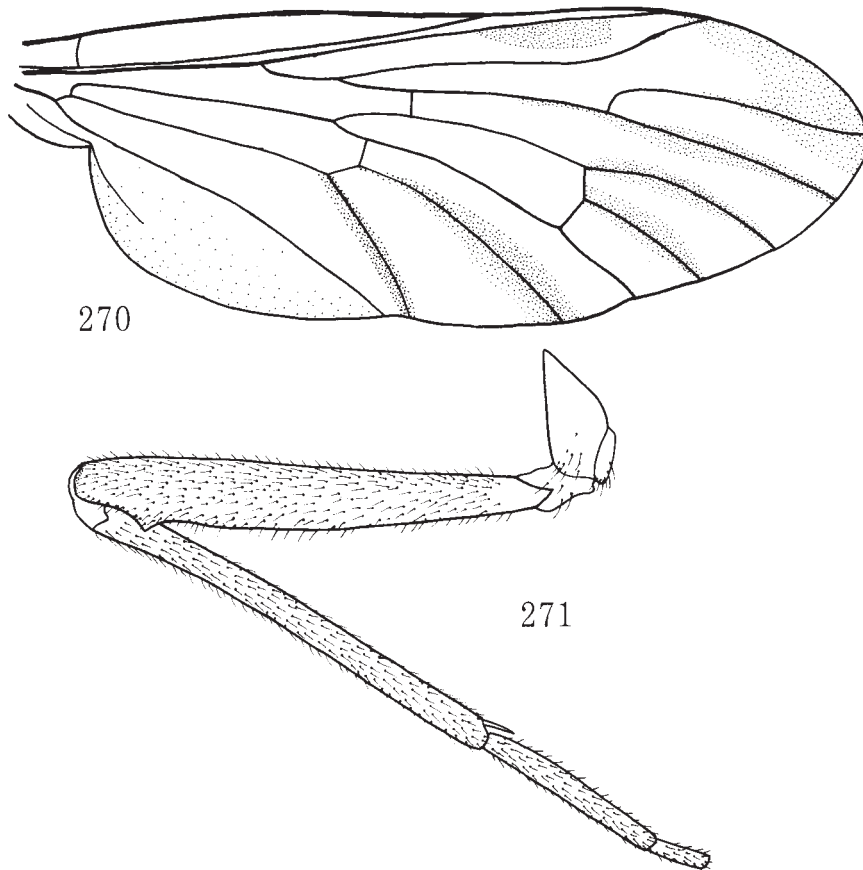
Rhagio maolanus C.YANG et D.YANG, 1993c, Entomotaxon., 15: 280. Type locality: Libo, Guizhou.

Male. Veins R4, R5, M1, M2, M3, and CuA bordered with brown to dark brown. Antenna (except arista), palpus, thorax, legs (except tarsus), and halter yellow. Hind femur with a ventral hump near apex.

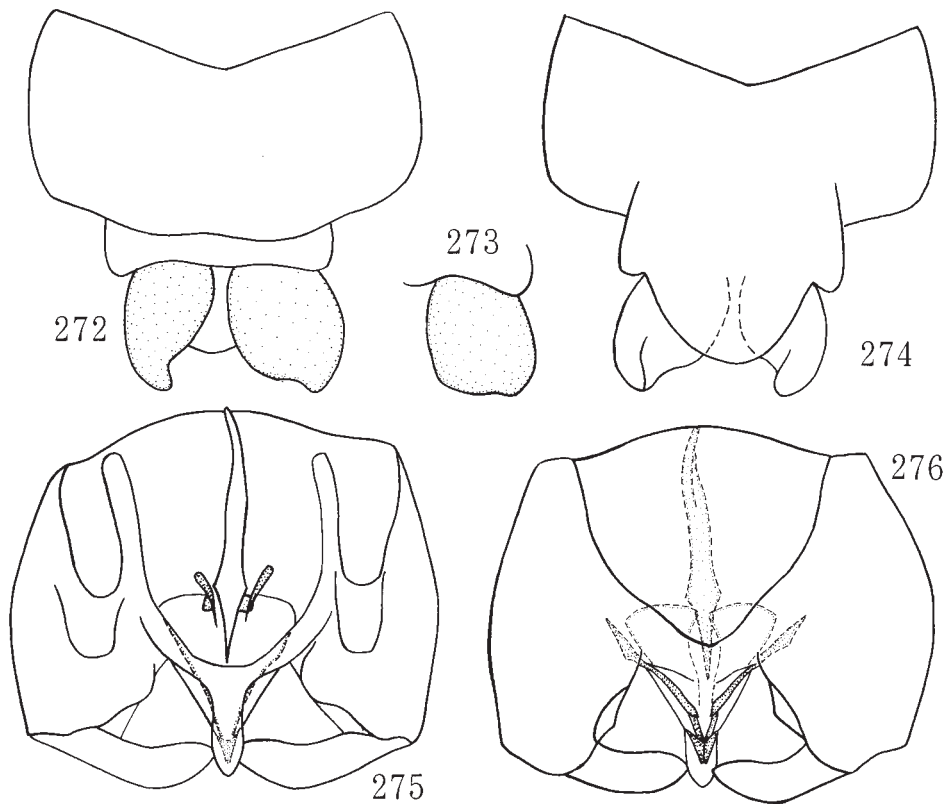
Male. Body length 9–11 mm, wing length 10–11 mm. Head black, and pale gray pollinose. Hairs on head yellow; ocellar tubercle and upper margin of occiput with black hairs; frons, parafacial and clypeus bare. Antenna yellow; arista black; scape and pedicel black haired, flagellum and arista minutely pale pubescent. Proboscis yellow, tinged with black apically, with black hairs; palpus yellow, chiefly yellow haired. Eye with contiguous

portion 1.7–1.8 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.6–1.7 times higher than long; width of one eye on a mid line in direct frontal view 0.9–1.0 times distance from antennae to median ocellus, 3.3–4.0 times width of frons just above antenna and 1.4–1.5 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2–0.3 times distance from antennae to median ocellus, 0.4–0.5 times width of face at lowest point in direct frontal view and 1.6–2.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.6–0.7 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long, 6.5–7.0 times as wide as parafacial on a mid line and 1.1–1.3 times as wide as face at upper margin of clypeus.

Thorax yellow; mesonotum dark yellow with 3 blackish longitudinal lines; scutellum dark yellow. Mesonotum and scutellum black haired; propleuron yellow haired, mesopleuron sparsely black haired at postero-upper part, anterior portion of metapleuron



Figs. 270–271. *Rhagio maolanus* C. YANG et D. YANG, male. 270, Wing; 271, hind leg.



Figs. 272–276. *Rhagio maolanus* C. YANG et D. YANG, male. 272, Tergites 9–10 and cerci, dorsal view; 273, cercus, dorso-lateral view; 274, tergite 9, sternite 10 and cerci, ventral view; 275, genital capsule, dorsal view; 276, genital capsule, ventral view.

yellow haired. Legs yellow; fore tibia white except base; tarsus brown to dark brown except hind tarsus somewhat paler. Hind femur with an apico-ventral hump. Hairs on legs yellow and black; fore tibia almost wholly white haired; tarsus and mid and hind tibiae with black hairs. Wing yellow, tinged with black along apico-anterior margin and most of longitudinal veins on apical portion. Stigma dark brown and truncate at apex. Halter yellow.

Abdomen yellow, but dorsum brownish yellow. Hairs on dorsum chiefly black but those on venter yellow. Male genitalia (Figs. 272–276): Tergite 9 much wider than long, with a V-shaped anterior incision; sternite 10 widely rounded apically; cercus large and somewhat quadrate; gonocoxal apodemes nearly parallel; gonostylus weakly curved; ejaculatory apodeme narrow posteriorly, with acute anterior portion; dorsal plate somewhat acute apically; ventral plate with narrow sclerotized lateral ridge.

Female. Unknown.

Specimens examined. Holotype , paratypes 2 , Maolan, Libo, Guizhou, 12–13. v. 1990, Chi-kun YANG and Zhiqi LIU.

Distribution. China (Guizhou).

Remarks. This species is similar to *guangxiensis* but is easily separated from the latter as shown in the key (couplet 15).

Rhagio meridionalis C.YANG et D.YANG

(Figs. 277–283)

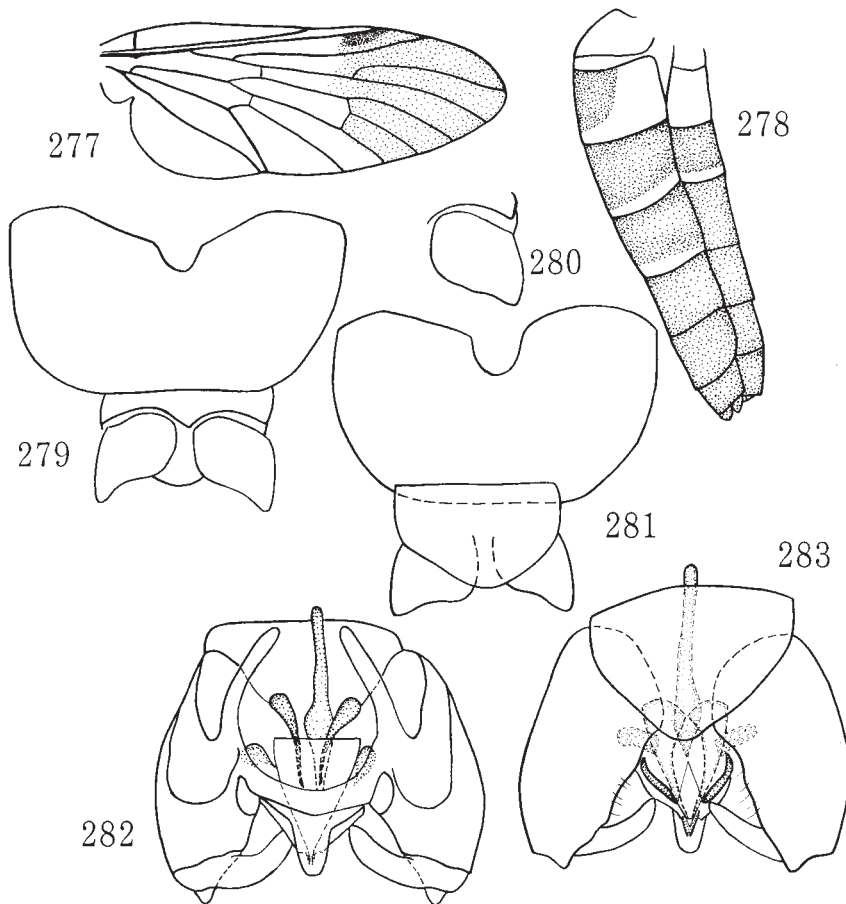
Rhagio meridionalis C.YANG et D.YANG, 1993b, Ent. J. E. China, 2: 2. Type locality: Chong'an, Fujian.

Male. Apical part of wing darker. Antenna (except arista and scape which may be darker), palpus and halter yellow. Parafacial abundantly pale haired. Arista arising near ventral side of flagellum. Thorax and coxa black.

Male. Body length 8.1–8.3 mm, wing length 8.0–9.6 mm. Head black, and pale gray pollinose. Hairs on head pale, but upper occiput and ocellar tubercle with black hairs; frons and clypeus bare, parafacial with long pale hairs. Antenna yellow, but scape somewhat darker; with chiefly black hairs; arista dark brown. Proboscis dark yellow with black hairs; palpus yellow with yellow hairs. Eye with contiguous portion 1.8–2.6 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.5–1.7 times higher than long; width of one eye on a mid line in direct frontal view 0.9–1.0 times distance from antennae to median ocellus, 3.0–3.1 times width of frons just above antenna and 1.1–1.2 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.35–0.4 times width of face at lowest point in direct frontal view and 2.9–3.0 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.6–0.7 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long, 2.2–2.4 times as wide as parafacial on a mid line and 0.85–0.9 times as wide as face at upper margin of clypeus. [N = 2].

Thorax black, and pale gray pollinose; humerus and scutellum dark yellow; mesonotum with 3 indistinct darker longitudinal spots, of which median one is divided by a pale line. Mesonotum and scutellum with black hairs; propleuron, upper part of mesopleuron and anterior portion of metapleuron with yellow hairs. Legs dark brown to black; coxa black and concolorous with pleuron; fore and mid femora, and basal portion of hind femur yellow, but apical half (except apex) of fore femur blackish; tibia yellow except apex of hind tibia; mid tarsus somewhat paler basally. Hairs on legs black, but those on coxa yellow; femur with some yellow hairs basally. Wing nearly hyaline, tinged with yellow particularly on anterior field; apical portion wholly brown or darker; stigma narrow and dark brown; veins brownish yellow to brown; anal cell narrowly open. Halter yellow.

Abdomen black, and weakly pale gray pollinose; basal 2 segments yellow, but tergite 2 with a large black basal spot; apical margin of tergites 3–4 and that of sternite 3 yellow. Hairs on abdomen black, but lateral portion of dorsum basally with yellow hairs; venter basally chiefly yellow haired. Male genitalia (Figs. 279–283): Tergite 9 distinctly wider



Figs. 277–283. *Rhagio meridionalis* C. YANG et D. YANG, male. 277, Wing; 278, abdomen, lateral view; 279, tergites 9–10 and cerci, dorsal view; 280, cercus, dorso-lateral view; 281, tergite 9, sternite 10 and cerci, ventral view; 282, genital capsule, dorsal view; 283, genital capsule, ventral view.

than long with small mid-anterior incision; tergite 10 distinct and membranous; sternite 10 somewhat narrow and rounded apically; cercus with concave posterior margin and apex somewhat acute; gonocoxal apodemes convergent; gonostylus weakly curved; ejaculatory apodeme nearly uniformly narrow anteriorly; dorsal plate rounded apically, ventral plate with V-shaped apical incision and narrow sclerotized lateral ridge.

Female. Unknown.

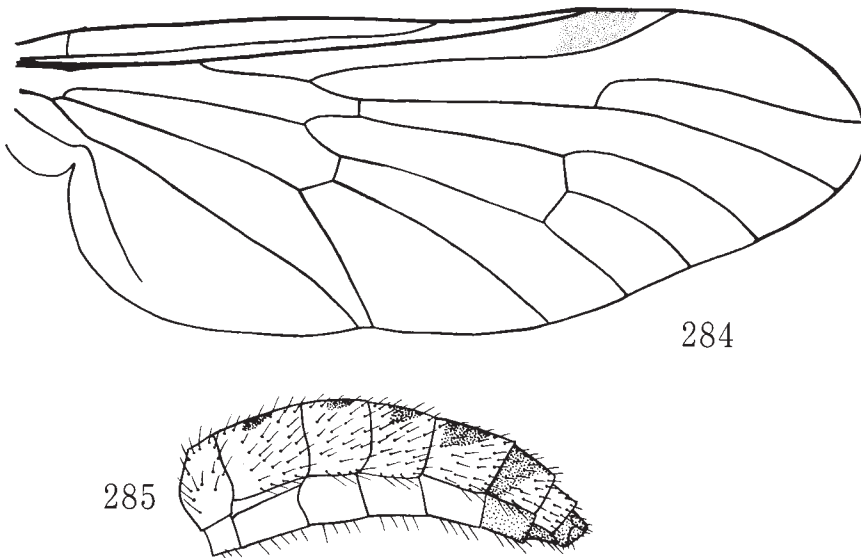
Specimens examined. Holotype , Chong'an, Fujian, 25. vi. 1979, Chi-kun YANG; paratype 1 , Huangshan Mountain, Anhui, 22. vii. 1977, Fasheng LI.

Remarks. This species is very similar to *pilosus* but may be separated from the latter as shown in the key (couplet 25).

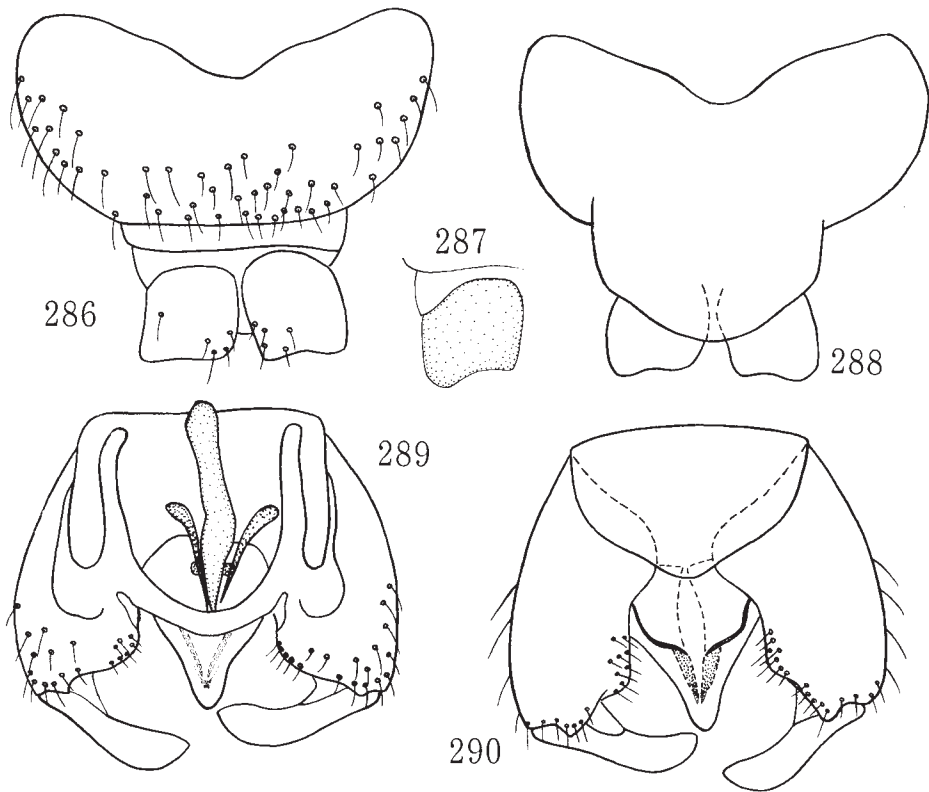
Rhagio nagatomii D. YANG et C. YANG sp. nov.
(Figs. 284–290)

Male and female. Antenna (except arista), palpus, proboscis, thorax (except three broad darker stripes on male mesonotum), legs (except apical portion of tarsus) and halter yellow. Abdominal tergites 2–4 each with a median smaller dark brown to black spot which is widely separated both from anterior and posterior margins. Arista arising near ventral side of flagellum. frons distinctly narrower than (but over 1/2 as wide as) one eye.

Male. Body length 7.8–10.1 mm, wing length 8.4–12.0 mm. Head dark brown to black, pale gray pollinose, and pale haired, but bare on clypeus, frons and upper portion of parafacial. Antenna yellow, with hairs chiefly pale; arista brown to dark brown. Proboscis yellow with either chiefly yellow or black hairs. Palpus yellow with pale hairs. Eye with contiguous portion 1.9–2.1 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.7–1.8 times higher than long; width of one eye on a mid line in direct frontal view 0.8–0.9 times distance from antennae to median ocellus, 2.9–3.6 times width of frons just above antenna and 1.1–1.2 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.25–0.3 times distance from antennae to median ocellus, 0.3–0.4 times width of face at lowest point in direct frontal view and 1.8–2.0 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5–0.6 times that from antennae to median ocellus; clypeus 0.8–0.9 times as wide as long, 2.3–2.7 times as wide as parafacial on a mid line and 1.0–1.1 times as wide as face at upper



Figs. 284–285. *Rhagio nagatomii* D. YANG et C. YANG, sp. nov., male. 284, Wing; 285, abdomen, lateral view.



Figs. 286–290. *Rhagio nagatomii* D. YANG et C. YANG, sp. nov., male. 286, Tergites 9–10 and cerci, dorsal view; 287, cercus, dorso-lateral view; 288, tergite 9, sternite 10 and cerci, ventral view; 289, genital capsule, dorsal view; 290, genital capsule, ventral view.

margin of clypeus. [N = 2].

Thorax yellow, and pale gray pollinose; mesonotum with three brown to dark brown longitudinal spots. Mesonotum and scutellum black haired, but anterolateral margin of mesonotum with pale hairs; propleuron and anterior portion of metapleuron pale haired. Legs yellow, but tarsus brownish. Hairs on legs chiefly black, but coxa with pale hairs. Wing nearly hyaline, basal portion and anterior field tinged with yellow; apical portion and posterior margin indistinctly tinged with brownish; stigma distinct, short, and dark brown; veins brownish yellow; anal cell narrowly open. Halter yellow.

Abdomen yellow, and weakly pale gray pollinose; tergites 1–5 (or 2–5) with a median dark brown to black spot, tergites 6–7 black with apical margin yellow; sternites 6–7 black with apical margin yellow. Hairs on abdomen chiefly black, but venter with pale hairs. Male genitalia (Figs. 286–290): Tergite 9 distinctly wider than long, with a nearly V-shaped anterior incision; sternite 10 widely rounded apically; cercus somewhat quadrate; gonocoxal apodemes nearly parallel; gonostylus somewhat swollen apically; ejaculatory apodeme long and thick, and flattened anteriorly; dorsal plate nearly acute apically, ventral plate with

sclerotized lateral ridge thin and curved.

Female. Body length 6.8 mm, wing length 6.8 mm. Similar to male except as follows: Frons with some pale hairs. Head (excluding protruded clypeus) 1.2 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 1.4 times width of frons just above antenna and 0.8 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.7 times distance from antennae to median ocellus, 0.5 times width of face at lowest point in direct frontal view and 1.0 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.7 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 2.9 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus. Abdominal tergite 5 with basal portion blackish, tergite 6 nearly yellow, tergite 7 brownish basally, tergite 8 black; sternite 5 brown basally.

Holotype ♂, Chengxian, Gansu, vi. 1964, Io Chou and Shaoyou LIU. Paratypes 1 ♀, 1 ♂, Tianshui, Gansu, vi. 1964, Io CHOU and Shaoyou LIU. Paratype 1 ♀, Jingyuan, Ningxia (1,940 m), 13. vii. 1980, Chi-kun YANG.

Distribution. China (Gansu and Ningxia).

Remarks. This species is similar to *formosus* (), but may be separated from the latter as shown in the key (couplet 29).

Rhagio perdicaceus FREY

Rhagio perdicaceus FREY, 1954, Notul ent., 34: 11. Type locality: Kambaiti, Burma.

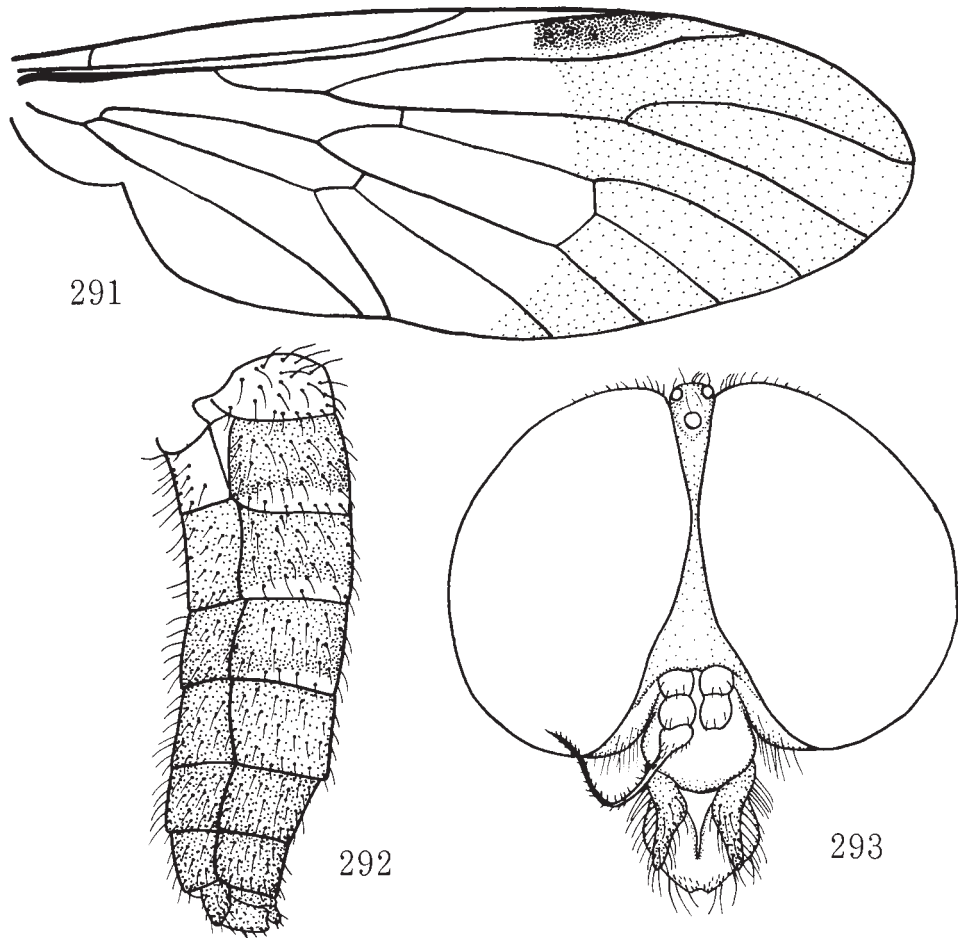
Distribution. China (Fujian), Burma.

Rhagio pilosus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 291–298)

Male. Apical part of wing darker. Eyes narrowly separated. Parafacial abundantly pale haired. Antenna arising near ventral side of flagellum. Thorax and coxa black.

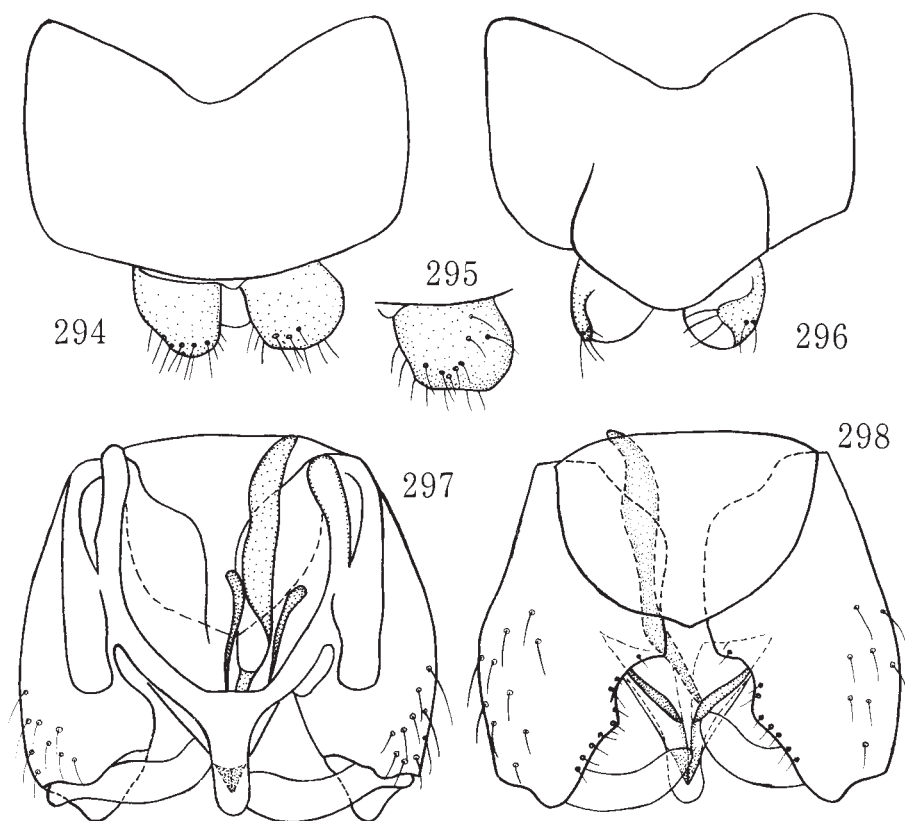
Male. Body length 5.1–5.7 mm, wing length 5.4–5.6 mm. Head black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle and upper margin of occiput with stiff black hairs; frons and clypeus bare; parafacial (except upper margin) distinctly pale haired. Antennal scape and pedicel brown to dark brown, flagellum yellow, arista dark brown; scape and pedicel black haired, flagellum and arista minutely pale pubescent. Proboscis brown to dark brown with black hairs; palpus brown to dark brown, with base somewhat paler, and with pale hairs. Eyes narrowly separated. Head (excluding protruded clypeus) 1.5–1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 2.7 times width of frons just above antenna and 1.1 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.4 times distance from antennae to median ocellus, 0.4 times width of face at



Figs. 291–293. *Rhagio pilosus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 291, Wing; 292, abdomen, lateral view; 293, head, anterior view.

lowest point in direct frontal view and 2.1–2.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.7–0.8 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.7–3.2 times as wide as parafacial on a mid line and 0.9 times as wide as face at upper margin of clypeus.

Thorax black, and pale gray pollinose; humerus and postalar callus pale brownish yellow; scutellum dark brownish yellow. Mesonotum and scutellum black haired, propleuron and metapleuron pale haired. Legs yellow; coxa dark brown to black and concolorous with pleuron, trochanters blackish; femur (except basal portion) dark brown to black; tarsus and apex of hind tibia brown to dark brown. Hairs on legs black, but those on coxa longer and chiefly pale. Wing nearly hyaline, tinged with black particularly in apical portion; stigma dark brown and reaching to wing margin; veins dark brownish yellow to brown; anal cell distinctly open. Halter yellow, knob brownish yellow.



Figs. 294–298. *Rhagio pilosus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 294, Tergites 9–10 and cerci, dorsal view; 295, cercus, dorso-lateral view; 296, tergite 9, sternite 10 and cerci, ventral view; 297, genital capsule, dorsal view; 298, genital capsule, ventral view.

Abdomen black, and pale gray pollinose; tergite 1, posterior margin of tergites 2–4 (or 2–5), sternites 1–2 yellow. Hairs on abdomen black, but base with some pale hairs particularly on sternite 2. Male genitalia (Figs. 294–298): Tergite 9 distinctly wider than long, with a nearly V-shaped anterior incision; sternite 10 widely rounded apically; cercus somewhat quadrate; gonocoxal apodemes nearly parallel; gonostylus curved; ejaculatory apodeme very long and distinctly bending; dorsal plate rounded apically; ventral plate with thin sclerotized lateral ridge.

Female. Unknown.

Holotype ♂, paratype 1 ♀, Tonghua, Jilin, 5. viii. 1983, Ding YANG.

Distribution. China (Jilin).

Remarks. This species is very similar to *meridionalis* but may be separated from the latter as shown in the key (couplet 25).

Rhagio pseudasticta D.YANG et C.YANG
(Fig. 299)

Rhagio pseudasticta D.YANG et C.YANG, 1994, Guangxi Sci., 1(3): 32, 33. Type locality: Maoer Mountain, Guangxi.

Female. Apical part of wing darker, and distinct small darkened stigma present. Antenna (except arista), palpus, humeral and postalar calli, ptero- and metapleuron, scutellum, coxa, and halter yellow. Arista arising near ventral side of flagellum. frons at narrowest part about $1/2$ as wide as one eye.

The original description of this species is quoted below.

Body length 6.0 mm, wing length 6.3 mm. Head black with pale gray pollinosity; hairs on head black and white, but face with white hairs. Antenna yellow, arista brown. Proboscis brownish yellow with black hairs; palpus yellow with black hairs.

Thorax yellow with pale gray pollinosity; mesonotum brownish black except for humeral and postalar calli yellow; postnotum brownish black with lateral margin brownish yellow; mesopleuron, sternopleuron (except upper and posterior margins), lower portion of hypopleuron brown to brownish black. Mesonotum and scutellum black haired; metapleuron yellow haired. Legs yellow; fore femur tinged with brown subapically, hind femur brownish black with basal portion and tip yellow to brownish yellow; hind tibia brown at apex; tarsi dark brown; legs chiefly black haired, but fore coxa white haired, and mid and hind coxae yellow haired. Wing yellowish, apical portion black, with distinct darker stigma. Halter yellow.

Abdomen brownish black with pale gray pollinosity; tergite 1 entirely yellow; apical portions of tergites 2–4 yellow; sternites 1–2, posterior margin of sternite 3 yellow. Hairs on abdomen chiefly black.

Holotype , Guangxi: Maoer mountain (1,400 m), 1992–08–24, YANG Chikun, YANG Chunqing.

Distribution. China (Guangxi).

Remarks. This species may be separated from *asticta* as shown in the key (couplet 22).

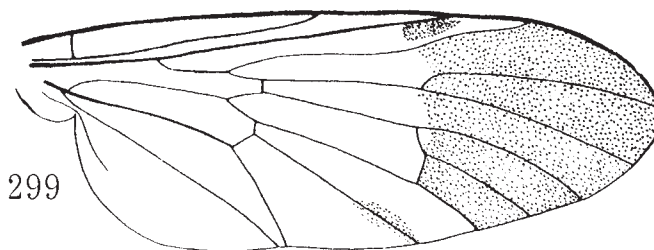


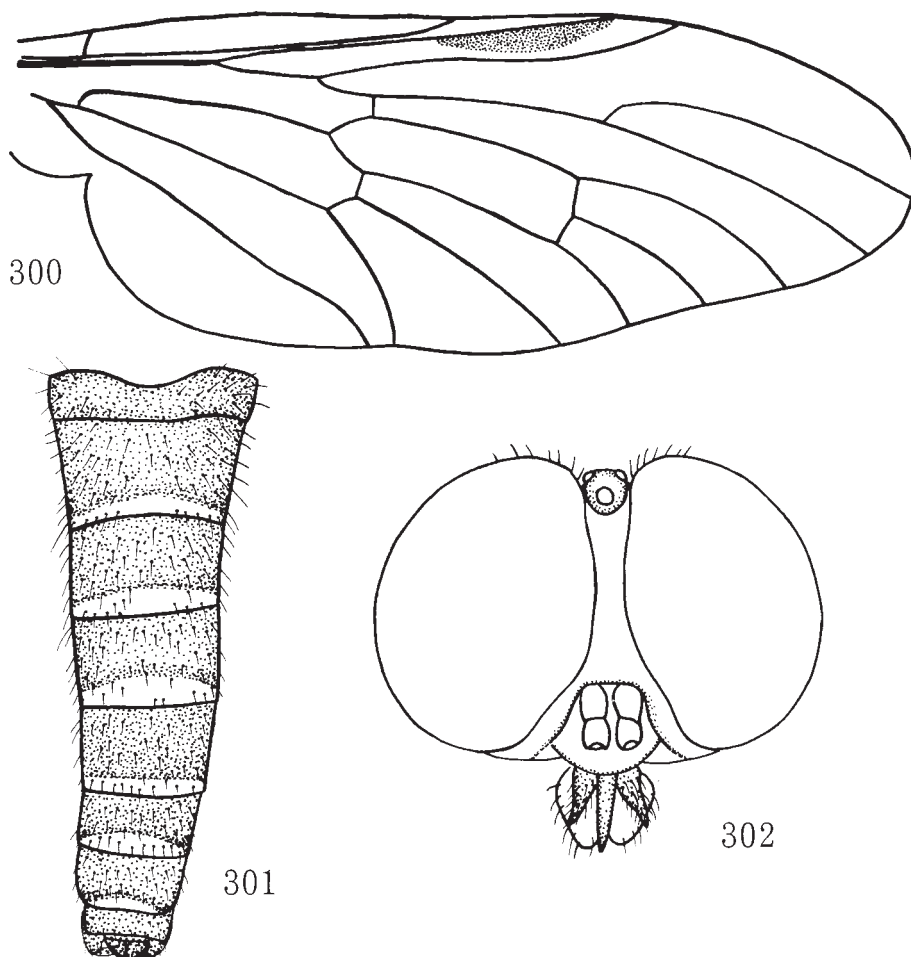
Fig. 299. *Rhagio pseudasticta* D. YANG et C. YANG, female wing. (From D.Yang and C.Yang, 1994)

Rhagio separatus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 300–307)

Male. Eyes separated (narrowest part of frons wider than median ocellus). Antenna [flagellum broken off], palpus, thorax and coxa dark brown to black.

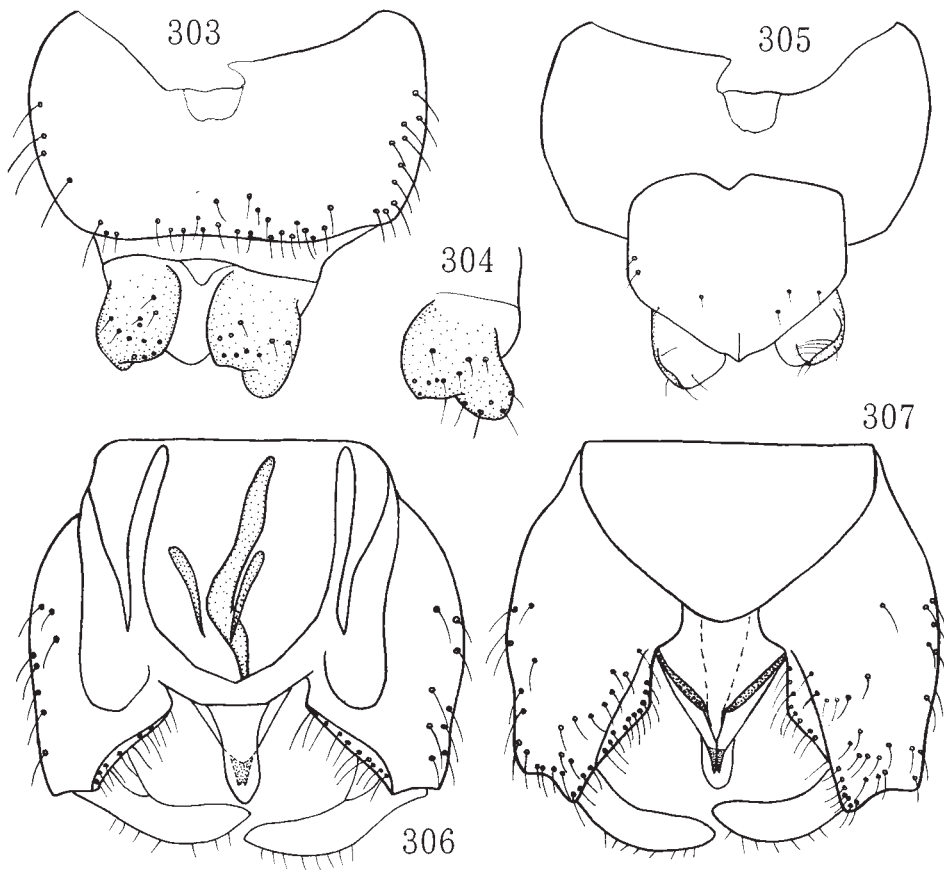
Male. Body length 7.9 mm, wing length 8.9 mm. Head black, and pale gray pollinose. Hairs on head pale, but ocellar tubercle and upper margin of occiput with black hairs; frons and clypeus bare, but parafacial with some hairs on median portion. Scape and pedicel black; scape bare; pedicel black haired; [flagellum broken off]. Proboscis and palpus brown to dark brown, with black hairs. Eyes distinctly separated and narrowest part of frons distinctly wider than median ocellus. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.2 times distance from



Figs. 300–302. *Rhagio separatus* D.YANG, C.YANG et NAGATOMI sp. nov., male. 300, Wing; 301, abdomen, dorsal view; 302, head, anterior view.

antennae to median ocellus, 2.2 times width of frons just above antenna and 1.0 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 2.1 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.8 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 2.6 times as wide as parafacial on a mid line and 0.85 times as wide as face at upper margin of clypeus.

Thorax dark brown, and pale gray pollinose. Humerus yellow. Mesonotum with 3 darker wide longitudinal spots, of which median one is divided by a pale line. Mesonotum with black hairs; propleuron and metapleuron with black and pale hairs. Legs dark brownish yellow; coxa and trochanter black, coxa concolorous with pleuron; tip of femur somewhat pale; tarsus and hind femur (except basal portion) dark brown. Hairs on legs black but those on coxa longer and chiefly pale. Wing indistinctly tinged with gray; stigma elongate and brown, not reaching to wing margin; veins brown to dark brown; anal cell widely open.



Figs. 303–307. *Rhagio separatus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 303, Tergites 9–10 and cerci, dorsal view; 304, cercus, dorso-lateral view; 305, tergite 9, sternite 10 and cerci, ventral view; 306, genital capsule, dorsal view; 307, genital capsule, ventral view.

Halter pale brownish yellow.

Abdomen black, and pale gray pollinose; tergites 2–7 with yellow apical margins. Hairs on abdomen black but those on sternite 2 chiefly pale. Male genitalia (Figs. 303–307): Tergite 9 distinctly wider than long, with an anterior incision; sternite 10 with apical portion more or less acute; cercus with a large apico-lateral apex; gonocoxal apodemes nearly parallel; gonostylus elongate and weakly curved; ejaculatory apodeme long and distinctly bending; dorsal plate rather acute apically, ventral plate with thin sclerotized lateral ridge.

Female. Unknown.

Holotype ♂, Yadong, 4. vii. 1992, Tianyu GUO.

Distribution. China (Xizang).

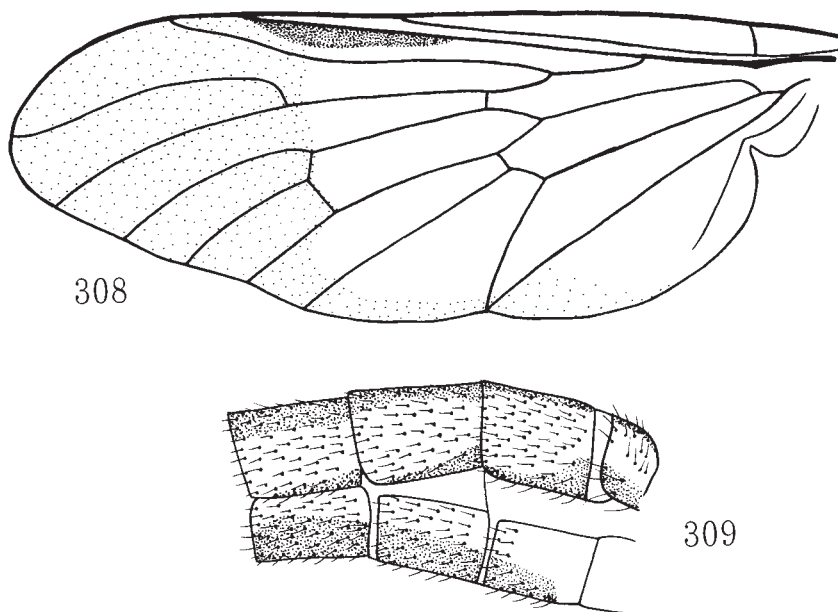
Remarks. This species is similar to *zhejiangensis*, *stigmus* and *shaanxiensis* but is separated from them as shown in the key (couplets 36–38).

Rhagio shaanxiensis D.YANG et C.YANG sp. nov.

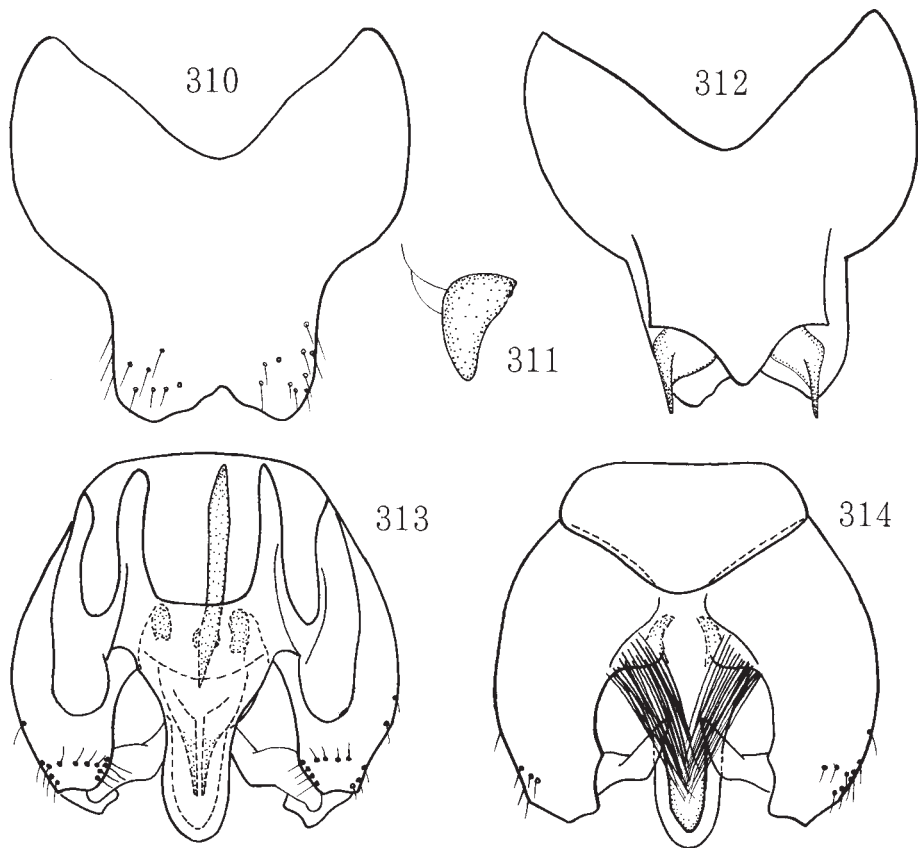
(Figs. 308–314)

Male. Antenna, palpus, thorax and coxa black. Abdominal tergites 1–4 with a wide median longitudinal black stripe and with black lateral margin.

Male. Body length 11.5 mm, wing length 8.8 mm. Head black, pale gray pollinose, pale



Figs. 308–309. *Rhagio shaanxiensis* D. YANG et C. YANG sp. nov., male. 308, Wing; 309, basal portion of abdomen, lateral view.



Figs. 310–314. *Rhagio shaanxiensis* D. YANG et C. YANG sp. nov., male. 310, Tergite 9, dorsal view; 311, cercus, dorso-lateral view; 312, tergite 9, sternite 10 and cerci, ventral view; 313, genital capsule, dorsal view; 314, genital capsule, ventral view.

haired, but upper occiput and ocellar tubercle black haired; frons and clypeus bare; gena with some black hairs; parafacial with pale hairs. Antenna black, with chiefly black hairs; arista dark brown. Proboscis and palpus dark brown to black with black hairs (the former may be yellow ventrally). [Head crushed and not measured].

Thorax black, and pale gray pollinose; mesonotum with three darker wide longitudinal spots, of which the median one is divided by a pale line; mid-posterior area of scutellum may be dark yellow. Mesonotum and scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow, coxa black and concolorous with pleuron; trochanter brownish yellow; hind femur black except basal portion and apex yellow; tibia brownish yellow, with apex darker; tarsus dark brown. Hairs on legs black, but coxa and ventral surface of fore and mid femora with pale hairs. Wing nearly hyaline or tinged with brown, apical portion and posterior margin somewhat darker; stigma distinct, elongate, dark brown; veins dark brown; anal cell closed at wing margin. Halter yellow.

Abdomen black, but tergites 1–4 yellow with lateral margin and median portion black; sternites 1–4 yellow with a median black spot on sternites 2–4. Hairs on abdomen chiefly black. Male genitalia (Figs. 310–314): Tergite 9 as long as wide, distinctly narrow apically, concave mid-apically, and with a nearly V-shaped anterior incision; sternite 10 acute apically; cercus bending and tapering; gonocoxal apodemes nearly parallel; gonostylus distinctly bending; dorsal plate rounded apically.

Female. Unknown.

Holotype ♂, Yangxiang, Shaanxi, 3. v. 1981, Longcheng XIANG.

Distribution. China (Shaanxi).

Remarks. This species is similar to *stigmosus* but may be separated from the latter as shown in the key (couplets 26 and 38).

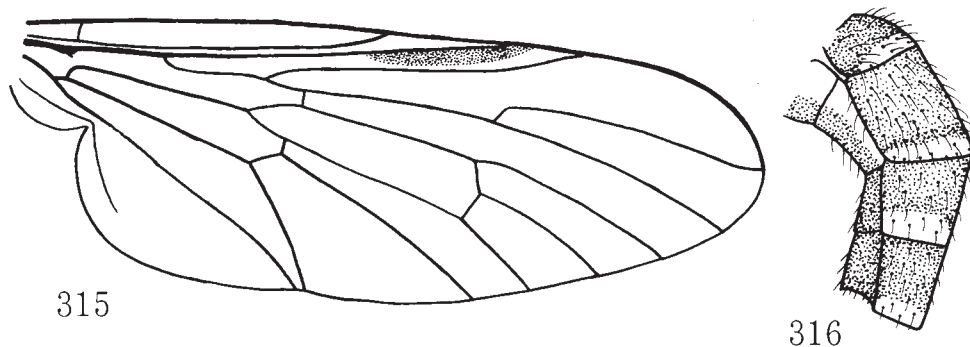
Rhagio shennonganus C.YANG et D.YANG
(Figs. 315–316)

Rhagio shennonganus C.YANG et D.YANG, 1991, J. Hubei Univ. (Nat. Hist.), 13: 276.

Type locality: Shennongjia, Hubei.

Female. Antenna, palpus, thorax, and abdomen (except posterior borders of tergites 1–4) black. Fore coxa yellow. Frons at narrowest point over 1/2 as wide as one eye.

Female. Body length 8.4 mm, wing length 8.0 mm. Head black, pale gray pollinose and pale haired, but upper occiput and ocellar tubercle black haired; frons with several pale hairs, clypeus bare, and parafacial with pale hairs. Antenna dark brown to black with chiefly black hairs. Proboscis and palpus blackish with black hairs. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 0.9 times distance from antennae to median ocellus, 1.1 times width of frons just above antenna and 0.7 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.8 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.1 times width of frons at median ocellus; dis-



Figs. 315–316. *Rhagio shennonganus* C. YANG et D. YANG, female. 315, Wing; 316, basal portion of abdomen, lateral view.

tance from ridge below proboscis to antennae about 0.9 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 2.4 times as wide as parafacial on a mid line and 0.7 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; humerus yellow; mesonotum with three black wide black longitudinal spots. Mesonotum and scutellum with pale hairs, but mesonotum with some black hairs laterally; propleuron and anterior portion of metapleuron with pale hairs. Legs yellow; mid and hind coxa basally tinged with black, apical half of fore and hind femora (except apex of fore femur) blackish, apex of hind tibia blackish, and tarsus brown to dark brown. Hairs on legs black; coxa wholly pale haired, femur with some pale hairs basally. Wing hyaline; stigma very narrow, elongate, and yellow; veins brown; anal cell narrowly open. Halter yellow.

Abdomen black, and pale gray pollinose; apical margin of tergites 1–4 and lateral margin of sternites 1–2 yellow. Hairs on abdomen pale.

Male. Unknown.

Specimen examined. Holotype , Shennongjia (2,700 m), Hubei, 23. vii. 1980, Xiaoyuan MAO.

Distribution. China (Hubei).

Remarks. This species is similar to *basimaculatus* but may be separated from the latter as shown in the key (couplet 33).

Rhagio shirakii Szilády

Rhagio shirakii Szilády, 1934b, Konowia, 13: 9. Type locality: Chosokol, Taiwan.

Distribution. China (Taiwan).

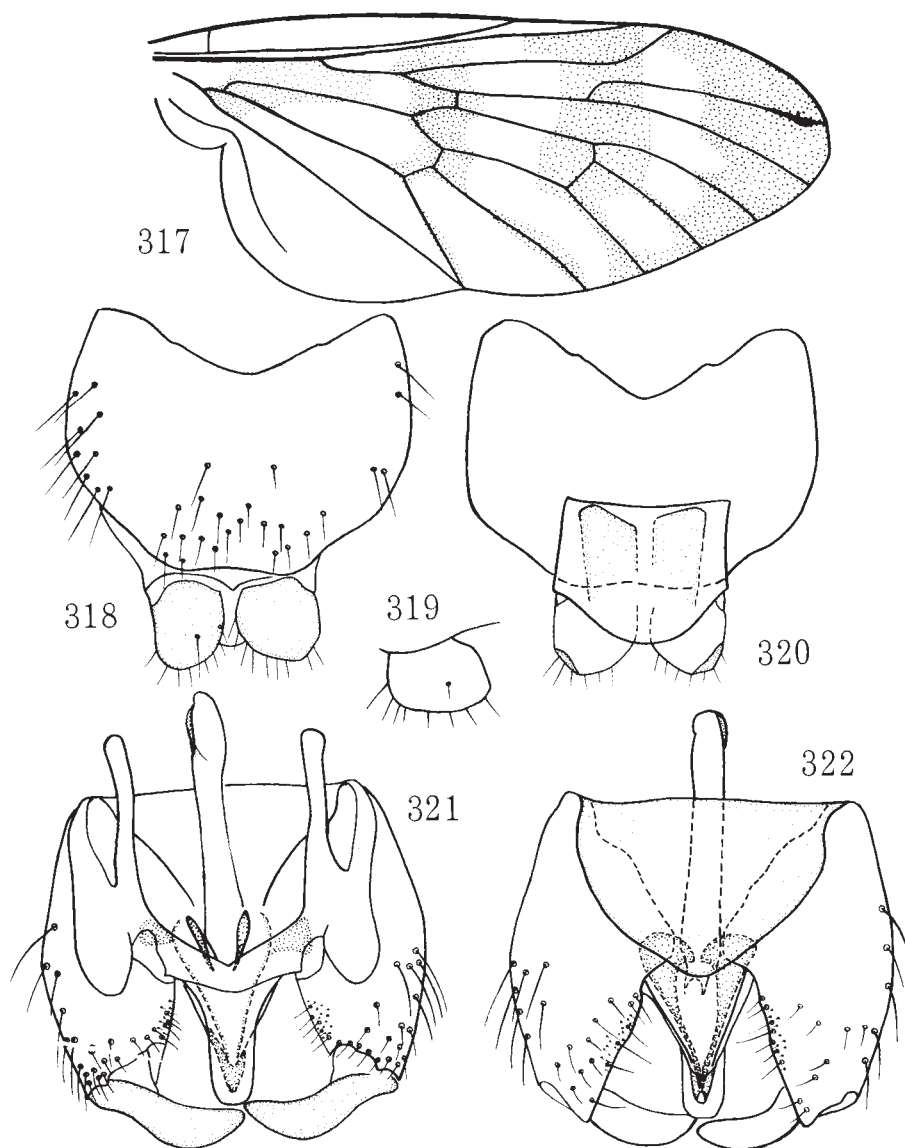
Rhagio sinensis C.YANG et D.YANG
(Figs. 317–322)

Rhagio sinensis C.YANG et D.YANG, 1993b, Ent. J. E. China, 2: 1. Type locality: Jिंगgangshan Mountain, Jiangxi.

Male and female. Similar to *choui* and *guizhouensis*. Antennal flagellum dark brown to black. Outer median band on wing not interrupted medially.

Male. Body length 5.1–6.5 mm, wing length 4.7–6.3 mm. Head black, and pale gray pollinose. Hairs on head black and pale, but those on lower occiput nearly wholly pale; frons and clypeus bare, parafacial with longer pale or black hairs. Antenna black (sometimes flagellum yellow) with black hairs. Proboscis and palpus dark brown to black with black hairs. Eye with contiguous portion 1.6–1.7 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.4–1.7 times higher than long; width of one eye on a mid line in direct frontal view 1.1–1.2 times distance from antennae to median ocellus, 2.2–2.6

times width of frons just above antenna and 0.8–0.9 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.4–0.5 times distance from antennae to median ocellus, 0.3–0.4 times width of face at lowest point in direct frontal view and 3.0–3.1 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.8 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.2–1.3 times as wide as parafacial on a mid line and 0.5 times as wide as



Figs. 317–322. *Rhagio sinensis* C. YANG et D. YANG, male. 317, Wing; 318, tergites 9–10 and cerci, dorsal view; 319, cercus, dorso-lateral view; 320, tergite 9, sternite 10 and cerci, ventral view; 321, genital capsule, dorsal view; 322, genital capsule, ventral view.

face at upper margin of clypeus. [N = 5].

Thorax black, and pale gray pollinose; mesonotum with 3 darker wide longitudinal spots. Mesonotum and scutellum with black hairs; pleuron with pale hairs except for mesopleuron and sternopleuron with some black hairs. Legs dark brown to black; coxa concolorous with pleuron; apex of fore and mid femora, and tibia (except apex) brownish yellow; tarsus brown to dark brown but tarsomere 1 (except apex) brownish yellow. Hairs on legs chiefly black, but fore and hind coxae with chiefly pale hairs. Wing hyaline, with distinct darker spots; stigma elongate and dark brown; veins brown to dark brown; anal cell closed, but sometimes narrowly open. Halter yellow.

Abdomen dark brown to black, and pale gray pollinose. Hairs on abdomen pale. Male genitalia (Figs. 318–322): Tergite 9 wider than long, with a shallow V-shaped anterior incision; tergite 10 reduced and membranous; sternite 10 with apical portion widely rounded; cercus somewhat rounded, with wide apex in dorsolateral view; gonocoxal apodemes nearly parallel; gonostylus somewhat curved; ejaculatory apodeme flattened anteriorly; dorsal plate obtuse apically; ventral plate elongate and nearly triangular with sclerotized lateral ridge thin and straight.

Female. Body length 4.6–6.0 mm, wing length 5.1–5.8 mm. Similar to male except as follows: Frons with short black hairs; head 1.5–1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.0–1.1 times distance from antennae to median ocellus, 0.9–1.0 times width of frons just above antenna and 0.4–0.5 times width of face at lowest point in direct frontal view; width of frons just above antennae 1.1–1.2 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct frontal view and 1.1–1.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 1.0–1.1 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 1.2–1.5 times as wide as parafacial on a mid line and 0.45–0.5 times as wide as face at upper margin of clypeus. [N = 3].

Specimens examined. Paratypes 5 , 3 , Meilin, Jiangxi, 18. iv. 1978, Chi-kun Y ANG.

Distribution. China (Jiangxi, Hubei).

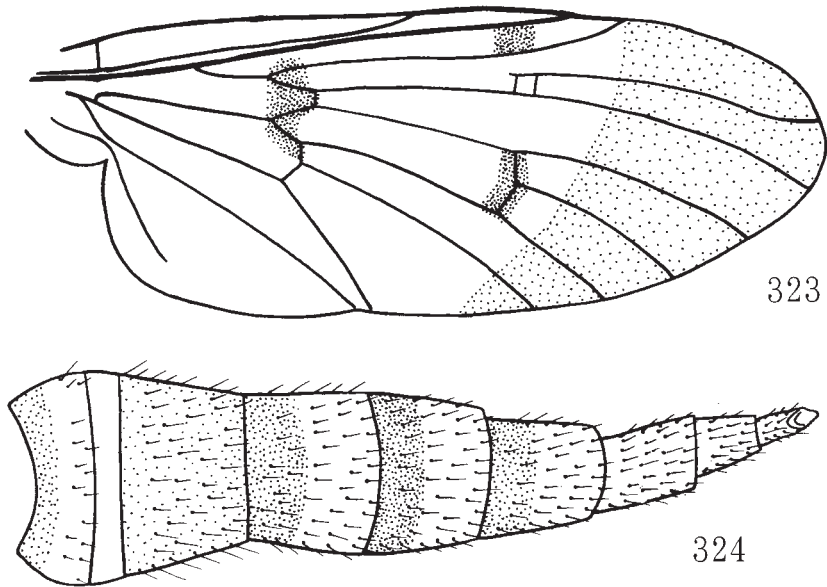
Remarks. This species is closely related to *choui*, *guizhouensis*, and *perdicaceus* but may be separated from them as shown in the key (couplets 6–7).

Rhagio singularis D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 323–324)

Female. Wing with two darker spots and somewhat darker apical portion. Antenna, palpus, thorax and legs (except apical portion of tarsus) yellow. Frons at narrowest part less than 1/2 as wide as one eye.

Female. Body length 6.8 mm, wing length 6.4 mm. Head dark brown to black, and pale gray pollinose. Hairs on head pale; ocellar tubercle with some black hairs; frons, parafacial and clypeus bare. Antenna yellow, flagellum dark reddish yellow, arista dark brown; scape



Figs. 323–324. *Rhagio singularis* D. YANG, C. YANG et NAGATOMI sp. nov., female. 323, Wing; 324, abdomen, dorsal view.

bare, pedicel pale haired, flagellum minutely pale pubescent. Proboscis dark yellow with pale hairs; palpus yellow with pale hairs. Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 0.8 times distance from antennae to median ocellus, 1.5 times width of frons just above antenna and 1.1 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.5 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 1.6 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.8 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 5.3 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus.

Thorax pale brownish yellow to yellow, and pale gray pollinose; mesonotum and scutellum without distinct darker markings. Mesonotum and scutellum with black hairs; propleuron and anterior portion of metapleuron with dark yellow or pale hairs. Legs yellow but apex of tarsus darkened [fore leg (except coxa and trochanter) and hind tarsus broken off]. Hairs on legs pale, but tibia and tarsus with black hairs. Wing slightly tinged with yellow, with a darker spot crossing base of discal cell and one short darker spot crossing apex of discal cell; darkened stigma rather short and truncate at both ends; apical portion of wing slightly darker; veins brownish yellow to brown; anal cell narrowly open; basal section of M2 as long as crossvein m. Halter yellow [knob may possibly be darker].

Abdomen brownish yellow, and pale gray pollinose; basal portion of tergites 1 and 3–5 dark brown to black; tergite 2 more or less brown. Hairs on abdomen pale.

Male. Unknown.

Holotype , Tianlin, Guangxi, 31. v. 1982, Fasheng Li.

Distribution. China (Guangxi).

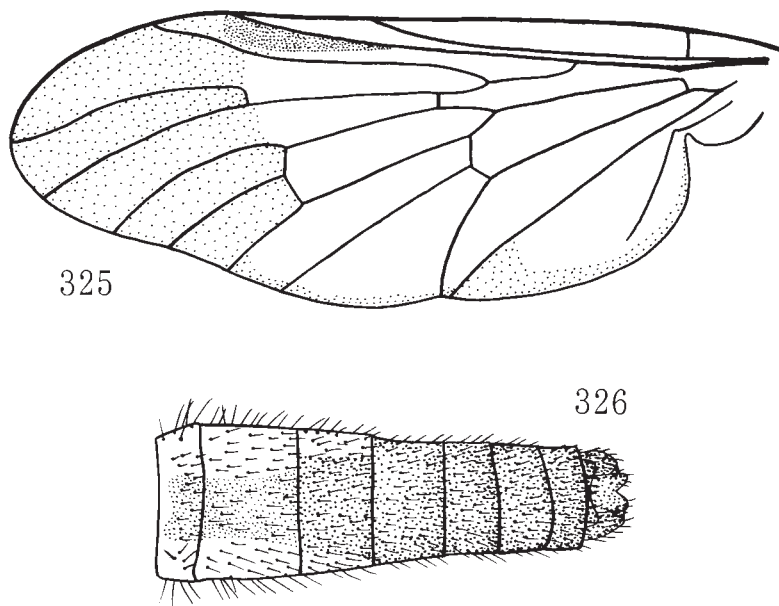
Remarks. This species variously falls in the couplets 11, 20 and 28 of the key according to the interpretation of the wing maculation and is similar to *centrimaculatus*, *nagatomii*, *formosus*, etc. but may be easily separated from them as shown in the key.

Rhagio stigmatosus D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 325–331)

Male. Thorax and coxa black, but scutellum with yellow mid-posterior part. Abdominal tergites 1–3 and sternites 2–4 each with a black wide mid longitudinal stripe. Parafacial abundantly pale haired.

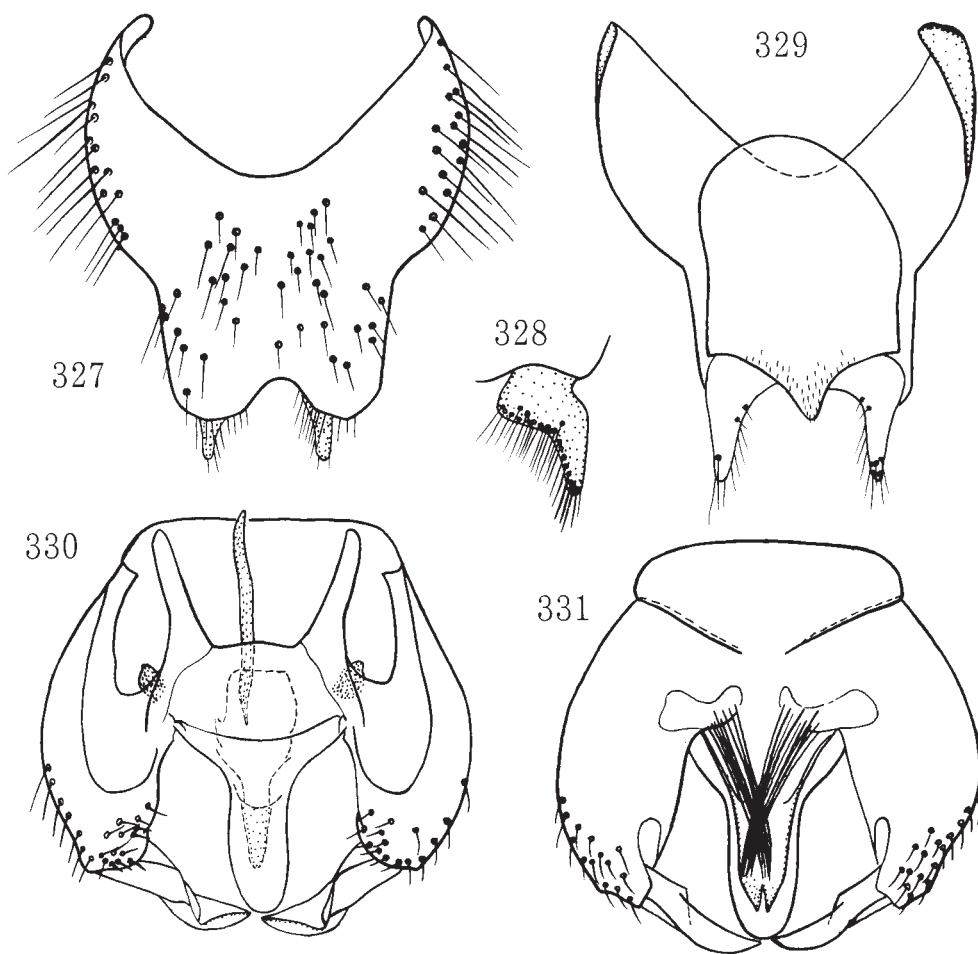
Male. Body length 7.3 mm, wing length 8.3 mm. Head black, and pale gray pollinose. Hairs on head pale, but upper margin of occiput and ocellar tubercle black haired, frons and clypeus bare; gena with some black hairs; parafacials with pale hairs. Antenna dark brown to black, with black and pale hairs. Proboscis brown to dark brown, with black hairs; palpus black with chiefly black hairs. Eye nearly contiguous (narrowest point of frons less than



Figs. 325–326. *Rhagio stigmatosus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 325, Wing; 326, abdomen, dorsal view.

width of median ocellus). Head (excluding protruded clypeus) 1.5 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 3.3 times width of frons just above antenna and 1.3 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.3 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 2.2 times width of frons at median ocellus; distance from ridge below proboscis to antennae 0.7 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 4.8 times as wide as parafacial on a mid line and 1.1 times as wide as face at upper margin of clypeus.

Thorax black, and pale gray pollinose; mid-posterior area of scutellum yellow. Mesonotum and scutellum black haired; propleuron and anterior portion of metapleuron pale haired. Legs [mid femur, mid and hind tibiae, and tarsus broken off] yellow; coxa



Figs. 327–331. *Rhagio stigmatosus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 327, Tergite 9 and cerci, dorsal view; 328, cercus, dorso-lateral view; 329, tergite 9, sternite 10 and cerci, ventral view; 330, genital capsule, dorsal view; 331, genital capsule, ventral view.

black and concolorous with pleuron; trochanter brownish yellow; hind femur black except basal portion and tip; fore tibia brownish yellow, with apex darker; fore tarsus dark brown. Hairs on legs chiefly black, but those on coxa pale and those on fore femur chiefly so. Wing nearly hyaline, apical portion distinctly brown; posterior margin tinged with brownish; stigma elongate, dark brown, wide apically; veins dark brown; anal cell narrowly open. Halter yellow except knob tinged with black.

Abdomen dark brown to black, but tergites 1–3 brownish yellow to yellow with lateral margin and median portion dark brown to black; sternites 1–4 yellow with a wide median black area on sternites 2–4. Hairs on abdomen black, but venter and lateral margin of tergites 1–4 with pale hairs. Male genitalia (Figs. 327–331): Tergite 9 as long as wide, distinctly narrower apically, concave mid-apically, and with a nearly V-shaped anterior incision; sternite 10 acute apically; cercus bending and tapering; gonocoxal apodemes rather divergent; gonostylus distinctly bending; dorsal plate rounded apically.

Female. Unknown.

Holotype , Ankiang, Shaanxi, 22. iv. 1981, Longcheng XIANG and Ning MA.

Distribution. China (Shaanxi).

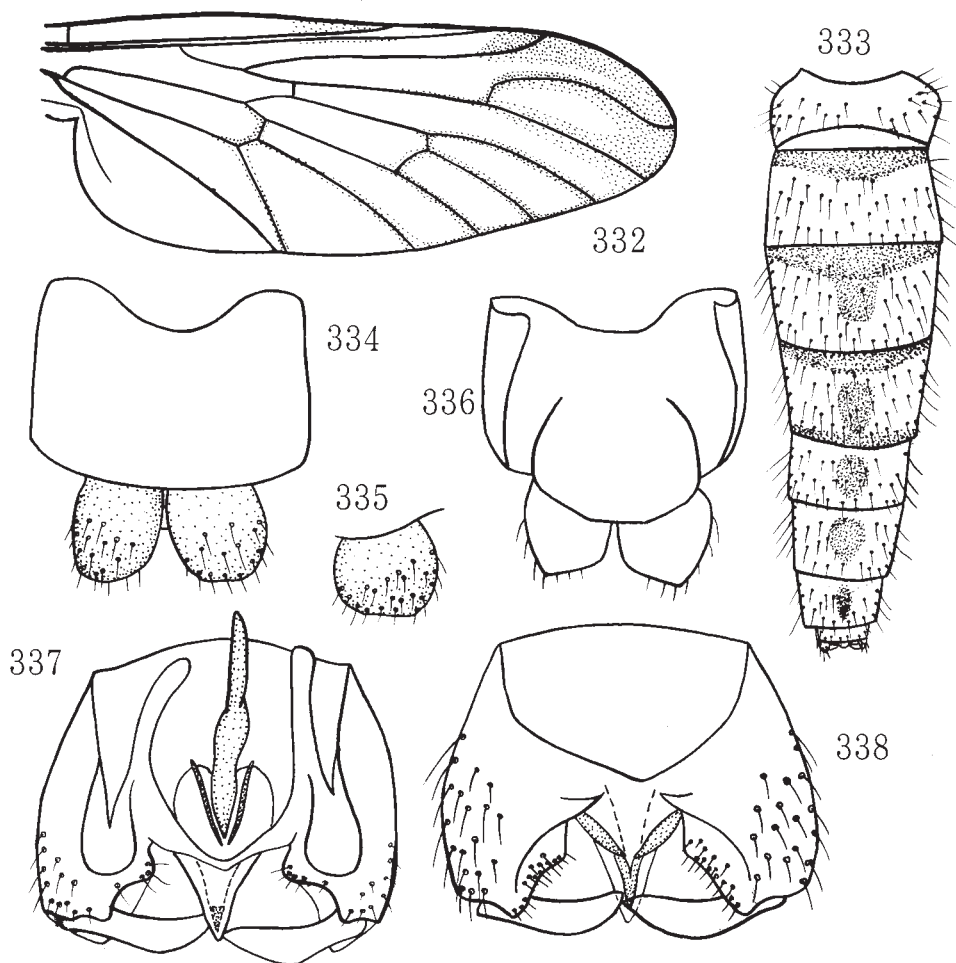
Remarks. This species is similar to *shaanxiensis* but may be separated from the latter as shown in the key (couplet 26).

Rhagio tuberculatus D.YANG, C.YANG et NAGATOMI sp. nov.
(Figs. 332–338)

Male. Veins R4, R5, M1 to M4, CuA, apical margin of discal and basal cells bordered with brown. Pterostigma absent. Pleuron, side of mesonotum, scutellum (except mid base), coxa, femur, tibia and halter yellow. hind femur with a ventral hump near apex. [Antennal flagellum broken off].

Male. Body length 6.8–9.6 mm, wing length 8.1–11.6 mm. Head dark brown to black, and pale gray pollinose; clypeus brown. Hairs on head pale, but occiput and ocellar tubercle black haired; frons, parafacial and clypeus bare. Antenna [flagellum broken off] yellow, scape bare and pedicel blackish haired. Proboscis dark brown with pale hairs; palpus yellow to brownish yellow with pale hairs. Eye with contiguous portion 3.3 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 0.8 times distance from antennae to median ocellus, 3.7 times width of frons just above antenna and 1.7 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.2 times distance from antennae to median ocellus, 2.2 times width of face at lowest point in direct frontal view and 3.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.5 times that from antennae to median ocellus; clypeus 0.9 times as wide as long, 7.2 times as wide as parafacial on a mid line and 1.2 times as wide as face at upper margin of clypeus. [N = 1, based on paratype].

Thorax yellow, and pale gray pollinose. Mesonotum dark brown to black but yellow



Figs. 332–338. *Rhagio tuberculatus* D. YANG, C. YANG et NAGATOMI sp. nov., male. 332, Wing; 333, abdomen, dorsal view; 334, tergite 9 and cerci, dorsal view; 335, cercus, dorso-lateral view; 336, tergite 10 and cerci, ventral view; 337, genital capsule, dorsal view; 338, genital capsule, ventral view.

laterally; mid-basal area of scutellum dark brown to black. Mesonotum and scutellum pale haired; propleuron and anterior portion of metapleuron pale haired. Legs yellow; tarsus brownish yellow to dark brown; fore tibia whitish, hind tibia brownish to brown. Hind femur with a ventral hump near apex. Hairs on legs black; coxa with yellow hairs; fore tibia with pale hairs. Wing nearly hyaline with brown parts: apical section of costal, subcostal, marginal and 1st submarginal cells, bordering of veins R4, R5, M1 to M4, CuA, apical margin of discal and 2nd basal cell. Stigma absent; veins brownish yellow to brown; basal section of M2 0.3 times as long as crossvein m; anal cell narrowly open. Halter yellow.

Abdomen yellow; tergite 1 with narrow dark brown basal margin; tergites 2–7 each with

black basal border produced at middle and extending to posterior margin on tergites 3–7; sternite 7 somewhat darker. Hairs on abdomen black. Male genitalia (Figs. 334–338): Tergite 9 wider than long with mid-anterior margin concave; sternite 10 broad apically; cercus broad with wide posterior margin; gonocoxal apodemes nearly parallel; gonostylus somewhat slender and slightly curved; ejaculatory apodeme somewhat narrow and curved basally; dorsal plate acute apically; ventral plate short and broad with sclerotized lateral ridge rather wide.

Female. Unknown.

Holotype ♂, paratype 1 ♀, Cebaling, Guangdong, v. 1992, Junhua HE.

Distribution. China (Guangdong).

Remarks. This species is most closely related to *maolanus* but may be easily separated from the latter as shown in the key (couplet 18). The paratype differs from the holotype as follows: body smaller (body length 6.8 mm, wing length 8.1 mm); abdominal tergites 4–7 each with a median brown spot.

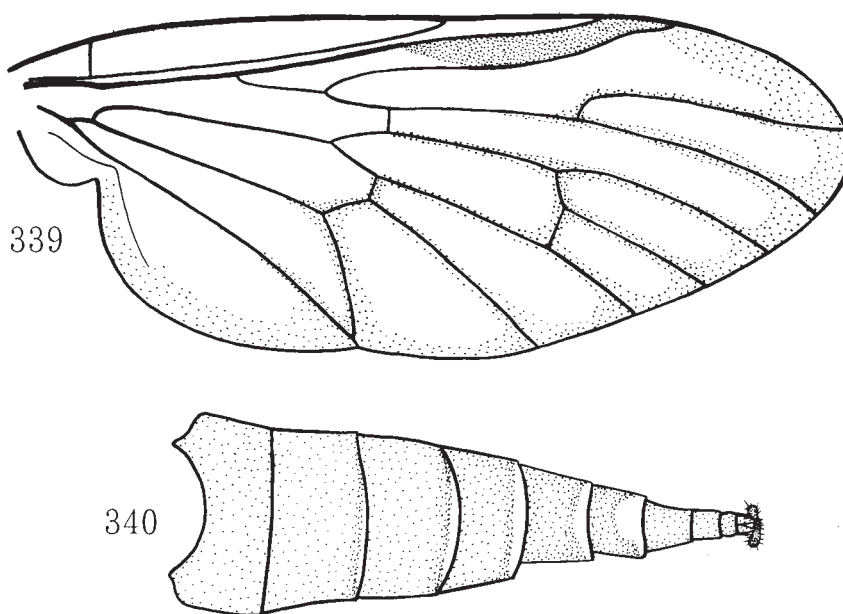
Rhagio zhejiangensis C.YANG et D.YANG
(Figs. 339–345)

Rhagio zhejiangensis C.YANG et D.YANG, 1989, J. Zhejiang Forest. Coll., 6: 290. Type locality: Tianmushan Mountain, Zhejiang.

Male and female. Antenna, palpus, thorax, coxa, and abdomen black. Femur and halter yellow. Parafacial abundantly pale haired. Frons distinctly narrower than (but over 1/2 as wide as) one eye.

Male. Body length 7.3–8.3 mm; wing length 6.6–8.6 mm. Head dark brown to black, and pale gray pollinose; pale haired, but black haired on upper occiput and ocellar tubercle and bare on frons and clypeus; parafacial abundantly pale haired. Antenna dark brown to black with chiefly pale hairs. Proboscis brown to dark brown, and chiefly pale haired; palpus dark brown to black, and chiefly pale haired. Eye with contiguous portion 1.5 times as long as ocellar triangle. Head (excluding protruded clypeus) 1.4–1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 2.5–2.7 times width of frons just above antenna and 1.0–1.1 times width of face at lowest point from a direct frontal view; width of frons just above antennae 0.4 times distance from antennae to median ocellus, 0.4 times width of face at lowest point from a direct frontal view and 2.0–2.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.7–0.8 times that from antennae to median ocellus; clypeus 1.1–1.2 times as wide as long, 2.9–3.2 times as wide as parafacial on a mid line and 0.9 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose; mesonotum with three wide darker longitudinal spots, of which median one is divided by a pale line; apical portion of scutellum dark yellow to yellow. Mesonotum and scutellum black haired; propleuron and

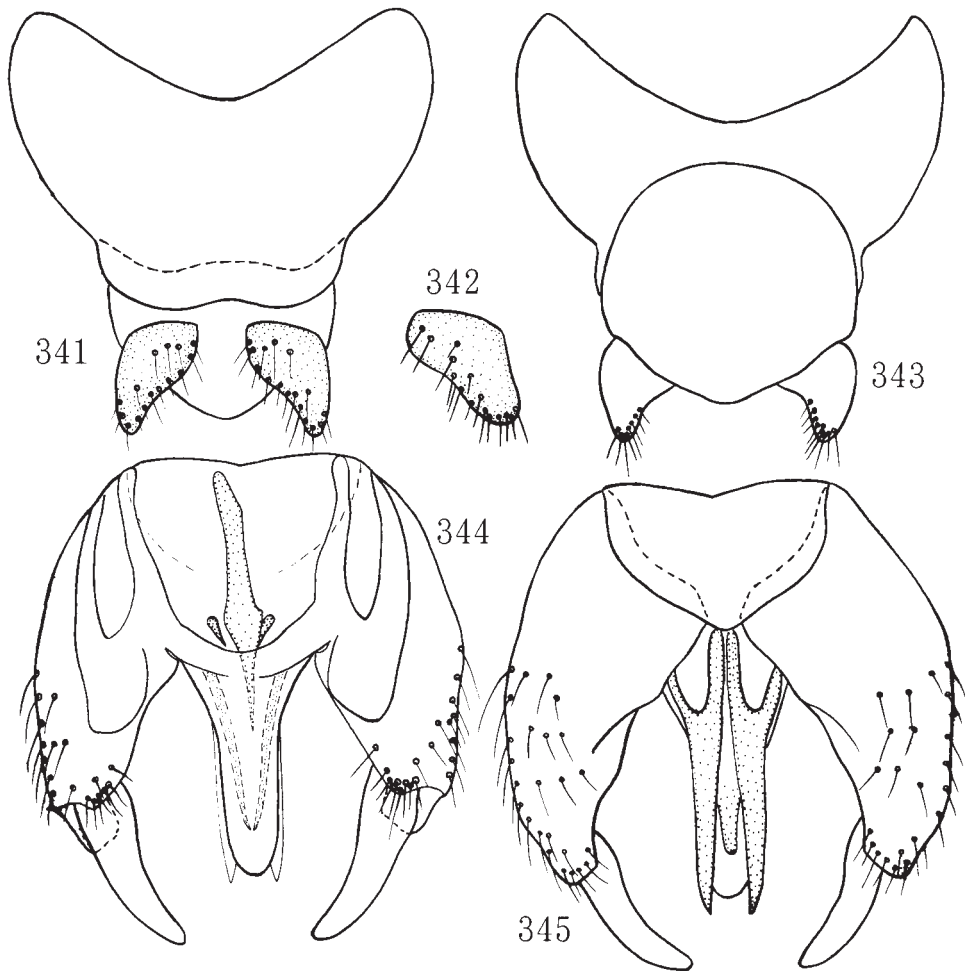


Figs. 339–340. *Rhagio zhejiangensis* C. YANG et D. YANG, female. 339, Wing; 340, abdomen, dorsal view.

anterior portion of metapleuron pale haired. Legs yellow; coxa black and concolorous with pleuron, trochanter blackish; apical portion of fore tibia brown; tarsus brown to dark brown. Hairs on legs black, but those on coxa pale and on femur largely so. Wing hyaline, but basal portion and anterior field yellow; apical and posterior margins and veins of apical portion tinged with brown; stigma very elongate and dark yellow; anal cell closed. Halter yellow.

Abdomen black, and weakly pale gray pollinose. Hairs on abdomen black, but those on side of tergites 1–4 and on sternites 2–4 pale. Male genitalia (Figs. 341–345): Tergite 9 wider than long, with a shallow V-shaped anterior incision and distinctly contracted apex; sternite 10 with apex somewhat acute; cercus somewhat bending and distinctly narrow apically; gonocoxal apodemes divergent; gonostylus weakly curved; ejaculatory apodeme somewhat curved anteriorly, with very acute posterior apex; dorsal plate rounded apically, ventral plate nearly as long as dorsal plate, with sclerotized lateral ridge very developed and elongate.

Female. Body length 8.3–9.2 mm, wing length 8.7–9.1 mm. Similar to male except as follows: Frons with very sparse and pale hairs; head 1.3–1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance from antennae to median ocellus, 1.4–1.5 times width of frons just above antenna and 0.7–0.8 times width of face at lowest point in direct frontal view; width of frons just above antennae 0.7–0.8 times distance from antennae to median ocellus, 0.5–0.6 times width of face at lowest point in direct



Figs. 341–345. *Rhagio zhejiangensis* C. YANG et D. YANG, male. 341, Tergite 9 and cerci, dorsal view; 342, cercus, dorso-lateral view; 343, tergite 9, sternite 10 and cerci, ventral view; 344, genital capsule, dorsal view; 345, genital capsule, ventral view.

frontal view and 1.2–1.3 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 0.9 times that from antennae to median ocellus; clypeus 0.9–1.0 times as wide as long, 2.6–2.7 times as wide as parafacial on a mid line and 0.8 times as wide as face at upper margin of clypeus. Abdominal tergites 2–6 with apical margin brownish yellow. Hairs on abdomen pale.

Specimens examined. Holotype , paratypes 1 , 3 , Tianmushan Mountains, Zhejiang, 3–5. v. 1980, Chi-kun YANG and Fasheng LI.

Distribution. China (Zhejiang).

Remarks. This species is similar to *separatus*, *shaanxiensis* and *stigmatosus* but may be separated from them as shown in the key (couplet 36).

Genus *Symphoromyia* FRAUENFELD

Symphoromyia FRAUENFELD, 1867, Verh. zool. -bot. Ges. Wien, 17: 496. Type species: *Atherix melaena* MEIGEN, 1820 (by original designation).

Diagnosis. Male eyes holoptic or very narrowly separated. In Chinese species, width of female frons just above antennae wider than one eye, female frons divergent toward vertex, face convergent toward antennae in both sexes. Gena below eyes wide. Parafacial bare, clypeus bare or sparsely haired; clypeus strongly convex with long lateral sulcus. Antennal scape often longer than pedicel; flagellum reniform with a slender subdorsal arista. Palpus 2-segmented. Metapleuron haired on anterior portion. Subscutellum absent. Tibial spurs 0-2-1; hind coxa with a ventral knob. Wing: Rs arising somewhat near humeral crossvein; R2 + 3 ending near R1; R5 ending at wing margin behind wing tip; anal cell narrowly open.

Remarks. The genus *Symphoromyia* is distributed only in the Holarctic region and contained 33 species of which only 4 species were known from the Palaearctic region. This genus is recorded for the first time from China. Of the Chinese species now known, 2 seem to be new to science and *S. crassicornis* is widely distributed in all parts of Europe (excluding Mediterranean area), China and Japan.

Literature: CHVÁLA (1983); NAGATOMI & KANMIYA (1969); TURNER (1974).

Key to Chinese and Central Asian species of *Symphoromyia* (based on females)

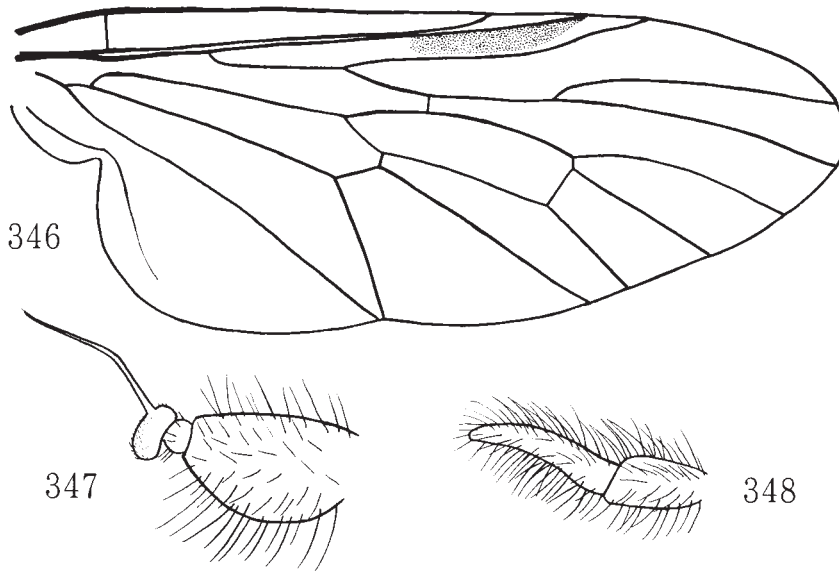
- 1. Scape distinctly longer than wide, and almost wholly covered with hairs; palpal segment 2 distinctly longer than segment 1, and less widened (Figs. 348, 354) 2
- Scape as long as wide, and with hairs which are absent on ventral and outer surfaces; palpal segment 2 subequal in length to segment 1 and spatulate (Fig. 351) *incorrupta* sp. nov.
- 2(1). Pedicel distinctly narrower than scape; scape distinctly longer than distance from base of pedicel to base of arista in outer view 3
- Pedicel subequal in width to scape; scape subequal in length to distance from base of pedicel to base of arista in outer view; Central Asia (Uzbekistan and Tadzikistan); (after CHVÁLA, 1983) *spitzeri*
- 3(2). Palpal segment 1 over 1/2 as long as segment 2; palpus dark brown to black; flagellum brown to dark brown; abdomen heavily pale gray pollinose and not polished; darkened stigma not well demarcated [based on 1 from Europe (probably from England)] *crassicornis*
- Palpal segment 1 short and inconspicuous (less than 1/2 as long as segment 2); palpus and flagellum reddish yellow (or dark yellow); abdomen weakly pale gray pollinose and polished; darkened stigma distinct, narrow and separated from vein R2 + 3 *sinensis* sp. nov.

Symphoromyia crassicornis (PANZER)
(Figs. 346–348)

Atherix crassicornis PANZER, 1806, Fauna insect. germ. Fasc., 105: 10. Type locality: "Hartz".

Male. Scape greatly swollen and flagellum narrower than scape. Pedicel much narrower than flagellum. Scape, ocellar tubercle, vertex, and occiput just behind upper eye margin with long hairs. Palpus and gena abundantly haired. Palpus log-like, with segment 1 over 1/2 as long as segment 2. Clypeus ending far below antennae and mid-upper face flat.

Male. Body length 6.1–7.5 mm, wing length 6.3–6.9 mm. Head dark brown to black, and pale gray pollinose. Hairs on head black, but lower occiput wholly and gena partly pale haired; frons, parafacial and clypeus bare. Antennal scape and pedicel dark brown to black with black hairs which are very short on the latter; scape very swollen, longer than wide; pedicel very small; flagellum dark yellow to brown and bare; arista wholly dark brown. Proboscis black with chiefly black hairs; labrum shorter than face; palpus black with pale and black hairs. Hairs on head and appendages very long (except those on pedicel and proboscis). Eyes narrowly separated or nearly contiguous. Head (excluding protruded clypeus) 1.5–1.6 times higher than long; width of one eye on a mid line in direct frontal view 1.6–1.7 times distance from antennae to median ocellus, 2.1–2.2 times width of frons just above antenna and 0.7–0.8 times width of face at lowest point in direct frontal view;



Figs. 346–348. *Symphoromyia crassicornis* (PANZER), male. 346, Wing; 347, antenna; 348, palpus.

width of frons just above antennae 0.8–1.0 times distance from antennae to median ocellus, 0.4 times width of face at lowest point in direct frontal view and 4.0–4.7 times width of frons at median ocellus; distance from ridge below proboscis to antennae about 1.4–1.5 times that from antennae to median ocellus; clypeus 1.0–1.2 times as wide as long, 1.1–1.2 times as wide as parafacial on a mid line and 0.4 times as wide as face at upper margin of clypeus.

Thorax dark brown to black, and pale gray pollinose. Mesonotum and scutellum long black haired, but anterior portion of mesonotum with pale hairs; pleuron pale haired. Legs dark brown to black, coxa concolorous with pleuron; tip of femur yellow. Hairs on legs black, but coxa and mid femur with pale and black hairs. Wing hyaline; stigma indistinct, elongate, dark yellowish; veins brownish yellow; anal cell narrowly open. Halter brownish yellow, knob dark brown to black.

Abdomen dark brown to black, and pale gray pollinose. Hairs on abdomen pale but those on segments 6–8 and genitalia wholly or partly black; hairs on side of dorsum long.

Female. No Chinese specimen is available.

Specimens examined. 2 ♂, Mengyuan, Qinghai, 21. vii. 1990; 5 ♂, Guyuan, Ningxia, 8. viii. 1980, Fasheng LI; 1 ♂, Guyuan, Ningxia, 18. vii. 1980, Chi-kun YANG; 1 ♂, Wutaishan Mountain (2,800 m), Shanxi, 24. vii. 1981, Fasheng LI.

Distribution. China (Qinghai, Ningxia, Shanxi). This species is widely distributed in the Palaearctic region.

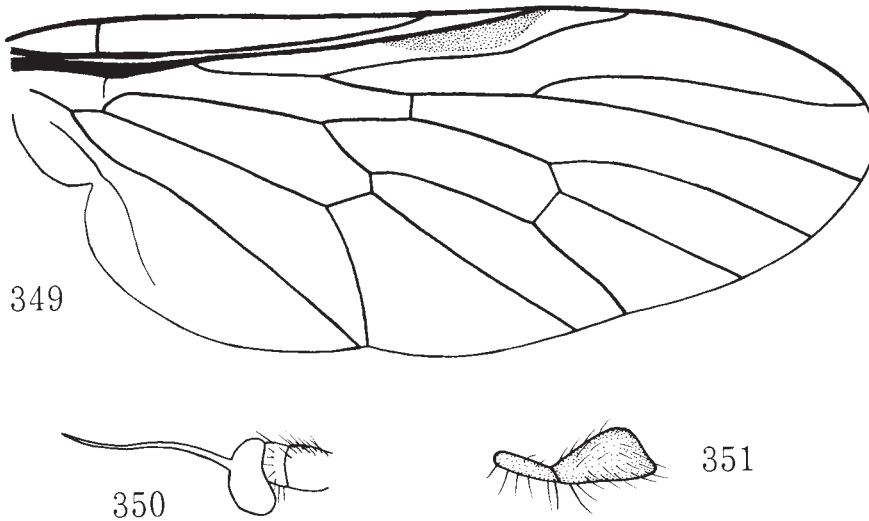
Remarks. This species is recorded for the first time from China. It may be distinguished from *sinensis* as shown in the key (couplet 3).

Symphoromyia incorrupta D.YANG, C.YANG et NAGATOMI sp. nov.

(Figs. 349–351)

Female. Scape about as wide as long, as wide as pedicel, and with dorsal hairs. Palpal segment 1 subequal in length to segment 2 which is spatulate. Labrum somewhat longer than face. Clypeus large and extending to antennae. Head, thorax, coxa and abdomen heavily pale gray pollinose.

Female. Body length 5.3 mm, wing length 5.4 mm. Head dark brown to black, pale gray pollinose, pale haired, with upper occiput chiefly black haired; clypeus and parafacial bare. Antenna dark brown to black; scape chiefly pale haired, pedicel black haired; in outer view, pedicel shorter than but about as wide as scape. Proboscis and palpus dark brown to black; the former black haired and the latter pale haired; in palpus, segment 1 slender and subequal in length to segment 2 which is spatulate. Labrum somewhat longer than face. Head (excluding protruded clypeus) 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 0.8 times width of frons just above antenna and 0.5 times width of face at lowest point in direct frontal view; width of frons just above antennae 1.3 times distance from antennae to median ocellus, 0.6 times width of face at lowest point in direct frontal view and 0.7 times width of frons at



Figs. 349–351. *Symphoromyia incorrupta* D. YANG, C. YANG et NAGATOMI sp. nov., female. 349, Wing; 350, antenna; 351, palpus.

median ocellus; width of frons at narrowest point 1.1 times width of one eye on a mid line in direct frontal view; distance from ridge below proboscis to antennae about 1.4 times that from antennae to median ocellus; clypeus 0.7 times as wide as long, 2.3 times as wide as parafacial on a mid line and 0.7 times as wide as face just below antennae.

Thorax dark brown to black, pale gray pollinose, pale haired, but bare on pteropleuron. Mesonotum with three wide darker spots. Legs dark brown to black, coxa concolorous with pleuron. Hairs on legs pale, but tibia and tarsus with black hairs. Wing nearly hyaline, but basal portion and anterior field tinged with yellow; stigma indistinct, elongate and dark yellow; veins chiefly brownish black; anal cell narrowly open. Halter yellow with basal portion brown.

Abdomen dark brown to black, and pale gray pollinose. Hairs on abdomen pale.

Male. Unknown.

Holotype , Menyuan, Qinghai, 15. vii. 1990.

Distribution. China (Qinghai).

Remarks. *S. incorrupta* () may be easily separated from *immaculata* (MEIGEN, 1804) () from Europe in the following points: palpal segment 2 widened; frons at narrowest part distinctly wider than one eye (from a direct frontal view). In *immaculata*: "Palpi slender. Frons of female narrower (fig. 112)" (after Oldroyd, 1969: 41); "frons occupying about a third of the width of the head....." (after Verrall, 1909: 300).

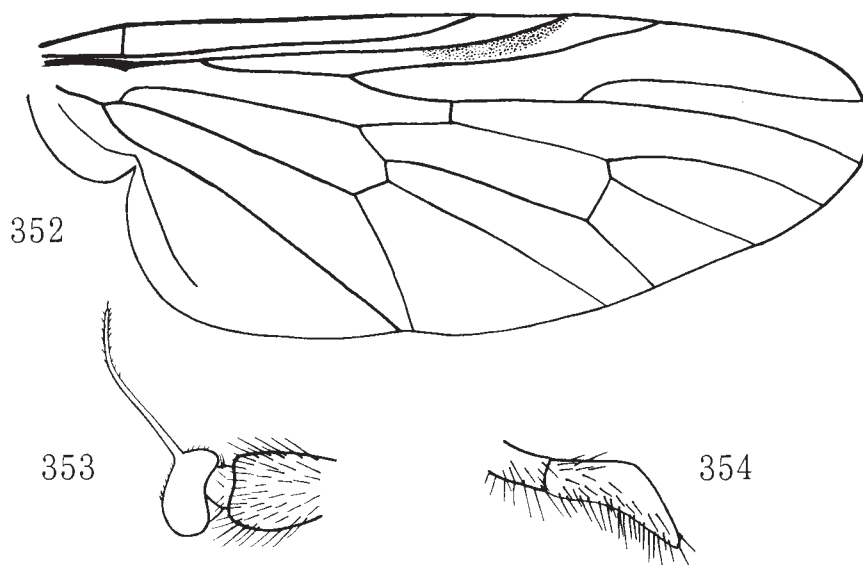
S. incorrupta () is easily separated from *crassicornis*, *sinensis* and *spitzeri* as shown in the key (couplet 1).

Symphoromyia sinensis D.YANG et C.YANG sp. nov.

(Figs. 352–354)

Female. Scape somewhat longer than wide, somewhat narrower than flagellum but distinctly wider than pedicel, and densely covered with black hairs. Palpal segment 1 short and inconspicuous, and segment 2 widest around middle and then tapering apically. Labrum nearly as long as face. Antenna (except arista) and palpus reddish yellow or dark yellow. Clypeus ending far below antennae and mid-upper face flat. Thorax, coxa, femur and abdomen weakly pale pollinose and more or less polished.

Female. Body length 6.7 mm, wing length 7.6 mm. Head black, and pale gray pollinose; black haired, but lower occiput chiefly pale haired; parafacial bare; frons with abundant black hairs; clypeus sparsely black haired on median portion. Antenna brown or dark yellow with black hairs; flagellum yellow and bare; arista brown; scape swollen; pedicel small. Proboscis dark brown to black with pale hairs; palpus dark yellow with segment 1 pale haired and segment 2 chiefly black haired. Palpal segment 1 short and inconspicuous. Labrum nearly as long as face. Head (excluding protruded clypeus) 1.4 times higher than long; width of one eye on a mid line in direct frontal view 1.1 times distance from antennae to median ocellus, 0.7 times width of frons just above antenna and 0.5 times width of face at lowest point in direct frontal view; width of frons just above antennae 1.6 times distance from antennae to median ocellus, 0.7 times width of face at lowest point in direct frontal view and subequal to width of frons at median ocellus; width of frons at narrowest point 1.3



Figs. 352–354. *Symphoromyia sinensis* D.YANG et C.YANG, sp. nov., female. 352, Wing; 353, antenna; 354, palpus.

times width of one eye on a mid line in direct frontal view; distance from ridge below proboscis to antennae about 1.5 times that from antennae to median ocellus; clypeus 0.7 times as wide as long, 1.8 times as wide as parafacial on a mid line and 0.6 times as wide as face at upper margin of clypeus.

Thorax black, and pale gray pollinose; mesonotum with three brown narrow longitudinal stripes (or with three wide darker stripes). Mesonotum and scutellum black haired, but anterior and anterolateral margins of mesonotum with pale hairs. Pleuron pale haired, but bare on pteropleuron. Legs black, coxa and femur concolorous with pleuron; tip of femur yellow; tibia brownish; tarsus brown to dark brown. Hairs on legs black, but fore and hind coxae, and femur (except dorsal part) with pale hairs. Wing nearly hyaline, weakly tinged with yellow; stigma elongate and dark yellow; veins brown; anal cell narrowly open. Halter yellow with knob dark brown.

Abdomen black, and pale gray pollinose. Hairs on abdomen black, but tergite 1, tergite 2 (except middle) and sternite 2 with pale hairs.

Male. Unknown.

Holotype , Jone (2,900 m), Gansu, 16. viii. 1980, Chi-kun YANG.

Distribution. China (Gansu).

Remarks. This species is easily separated from *crassicornis* as shown in the key (couplet 3).

Subfamily SPANIINAE

Genus *Litoleptis* CHILLCOTT

Litoleptis CHILLCOTT, 1963, Can. Ent., 95: 1186. Type species: *Litoleptis alaskensis* CHILLCOTT, 1963, from Alaska (by original designation).

For diagnosis of *Litoleptis*, see NAGATOMI (1982). We have seen 1 (preserved in alcohol) from Yunnan. This is the first record of *Litoleptis* from China. When more material is available, a description will be given.

Literature: CHILLCOTT (1963).

Litoleptis sp.

No description is given here.

Specimen examined. 1 , Xiaguan, Yunnan, 14. v. 1981, Chi-kun YANG.

Genus *Ptiolina* ZETTERSTEDT

Ptiolina ZETTERSTEDT, 1842, Dipt. Scand., 1: 226. Type species: *Leptis obscura*

FALLEN, 1814. By designation of FRAUENFELD, 1867.

Previously only 1 Chinese species was recorded from Taiwan. We have seen another species (1 ♂, preserved in alcohol) from Jiangxi but wish to withhold its description until more material is available.

For generic diagnosis of *Ptiolina*, see NAGATOMI (1982).

Literature: HARDY & MCGUIRE (1947); LINDNER (1942); NAGATOMI (1985, 1986a, 1986b).

Ptiolina latifrons NAGATOMI

Ptiolina latifrons NAGATOMI, 1986, Kontyu, 54: 312. Type locality: Hokkaido (Upepesanke).

Distribution. Taiwan (Chiayi Hsien) and Japan (Hokkaido, Honshu).

Ptiolina sp.

No description is given here.

Specimen examined. 1 ♂, Jinggangshan Mountain, Jiangxi, 25. iv. 1978, Chi-kun YANG.

Distribution. China (Jiangxi).

Genus *Spatulina* SZILÁDY

Spatulina SZILÁDY, 1942, Mitt. münchen ent. Ges., 32: 625. Type species: *Spatulina engeli* SZILÁDY, 1942, from Europe (Czechoslovakia) (by monotypy).

The original description of *Spatulina engeli* is quoted below.

Durch den wohlentwickelten Sporen der Mittelschienen verbindet sich diese interessante neue Form mit *Omphalophora* Beck. Die Gestalt ihrer Fühler ist aber spatelförmig wie bei *Ptiolina*. Ganz eigentümlich sind die langen, geraden Endglieder der Taster, welche (beim ♂ [= correctly ♀]) beinahe bis zur Fühlerwurzel hervorragen.

Die von Herrn Dr. Heinz Fischer am Gehrengrat (bei Dalaas) in den Klostertaler Alpen (Vorarlberg), in einer Höhe von 2,400 m am 26. VII. 1941 gesammelten ♂ sind 4,5 mm lang. Flügellänge 5 mm.

Die Fliegen sind schwarz, fast überall fein bereift, nur stellenweise glänzend, mit langen, zottigen schwarzen Haaren. Die scharf getrennten oberen, großen Augenfacetten sind rot-braun, die des unteren Augendrittels schwarz. Saumhaare des hinteren Augenrandes sehr lang, nach vorne gebogen, Die Bereifung des Kopfes ruft am Stirndreieck 2 kleinere, graue Dreiecke und am Gesicht 3 graue Längsstreifen hervor, die seitlichen sind von den Augen durch einen breiten, schwarzen Saum getrennt.

Fühlergriffel stark, fast so lang, wie das ovale Endglied des Fühlers, mittelständig. Beide Grundglieder kurz, halb so lang wie breit.

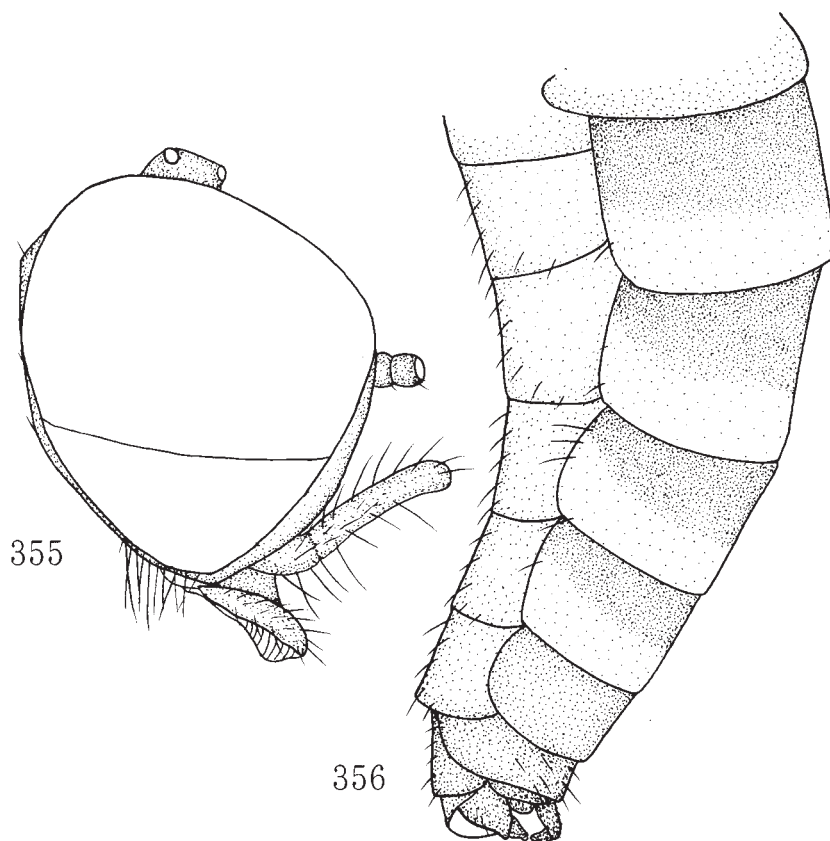
Mittelleib aschgrau bereift; der hellere Rücken trägt 3 fast gleichbreite, mattschwarze Längsstreifen, von denen die seitlichen vorne verkürzt sind. Flügel schwärzlich, aus der Diskalzelle treten 3 regelmäßig stehende Längsadern hervor. Schwinger und Beine schwarz.

Type in Budapest. Ungar. Nat. -Museum.

Spatulina sinensis D.YANG, C.YANG et NAGATOMI sp. nov.
(Figs. 355–360)

The species described below may belong to *Spatulina*. More comparison is necessary between *engeli* (from Czechoslovakia) and *sinensis* (from China) for determination of the generic position of *sinensis*.

Spatulina, sinensis () may differ from *Ptiolina* species as follows: Mid-upper face (surrounded by parafacials and clypeus) deeply sunken; occiput above neck strongly con-

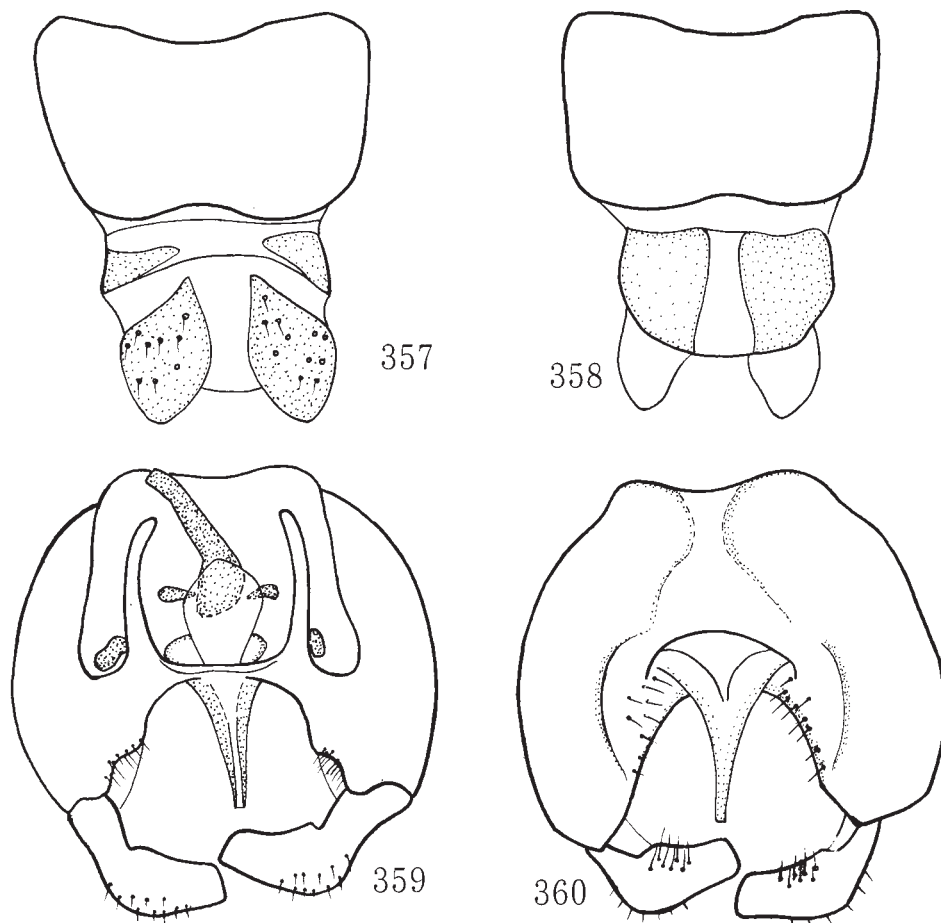


Figs. 355–356. *Spatulina sinensis* D. YANG, C. YANG et NAGATOMI sp. nov., male. 355, Head, lateral view; 356, abdomen, lateral view.

cave and upper eye margin Y-shaped; palpus long and extending to antenna; mid tibial spurs well developed and apparently longer than in *Ptiolina*.

The head of the examined specimen of *sinensis* has not been macerated in KOH solution, and the number of segments of the palpus is not clear. It may be 1-segmented. [Flagellum, mid tarsus and hind femur are broken off in the examined specimen of *sinensis*].

Male. Body length 7.0 mm, wing length 5.9 mm. Head dark brown to black, pale gray pollinose and black haired, but pale pilose on lower occiput and bare on frons and face. Antenna [flagellum broken off] dark brown to black with some black hairs; scape nearly as long as pedicel. Proboscis brownish yellow to dark brown, and short whitish pilose; palpus probably 1-segmented, very long, about as long as face, and black with long black hairs. Eye with contiguous portion 0.8 times as long as ocellar triangle. Head 1.3 times higher than long; width of one eye on a mid line in direct frontal view 1.0 times distance



Figs. 357–360. *Spatulina sinensis* D. YANG, C. YANG et NAGATOMI sp. nov., male. 357, Tergites 9–10 and cerci, dorsal view; 358, tergite 9, sternite 10 and cerci, ventral view; 359, genital capsule, dorsal view; 360, genital capsule, ventral view.

from antennae to median ocellus, 1.0 times width of face at lowest point in direct frontal view, and 2.8 times width of frons just above antenna; width of frons just above antennae 0.4 times distance from antennae to median ocellus, 3.0 times width of frons at median ocellus and 0.4 times width of face at lowest point in direct frontal view; distance from ridge below proboscis to antennae about 1.0 times that from antennae to median ocellus; clypeus 0.8 times as wide as long, 0.4 times as wide as face at upper margin of clypeus, and 1.3 times as wide as parafacial on a mid line.

Thorax black and pale gray pollinose; [hairs on thorax rubbed off]; mesonotum with 3 wide darker longitudinal spots, of which median one is divided by a mid line. Metapleuron with some long yellow hairs on posterior part. Legs [mid tarsus and hind legs except coxa and trochanter broken off] dark brown to black and pale gray pollinose, but fore and mid tibiae pale brownish yellow with apical portion darker; hairs on legs chiefly pale, coxa with long and chiefly pale hairs, femur ventrally with long black hairs. Wing pale gray with brown stigma; R2 + 3 curved forward and ending near R1; R5 ending at wing margin behind wing tip. Halter stem yellow, knob dark brown.

Abdomen dark brown, and pale gray pollinose; dorsum with basal portion of tergites 2–5 darker; hairs on abdomen whitish. Male genitalia (Figs. 357–360): Tergite 9 wider than long, slightly concave on anterior margin; tergite 10 narrow and sternite 10 rather broad with median portion membranous; cercus large with apical portion somewhat acute; gonocoxites large and long with fused ventral portion partly somewhat membranous; gonostylus distinctly curved with wide apex; gonocoxal apodemes slender and nearly parallel; ejaculatory apodeme curved posteriorly.

Female. Unknown.

Holotype ♂, Shiquan, shaanxi, 25. iv. 1980, Longchen XIANG and Ning MA.

Distribution. China (Shaanxi).

Remarks. If this species is not a true member of *Spatulina*, it would belong to a new genus.

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We are much indebted to Mr. Fasheng LI (China Agricultural University, Beijing), Prof. Io CHOU (Northwest Agricultural University, Shaanxi), Dr. Carlo Leonardi (Museo Civico di Storia Naturale, Milano), Dr. K. KUSIGEMATI (Kagoshima University, Kagoshima) for their help in many ways. This research is supported partly by the National Natural Science Foundation of China. Sincere thanks are also expressed to Mr. K. G. V. SMITH, London (Editor in Chief, Entomologist's Monthly Magazine) for critical reading of the manuscript.

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