

New and little known species of Dolichopodidae from China (IV)

by Ding YANG

Abstract

In the present paper, 20 species of the family Dolichopodidae from China are described as new to science: *Neurigona concaviuscula*, *N. guangxiensis*, *N. shennongjiana*, *N. xiangshana*, *N. xizangensis*, *N. zhejiangensis*, *Ludovicicus apicularis*, *L. biaristatus*, *L. neixianganus*, *Paraclius stipitatus*, *Dolichopus henanus*, *Hercostomus (Hercostomus) xixianus*, *H. (H.) flavimarginatus*, *H. (H.) nudiusculus*, *H. (H.) binatus*, *H. (H.) henanus*, *Diostracus henanus*, *Syntormon xinjiangensis*, *S. xizangensis*, *Plagiozopelma pubescens*. Two species are recorded from the China for the first time: *Neurigona micropyga* NEGROBOV, *Plagiozopelma flavipodex* (BECKER).

Keywords: Dolichopodidae, new species, China

Introduction

The present paper deals with 24 species of Dolichopodidae from China which belong to 9 genera respectively. Among them 20 species are described as new to science.

Keys to the species of *Neurigona*, *Pelastoneurus* and *Paraclius* from China are given. The types of the new species are mainly deposited in the Insect Collection of China Agricultural University (CAU) except some paratypes kept in the Royal Belgian Institute of Natural Sciences (IRSN). The abbreviations used here are similar to the second one of the serial papers (YANG, 1998c).

Subfamily Neurigoninae

The genus *Neurigona* RONDANI

Diagnosis. Thorax and abdomen usually yellow with black markings. Face narrow, but very narrow medially; male eyes sometimes contiguous on face. Postocular bristles mostly or wholly yellow. Palpus pale yellow. Mesonotum with mid-posterior portion distinctly flattened. Bristles and hairs on pronotum and propleuron yellow; propleuron with 1 short bristle on upper portion and 1 long bristle on lower portion. Scutellum with 2 strong apical bristles and 2 very short lateral hairs. M1+2

weakly or strongly bent apically and convergent with R4+5. Mid and hind femora without preapical bristle. In male, abdominal segment 5 sometimes with a ventral projection.

The species of *Neurigona* from the Chinese mainland are poorly known, with only two known species: *chetitarsa* PARENT 1926, *grisea* PARENT 1944. Five species were known from Taiwan (BECKER, 1922). In the present paper, 6 new species and a new record are added to Chinese fauna.

Key to males of *Neurigona* from the Chinese mainland

1. Abdominal segment 5 with ventral projection . . . 2
Abdominal segment 5 without ventral projection . . . 6
2. Abdomen mostly yellow with black spots; mesonotum yellow 3
Abdomen metallic green except segment 1 partly yellow; mesonotum darker. Inner Mongolia (PARENT, 1944; NEGROBOV & FURSOV, 1988) . . . *grisea* PARENT
3. Mesonotum wholly yellow 4
Mesonotum with large or small mid-posterior area black 5
4. Scutellum and metanotum brownish yellow; fore coxa with black bristles apically; fore tarsomere 4 distinctly shortened with incised ventral margin, tarsomere 5 with baso-ventral surface somewhat thickened with dense hairs. Beijing *xiangshana* sp. nov.
Scutellum and metanotum yellow; fore coxa with yellow bristles apically; fore tarsus simple, tarsomeres 3-5 with short erect ventral hairs Xizang
. *xizangensis* sp. nov.
5. Mesonotum with wide mid-posterior black area. Mid tibia and tarsus without a row of short erect pale av. Guangxi *guangxiensis* sp. nov.
Mesonotum with narrow mid-posterior brown spot. Mid tibia and tarsus with a row of short erect pale av. Zhejiang *zhejiangensis* sp. nov.
6. Fore coxa with yellow bristles apically 7
Fore coxa with black bristles apically. Sichuan
. *concaviuscula* sp. nov.

7. Fore femur with a row of yellow av; mid tarsus normal. Hubei
 *shennongjiana* sp. nov.
 Fore femur without a row of av; mid tarsomere 5 with strong bristles on ventral surface, and one claw distinctly elongated and spine-like. Henan
 *micropyga* NEGROBOV

1. *Neurigona concaviuscula* sp. nov.
 (Figs. 1-2)

Diagnosis. Eyes separated. Scutellum (except posterior margin) and metanotum blackish. M1+2 bent apically in rectangular form. Halter yellow with blackish knob. Fore tarsomere 4 shortened (as long as 2/3 of tarsomere 3) with ventral surface slightly concave and bare. Abdominal segment 5 without ventral projection.

Male. Body length 3.9 mm, wing length 4.0 mm.

Head metallic green with pale grey pollen; eyes separated; face narrow, but very narrow medially. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) yellow. Antenna yellow; first flagellomere 1.2 times longer than wide, somewhat acute apically; arista black with basal segment 0.12 times as long as apical segment. Proboscis brownish with chiefly pale hairs; palpus pale yellow with pale hairs.

Thorax yellow with yellow pollen; scutellum (except posterior margin) and metanotum blackish; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but pronotum and propleuron with yellow bristles and hairs; 17-18 irregularly paired

acr short and hair-like, 7 dc (of which 3 posterior ones are stronger). Legs [mid tibia and tarsus broken] yellow; all coxae yellow. Hairs and bristles on legs black; fore coxa with yellow hairs, but apically with black bristles. Fore tibia with 1 d; hind tibia with 2 ad and 3 pd. Fore tarsus: apical portion of tarsomere 1, tarsomeres 2-3 and base of tarsomere 4 with somewhat longer straight hairs curved downward apically, tarsomere 4 shortened and weakly widened (as long as 2/3 of tarsomere 3) with ventral surface concave and bare; tarsomere 5 basally with ventral surface thickened with dense brownish yellow hairs. Relative length of segments (excluding coxae, trochanters and femora) of legs LI 5.4: 4.4: 2.2: 1.2: 0.8: 1.0; LIII 10.6: 3.1: 3.9: 2.1: 1.7: 0.8. Wing slightly tinged with greyish; veins black, M1+2 strongly bent apically in rectangular form and ended at wing margin near R4+5; CuAx ratio 0.5. Squama yellow with pale hairs. Halter yellow with blackish knob.

Abdomen yellow with yellow pollen; terga 2-5 each with wide black basal band, hypopygium shiny black. Hairs on abdomen black, but those on sterna 1-2 pale. Abdominal segment 5 without ventral projection. Male genitalia (Fig. 2): Surstylus with dorsal lobe large and somewhat quadrate; ventral lobe narrow and distinctly curved, basally with 2 slightly thick projections.

Female. Unknown.

Holotype male, Sichuan: Qincheng Mountain, 1998. VIII. 20, Ding YANG. (CAU)

Distribution. China (Sichuan).

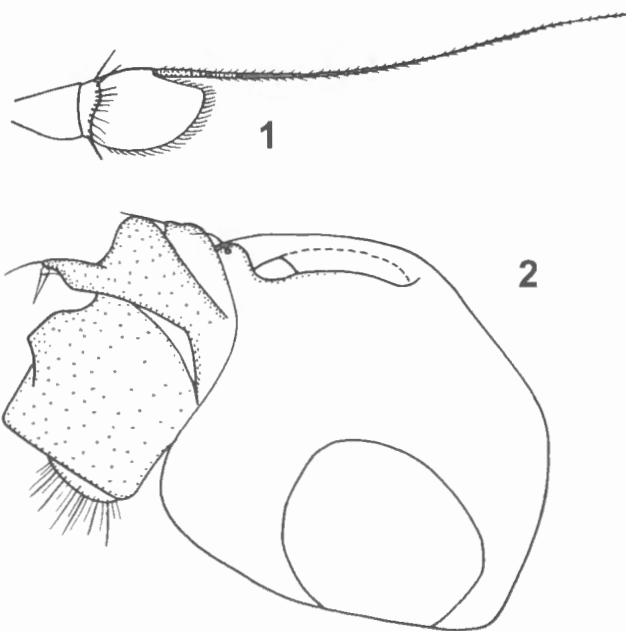
Remarks. This species is similar to *denudata* Becker from the Oriental region, but may be separated from the latter by the modified fore tarsus, abdominal tergum 5 with black basal band, halter yellow with blackish knob (BECKER, 1922).

2. *Neurigona guangxiensis* sp. nov.
 (Figs. 3-4)

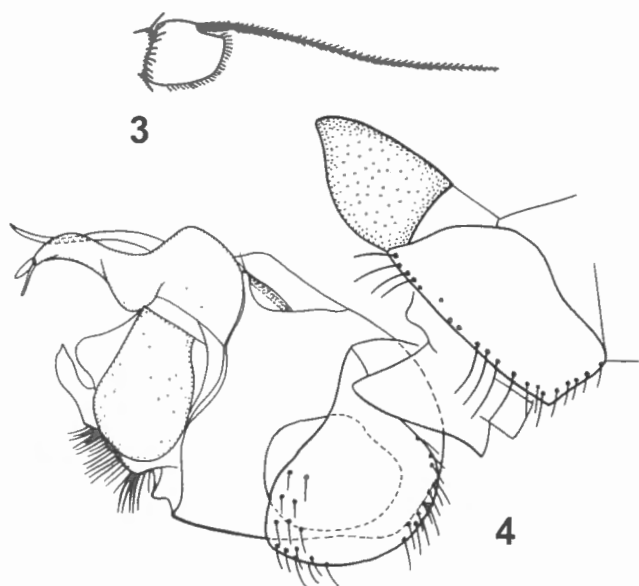
Diagnosis. Eyes separated. Mesonotum with mid-posterior area black; scutellum (except posterior margin) and metanotum blackish. Halter yellow with brown knob. Mid tarsomere 1 elongated, nearly as long as mid tibia. Abdominal segment 5 with ventral projection.

Male. Body length 4.3 mm, wing length 4.0 mm.

Head metallic green with pale grey pollen; eyes separated; face narrow, but very narrow medially. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) yellow. Antenna yellow; first flagellomere 1.1 times longer than wide, obtuse apically; arista black with basal segment 0.1 times as long as apical segment. Proboscis dark yellow with pale hairs; palpus pale yellow, with blackish hairs.



Figs. 1-2 — *Neurigona concaviuscula* sp. nov., male. 1. antenna, lateral view; 2. genitalia, lateral view.



Figs. 3-4 — *Neurigona guangxiensis* sp. nov., male. 3. antenna (excluding scape), lateral view; 4. apex of abdomen, lateral view.

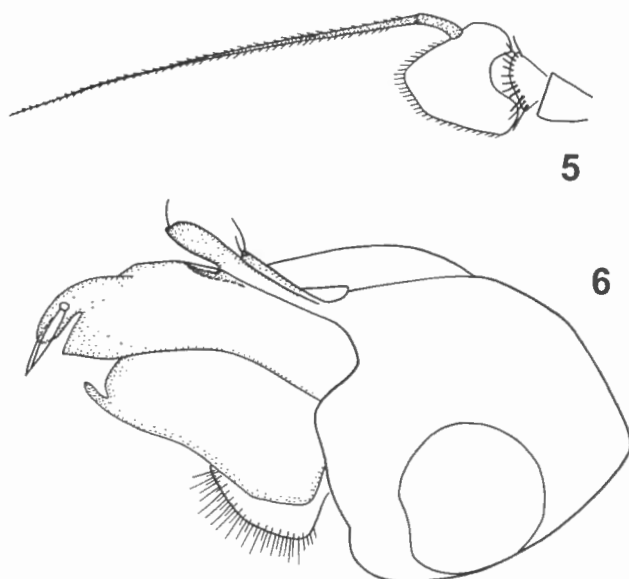
Thorax yellow with yellow pollen; mesonotum with mid-posterior area black; scutellum (except posterior margin) and metanotum blackish; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but pronotum and propleuron with yellow bristles and hairs; 18-19 irregularly paired acr short and hair-like, 4 dc (of which anterior ones are shorter). Legs yellow; all coxae yellow. Hairs and bristles on legs black; fore coxa with yellow hairs, but apically with black bristles. Fore tibia with 1 ad and 1 pd; mid tibia with 3 ad, 3 pd, 1 av and 2 short pv; mid tarsomere 1 basally with 1 pv and medially with 1 ad; hind tibia with 4 ad and 3 pd; hind tarsomere 1 with 2 v medially. Legs simple with mid tarsomere 1 elongated and nearly as long as mid tibia. Relative length of segments of legs LI 5.8: 4.4: 2.8: 1.8: 1.1: 0.8; LII 7.6: 7.7: 3.1: 2.0: 1.2: 0.8; LIII 12.4: 3.2: 4.0: 2.3: 1.7: 0.8. Wing hyaline, slightly tinged with yellowish; veins brown, M1+2 strongly bent apically in rectangular form and ended at wing margin near R4+5; CuAx ratio 0.5. Squama yellow with pale hairs. Halter yellow with brown knob.

Abdomen yellow with yellow pollen; terga 2-4 each with wide black basal band; segment 5 wholly black, with ventral projection; hypopygium shiny black. Hairs on abdomen black. Male genitalia (Fig. 4): Surstylus with dorsal lobe short and wide, its apical margin incised with two acute or obtuse processes; ventral lobe elongated and curved, basally with 1 thin finger-like projection.

Female. Unknown.

Holotype male, Guangxi: Pingxiang, 1957. V. (CAU)

Distribution. China (Guangxi).



Figs. 5-6 — *Neurigona micropyga* NEGROBOV, male. 5. antenna, lateral view; 6. genitalia, lateral view.

Remarks. This species is similar to *exemta* BECKER from Taiwan and Sri Lanka, but may be separated from the latter by having the mesonotum with black mid-posterior area (BECKER, 1922).

3. *Neurigona micropyga* NEGROBOV (Figs. 5-6)

Neurigona micropyga NEGROBOV, 1987. Ent. Obozr. 66: 413. Type locality: Russia.

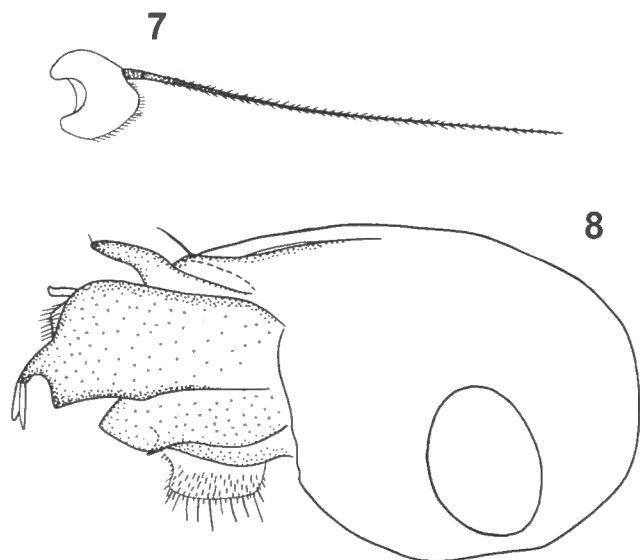
Diagnosis. Eyes contiguous. First flagellomere as long as wide. Mesonotum with a mid-posterior spot blackish and subtriangular; metanotum brown. Fore coxa with yellow bristles apically. Fore tarsomere 5 slightly thickened with strong bristles on ventral surface; one claw distinctly elongated and spine-like. Abdominal segment 5 without ventral projection.

Specimens examined. 1 male, Henan: Neixiang, 1998. VII. 14, Xueyou HU.

Distribution. China (Henan); Russia.

4. *Neurigona shennongjiana* sp. nov. (Figs. 7-8)

Diagnosis. Eyes contiguous on face. Posterior vertical bristles yellow. Scutellum yellow and metanotum black. Fore femur with a row of yellow av. Fore coxa with yellow bristles apically. Fore and mid tarsomere 1 elongated and longer than corresponding tibia. Mid tibia with one row of av on whole length. M1+2 distinct but slowly bent apically. Abdominal segment 5 without ventral projection.



Figs. 7-8 — *Neurigona shennongjiana* sp. nov., male. 7. antenna (excluding scape and pedicel), lateral view; 8. genitalia, lateral view.

Male. Body length 5.0 mm, wing length 4.1 mm.

Head metallic green with pale grey pollen; face narrow, eyes contiguous on median portion of face. Hairs and bristles on head black; postocular bristles (including ventral hairs) wholly yellow, posterior ventral bristles yellow. Antenna yellow; first flagellomere as long as wide, obtuse apically; arista black with basal segment 0.05 times as long as apical segment. Proboscis yellow with pale hairs; palpus pale yellow, with pale hairs.

Thorax yellow with yellow pollen; scutellum yellow, metanotum black; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but pronotum and propleuron with yellow bristles and hairs; 11-12 irregularly paired acr short and hair-like, 5 distinct dc (of which anterior 3 are somewhat weaker). Legs yellow; all coxae yellow; tarsi brown. Hairs and bristles on legs black; fore coxa with yellow hairs and bristles. Fore tibia without d; mid tibia with 4-5 ad on basal half, one row of somewhat long and thin av on whole length, and 1 apv; hind tibia with 3-4 pd. For and mid tarsomere 1 elongated and longer than corresponding tibia. Fore tarsomeres 1-5 with distinct rowed ventral hairs (of which those on tarsomere 1 are somewhat erect and those on tarsomeres 4-5 longer), mid tarsomeres 1-4 with one row of thin av. Relative length of segments of legs LI 5.7: 7.6: 3.5: 2.4: 2.9: 1.2; LII 7.4 : 8.1: 3.4: 2.2: 1.6: 0.8; LIII 12.2: 4.0: 4.3: 2.1: 1.2: 0.8. Wing hyaline, tinged with blackish on apico-anterior portion; veins black, M1+2 distinctly but slowly bent apically and convergent with R4+5; CuAx ratio 0.4. Squama yellow with pale hairs. Halter yellow with brownish yellow knob.

Abdomen yellow with yellow pollen; terga 2-3 each with a black spot at base; hypopygium shining black. Abdominal segment 5 without ventral projection. Hairs on abdomen pale, but terga 1-4 (except posterior area of

tergum 4) chiefly black. Male genitalia (Fig. 8): Surstylus with dorsal lobe short and narrow, with a small acute process at dorsal corner; ventral lobe long and wide, with 1 short finger-like apex, basally with 2 finger-like projections (of which the outer one is long and curved).

Female. Unknown.

Holotype male, Hubei: Shennongjia (1700 m), 1984. VI. 29, Chi-kun YANG. (CAU)

Distribution. China (Hubei).

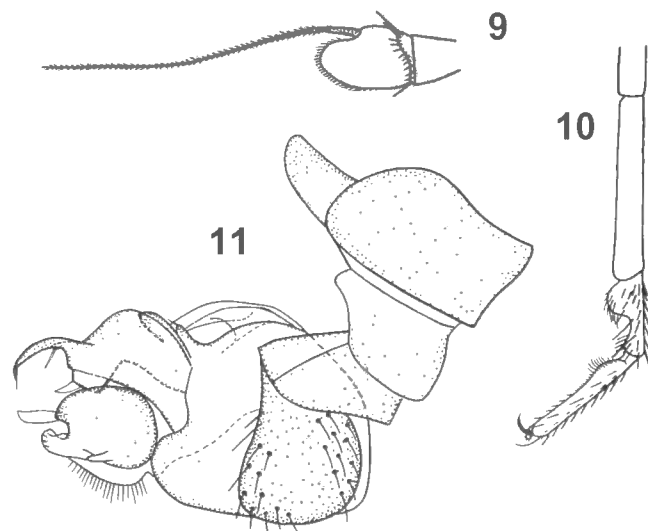
Remarks. This new species is easily separated from other known species of the genus by having the fore femur with one row of yellow av and mid tibia with one row of av on whole length.

5. *Neurigona xiangshana* sp. nov. (Figs. 9-11)

Diagnosis. Eyes separated. Scutellum and metanotum brownish yellow. Fore tarsomere 4 distinctly shortened (half as long as of tarsomere 3), thickened basally, and with incised ventral margin; tarsomere 5 with baso-ventral surface slightly thickened with dense hairs curved upward apically. M1+2 bent apically in rectangular form. Abdominal segment 5 with ventral projection.

Male. Body length 3.7 mm, wing length 4.0 mm.

Head metallic green with pale grey pollen; eyes separated; face narrow, but narrowest medially. Hairs and bristles on head black; postocular bristles (including ventral hairs) yellow except most upper one. Antenna yellow; first flagellomere 1.2 times longer than wide, somewhat



Figs. 9-11 — *Neurigona xiangshana* sp. nov., male. 9. antenna, lateral view; 10. fore tarsomeres 3-5, lateral view; 11. apex of abdomen, lateral view.

acute apically; arista black with basal segment 0.1 times as long as apical segment. Proboscis dark brown with pale hairs; palpus pale yellow, with pale hairs.

Thorax yellow with yellow pollen; scutellum and metanotum brownish yellow; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but pronotum and propleuron with yellow bristles and hairs; 17-18 irregularly paired acr, short and hair-like, 5 distinct dc (of which most anterior one smaller). Legs yellow; all coxae yellow. Hairs and bristles on legs black; fore coxa with yellow hairs, but apically with black bristles. Fore tibia with 1 ad and 1 pd; mid tibia with 3 ad, 3 pd and 2 av; hind tibia with 4 ad, 4-5 pd and 1 av; fore tarsomere 4 distinctly shortened (as long as 1/2 of tarsomere 3), basally thickened, and with distinctly incised ventral margin; tarsomere 5 basally with ventral surface slightly thickened with dense curved upward hairs. Relative length of segments of legs LI 5.8: 4.7: 2.2: 1.4: 0.7: 1.0; LII 7.1: 6.3: 2.8: 1.7: 1.1: 0.65; LIII 11.1: 3.2: 3.9: 2.2: 1.5: 0.65. Wing slightly tinged with greyish yellow; veins black, M1+2 strongly bent apically in rectangular form and ended at wing margin near R4+5; CuAx ratio 0.5. Squama yellow with pale hairs. Halter yellow.

Abdomen brownish yellow with yellow pollen; tergum 2 pale, terga 2-4 each with narrow black basal band; hypopygium shiny black. Abdominal segment 5 with ventral projection. Hairs on abdomen black, but those on sterna 1-2 pale. Male genitalia (Fig. 11): Surstylus with short dorsal lobe incised on apical margin; ventral lobe long with finger-like apex, basally with 2 finger-like projections.

Female. Unknown.

Holotype male, Beijing: Xiangshan, 1998. IX. 10, Ding YANG. (CAU)

Distribution. China (Beijing).

Remarks. This species is somewhat similar to *concaviuscula* sp. nov. in the fore tarsus with shortened tarsomere 4 and elongated tarsomere 5, but may be separated from the latter by the abdominal segment 5 with ventral projection, fore tarsomere 4 distinctly shortened (as long as 1/2 of tarsomere 3), basally thickened, and with distinctly incised ventral margin; in *concaviuscula*, abdominal segment 5 without ventral projection, fore tarsomere 4 as long as 2/3 of tarsomere 3, its ventral surface concave and bare.

6. *Neurigona xizangensis* sp. nov.
(Figs. 12-13)

Diagnosis. Eyes contiguous on face. Fore coxa with yellow bristles apically. Fore and mid tarsomere 1 elongated and longer than corresponding tibia. Fore tarsomeres 3-5 with short ventral hairs somewhat erect; mid tibia

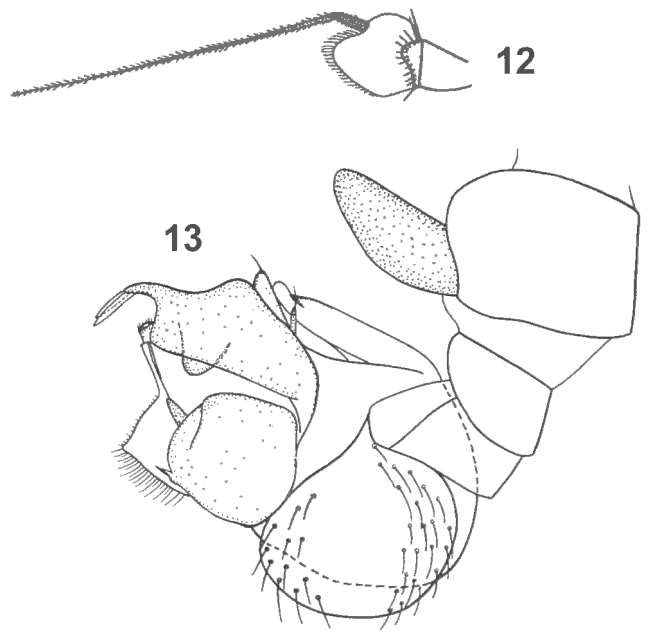
and tarsomeres 1-4 with short ventral hairs erect, sparse, and pale. M1+2 distinctly but gently curved apically. Abdominal segment 5 with ventral projection.

Male. Body length 4.4-5.1 mm, wing length 5.4-5.7 mm.

Head metallic green with pale grey pollen; face narrow, eyes contiguous on median portion of face. Hairs and bristles on head black; postocular bristles (except uppermost 1) yellow. Antenna yellow; first flagellomere as long as wide, obtuse apically; arista black with basal segment 0.1 times as long as apical segment. Proboscis dark brownish yellow with pale hairs; palpus pale yellow, with pale hairs.

Thorax yellow with yellow pollen; scutellum and metanotum yellow; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but those on pronotum and propleuron yellow; 18-19 irregularly paired acr short and hair-like, 6 distinct dc (of which most posterior one is longest). Legs yellow; all coxae yellow; tarsi brown. Hairs and bristles on legs black; fore coxa with yellow hairs and bristles. Fore tibia without d; mid tibia with 3 ad and 1 pd; hind tibia with 1 ad, 5-6 pd and some irregular v; fore and mid tarsomere 1 much elongated and longer than corresponding tibia; fore tarsomeres 3-5 with short ventral hairs somewhat erect; mid tibia and tarsomeres 1-4 with short ventral hairs erect, sparse, and pale.

Relative length of segments of legs LI 8.2: 8.7: 4.2: 2.6: 1.2: 0.8; LII 12.7: 13.2: 4.2: 2.8: 1.3: 0.8; LIII 18.2: 6.1: 5.7: 3.1: 1.7: 0.8. Wing hyaline; veins black, M1+2 gently bent apically and convergent with R4+5; CuAx ratio 0.4. Squama yellow with pale hairs. Halter yellow, knob brownish yellow.



Figs. 12-13 — *Neurigona xizangensis* sp. nov., male. 12. antenna, lateral view; 13. apex of abdomen, lateral view.

Abdomen yellow with yellow pollen; terga 2-4 each with large black basal spots; hypopygium shiny black. Abdominal segment 5 with black ventral projection. Hairs on abdomen chiefly black. Male genitalia (Fig. 13): Surstylus with dorsal lobe short and wide, and with a small acute process at dorsal corner; ventral lobe long with finger-like apex, basally with 2 thick or thin finger-like projections.

Female. Unknown.

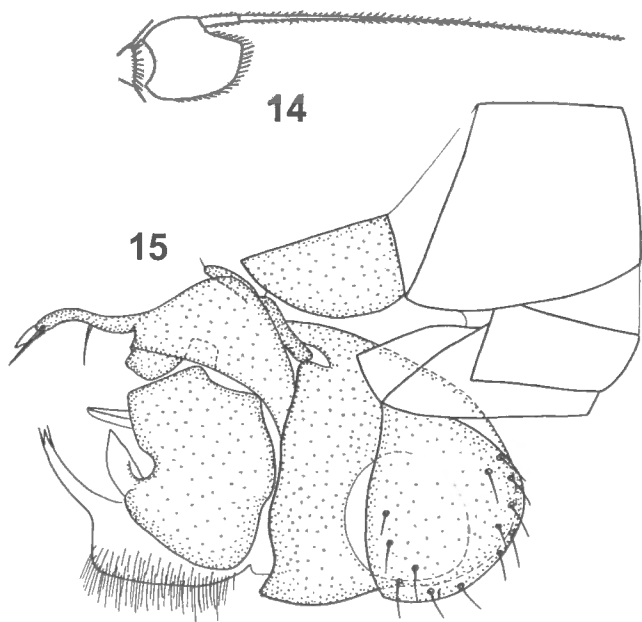
Holotype male, paratype 1 male, Xizang: Bomi (2700 m), 1978. VII. 19, Fasheng Li. Paratype 1 male, Xizang: Bomi (3050 m), 1978. VII. 16, Fasheng Li. (CAU)

Distribution. China (Xizang).

Remarks. This new species is similar to *flavella* NEGROBOV from Russia, but may be separated from the latter by having the fore and mid tarsomere 1 elongated and longer than its corresponding tibia and different dorsal bristles on tibiae (NEGROBOV, 1987).

7. *Neurigona zhejiangensis* sp. nov. (Figs. 14-15)

Diagnosis. Eyes narrowly separated. Mesonotum with a narrow mid-posterior brown spot; scutellum (except posterior margin) and metanotum brown. Mid tibia and tarsus with a row of short erect pale av; mid tarsomere 1 elongated, as long as mid tibia. Abdominal segment 5 with ventral projection.



Figs. 14-15 — *Neurigona zhejiangensis* sp. nov., male. 14. antenna, lateral view; 15. apex of abdomen, lateral view.

Male. Body length 4.9-5.0 mm, wing length 4.0-4.1 mm.

Head metallic green with pale grey pollen; eyes narrowly separated; face narrow, but most narrow medially. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) yellow. Antenna yellow; first flagellomere 1.1 times longer than wide, obtuse apically; arista black with basal segment 0.1 times as long as apical segment. Proboscis yellow with pale hairs; palpus pale yellow, with black hairs.

Thorax yellow with yellow pollen; mesonotum with a narrow mid-posterior brown spot; scutellum (except posterior margin) and metanotum brown; pteropleuron with a small black spot just below wing base. Hairs and bristles on thorax black, but pronotum and propleuron with yellow bristles; 18-19 irregularly paired acr short and hair-like, 5 dc (of which 3 posterior bristles are longer). Legs yellow; all coxae yellow. Hairs and bristles on legs black; fore coxa with short yellow hairs, but apically with black bristles. Fore tibia with 1 ad and 1 pd; mid tibia with 4-5 ad, 2 pd, 3 av (at base) and 1 pv; mid tarsomere 1 with 8 ad; hind tibia with 3 ad and 3 pd; hind tarsomere 1 with 2 v medially. Mid tibia and tarsomeres 1-4 with a row of short erect pale av. Legs simple with mid tarsomere 1 elongated and as long as mid tibia. Relative length of segments of legs LI 6.2: 5.2: 2.7: 1.3: 0.95: 0.7; LII 8.3: 8.3: 3.0: 1.8: 1.2: 0.7; LIII 12.7: 3.75: 4.0: 2.2: 1.4: 0.7. Wing hyaline; veins brownish yellow, M1+2 strongly bent apically in rectangular form and ended at wing margin near R4+5; CuAx ratio 0.6. Squama yellow with pale hairs. Halter yellow.

Abdomen yellow with yellow pollen; terga 2-3 each with wide blackish basal band; tergum 4 wholly blackish, segment 5 blackish with ventral projection; hypopygium shiny blackish. Hairs on abdomen black. Male genitalia (Fig. 15): Surstylus with dorsal lobe short and wide, its apical margin incised with one acute process; ventral lobe with slender and curved apical portion, basally with 2 finger-like projections.

Female. Unknown.

Holotype male, Zhejiang: Baishanzu (550 m), 1993.IX.6, Hong Wu. Paratype: 1 male, Zhejiang: Baishanzu, 1993.VIII.12, Hong Wu. (CAU)

Distribution. China (Zhejiang).

Remarks. This species is very similar to *guangxiensis* sp. nov., but may be separated from the latter by having the mesonotum with narrow mid-posterior area brown, mid tibia and tarsus with a row of short erect pale av.

Subfamily Dolichopodinae

Key to the species of *Pelastoneurus* from China

1. R4+5 and M not thickened basally 2
- R4+5 and M thickened basally *crassinervis* PARENT

2. Apex of hind tibia brownish. Taiwan
 *intactus* BECKER
 Hind tibia wholly yellow. Yunnan, Taiwan
 *bifarius* BECKER

8. *Pelastoneurus bifarius* BECKER
 (Figs. 16-18)

Pelastoneurus bifarius BECKER, 1922. Capita zool. 1(4):
 17. Type locality: Taiwan.

Diagnosis. Antenna yellow; first flagellomere 1.2 times longer than wide, with dorsal surface dark yellow. CuAx ratio 1.3.

Male. Body length 4.0 mm, wing length 4.4 mm.

Head metallic green with pale grey pollen. Face slightly wider than first flagellomere. Hairs and bristles on head black; middle and lower postocular bristles pale. Antenna yellow; first flagellomere 1.2 times longer than wide, obtuse apically, with dorsal surface dark yellow. Proboscis blackish with blackish hairs; palpus yellow with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 6 strong dc, 12-13 acr irregularly paired, short and hair-like; propleuron pale haired, with 1 black bristle on lower part. Legs yellow; fore coxa yellow, mid and hind coxae black; fore and mid tarsi brown to dark brown from tip of tarsomere 1 onward, hind tarsus

wholly brown. Hairs and bristles on legs black; mid and hind coxae with 1 outer bristle; mid and hind femora with 1 preapical bristle. Fore tibia with 2 ad and 2 pd; mid tibia with 3 ad, 2 pd and 1 av; hind tibia with 4 ad, 2 pd and 2 av; hind tarsomere 1 with 1 v at base. Relative length of segments of legs LI 5.8: 2.9: 1.7: 1.2: 0.8: 0.8; LII 9.2: 3.2: 2.9: 2.3: 1.7: 1.1; LIII 9.9: 2.1: 3.7: 2.8: 1.8: 1.1. Wing pale greyish brown with apical and posterior margin paler; veins black; M strongly curved forward toward R4+5 apically, CuAx ratio 1.3. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen. Hairs on abdomen black. Male genitalia (Fig. 18): Epandrium broad, longer than wide; lateral lobe distinctly curved, but the same one on opposite side longer and strongly curved; cercus broad, with narrow base; hypandrium rather thick with thin apex.

Specimen examined. 1 male, Yunnan: Xishuangbanna (850 m), 1958. IX. 2, Yingran ZHANG.

Distribution. China (Yunnan, Taiwan).

BECKER (1922) described this species from Taiwan. Here it is recorded from the mainland of China for the first time.

9. *Ludovicius apicularis* sp. nov.
 (Figs. 19-20)

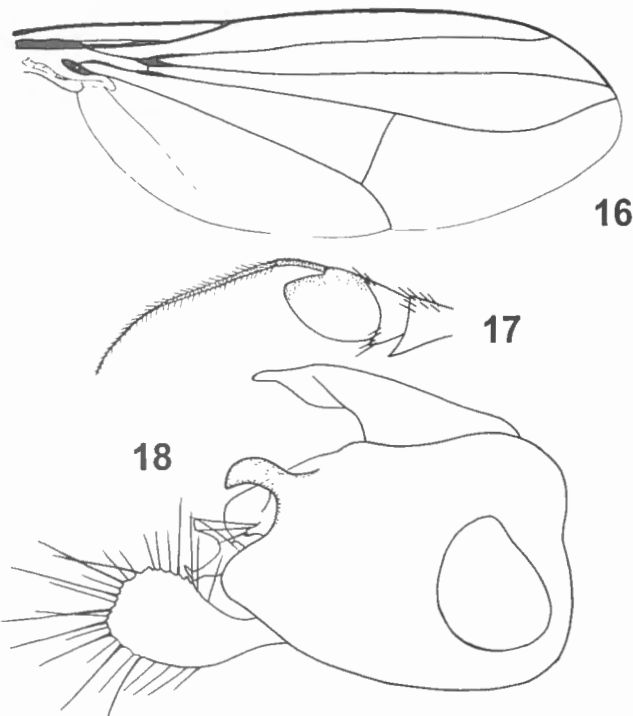
Diagnosis. First flagellomere obtuse apically; arista apical, with swollen apex white. Acr absent.

Male. Body length 4.0 mm, wing length 4.0 mm.

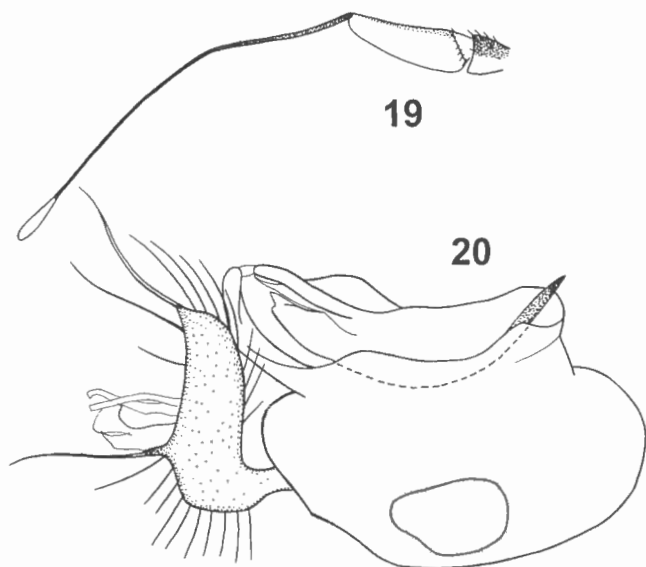
Head metallic green with pale grey pollen. Face distinctly narrower than first flagellomere. Hairs and bristles on head black; middle and lower postocular bristles pale. Antenna yellow, scape and first flagellomere darker dorsally; first flagellomere 2.5 times longer than wide, obtuse apically; arista apical and black, with swollen apex white. Proboscis brownish yellow with blackish hairs; palpus yellow with blackish hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 6 strong dc, acr absent; propleuron pale haired, with 1 pale bristle on lower part. Legs yellow; fore coxa yellow, mid and hind coxae dark brownish yellow; tarsi brown to dark brown from tip of tarsomere 1 onward. Hairs and bristles on legs black, those on coxae wholly pale; mid and hind femora with 1 preapical bristle. Fore tibia with 1 ad and 2 pd; mid tibia with 4 ad, 3 pd and 2 av; hind tibia with 3-4 ad, 5-6 pd and 1 av. Relative length of segments of legs LI 6.0: 3.9: 1.5: 1.3: 1.0: 0.7; LII 9.3: 5.3: 2.1: 1.8: 1.1: 0.8; LIII 11.0: 3.7: 3.0: 1.8: 1.1:?. Wing nearly hyaline; veins blackish; R4+5 and M convergent apically, CuAx ratio 0.45. Squama yellow with pale hairs. Halter yellow.

Abdomen metallic green with pale grey pollen. Hairs on abdomen black. Male genitalia (Fig. 20): Epandrium longer than wide; lateral lobe rather long; cercus elon-



Figs. 16-18 — *Pelastoneurus bifarius* BECKER, male. 16. wing; 17. antenna, lateral view; 18. genitalia, lateral view.



Figs. 19-20 — *Ludovicicus apicilaris* sp. nov., male. 19. antenna, lateral view; 20. genitalia, lateral view.

gated and curved, with narrow base; hypandrium irregularly furcate.

Female. Unknown.

Holotype male, Ningxia: Liupanshan Mountain (2100 m), 1980. VII. 14, Fasheng Li. (CAU)

Distribution. China (Ningxia).

Remarks. This new species is somewhat similar to *dorsalis* YANG from Xizang, but may be separated from the latter by having the arista apical with swollen apex white. In *dorsalis*, the arista is dorsal and wholly black (YANG, 1996).

10. *Ludovicicus biaristatus* sp. nov.
(Figs. 21-22)

Diagnosis. Thorax and abdomen partly yellow. Postocular hairs wholly black. First flagellomere with apico-upper corner much elongated, its apical portion black and arista-like with white swollen tip; arista dorsal.

Male. Body length 3.3 mm, wing length 3.3 mm.

Head metallic green with pale grey pollen. Face narrower than first flagellomere. Hairs and bristles on head black; postocular bristles wholly black. Antenna yellow, first flagellomere with black dorsal margin; first flagellomere with apico-upper corner much elongated, its apical portion black and arista-like with white swollen tip; arista dorsal and black. Proboscis blackish, palpus black, with black hairs.

Thorax metallic green with pale grey pollen; antero-lateral area of mesonotum dark yellow; pleuron dark yellow to yellow except pteropleuron, anterior portion of sternopleuron, and posterior portion of hypopleuron black. Hairs and bristles on thorax black; 6 strong dc, acr absent. Legs yellow; all coxae yellow; tarsi brown to dark brown from tip of tarsomere 1 onward. Hairs and bristles on legs black; mid and hind femora each with 1 preapical bristle. Fore tibia with 1 weak ad and 2 weak pd; mid tibia with 2 ad, 2 pd and 1 av; mid tarsomere 1 with 2 weak v; hind tibia with 2 ad, 3 pd and 1 av; hind tarsomere 1 with 2 strong v. Relative length of segments of legs LI 3.8: 2.4: 1.05: 1.05: 0.8: 0.55; LII 6.2: 3.7: 1.7: 1.4: 1.0: 0.6; LIII 7.2: 2.1: 2.3: 1.6: 1.0: 0.7. Wing slightly tinged with greyish; veins brown; R4+5 and M convergent apically; CuAx ratio 0.4. Squama yellow with black hairs. Halter yellow.

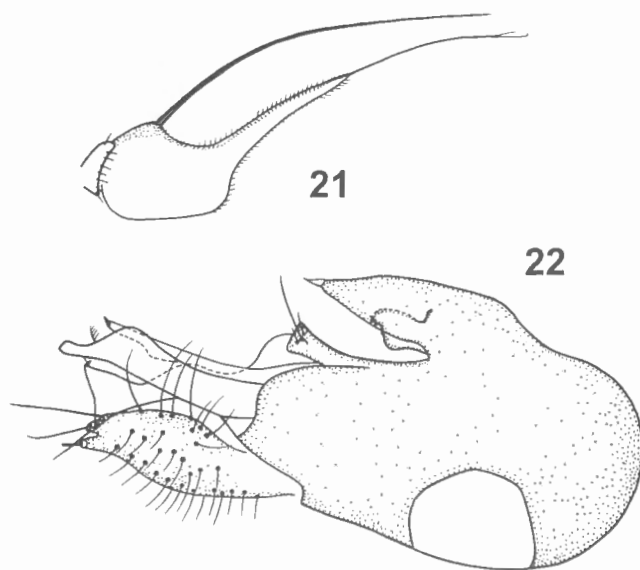
Abdomen metallic green with pale grey pollen; segments 1-3 yellow except posterior margin of terga 2-3 and anterior margin of tergum 3 blackish). Hairs on abdomen black. Male genitalia (Fig. 22): Epandrium longer than wide; lateral lobe distinct and slightly curved; cercus band-like, with distinct apical denticles; hypandrium rather wide with narrow apex.

Female. Unknown.

Holotype male, Henan: Neixiang, 1998. VII. 14, Xueyou Hu. (CAU)

Distribution. China (Henan).

Remarks. This new species is easily distinguished from other known species of the genus by the unique shape of the antenna.



Figs. 21-22 — *Ludovicicus biaristatus* sp. nov., male. 21. antenna (excluding scape), lateral view; 22. genitalia, lateral view.

11. *Ludovicicus neixianganus* sp. nov.
(Figs. 23-24)

Diagnosis. Thorax and abdomen partly yellow. Postocular hairs wholly black. First flagellomere with apico-upper corner somewhat elongated and acute; arista dorsal.

Male. Body length 3.0 mm, wing length 3.6 mm.

Head metallic green with pale grey pollen. Face narrower than first flagellomere. Hairs and bristles on head black; postocular bristles wholly black. Antenna dark yellow, but black dorsally; first flagellomere with apico-upper corner somewhat elongated and acute; arista dorsal and black. Proboscis brownish yellow, palpus black, with black hairs.

Thorax metallic green with pale grey pollen; posterior portion of sternopleuron, and anterior portion of hypopleuron, and metapleuron yellow. Hairs and bristles on thorax black; 6 strong dc, 4-5 acr short and hair-like. Legs yellow; all coxae yellow; tarsi brown to dark brown from tip of tarsomere 1 onward. Hairs and bristles on legs black; mid and hind femora with 1 preapical bristle. Fore tibia with 1 ad and 2 pd; mid tibia with 3 ad, 2 pd and 1 av; mid tarsomere 1 with 3 av; hind tibia with 2 ad, 4-5 pd and 5-6 v; hind tarsomere 1 with 2 strong v. Relative length of segments of legs LI 4.2: 2.8: 1.2: 1.2: 0.9: 0.5; LII 6.7: 3.8: 1.8: 1.7: 1.0: 0.6; LIII 8.2: 2.2: 2.8: 1.8: 1.1: 0.7. Wing slightly tinged with greyish; veins dark brown; R4+5 and M convergent apically; CuAx ratio 0.45. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; terga 1-2 yellow (except posterior margin of tergum 1, middle portion and posterior margin of tergum 2), tergum 3 with a yellow lateral spot; sterna 1-3 yellow. Hairs on abdo-

men black. Male genitalia (Fig. 24): Epandrium distinctly longer than wide; lateral lobe distinct and acute apically; cercus band-like, with distinct apical denticles; hypandrium wide apically, with a long lateral arm.

Female. Unknown.

Holotype male, Henan: Neixiang, 1998. VII. 14, Xueyou HU. (CAU)

Distribution. China (Henan).

Remarks. This new species is somewhat similar to *biaristatus* sp. nov. in the body coloration, but can be easily separated from the latter by the characters of antenna and male genitalia.

Key to species of *Paraclius*
from Chinese mainland

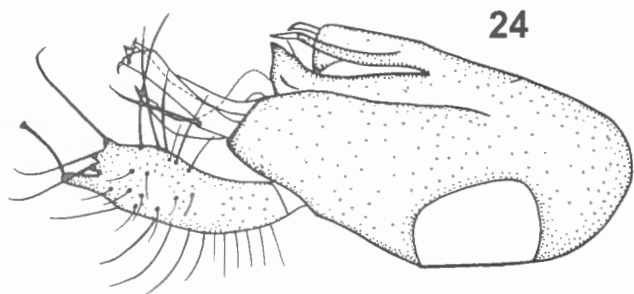
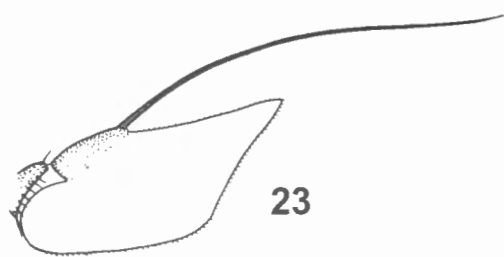
1. Middle and lower postocular hairs yellow; antenna chiefly yellow or wholly black 2
Postocular hairs wholly black; antenna wholly black 5
2. Antenna chiefly yellow 3
Antenna wholly black 4
3. First flagellomere acute apically. Guangxi
..... *basiflavus* YANG
First flagellomere obtuse apically. Zhejiang
..... *sinensis* YANG et LI
4. Scutellum with 4 bristles. Sichuan
..... *stipiatius* YANG sp. nov.
Scutellum with 6 bristles. Hainan, Taiwan
..... *adligatus* BECKER
5. Hind femur with dorsal surface and apex black .. 6
Hind femora wholly yellow. Sichuan
..... *emeiensis* YANG et SAIGUSA
6. First flagellomere acute apically. Zhejiang, Sichuan,
Henan *acutatus* YANG et LI
First flagellomere obtuse apically. Yunnan
..... *yunnanensis* YANG

12. *Paraclius stipiatius* sp. nov.
(Figs. 25-26)

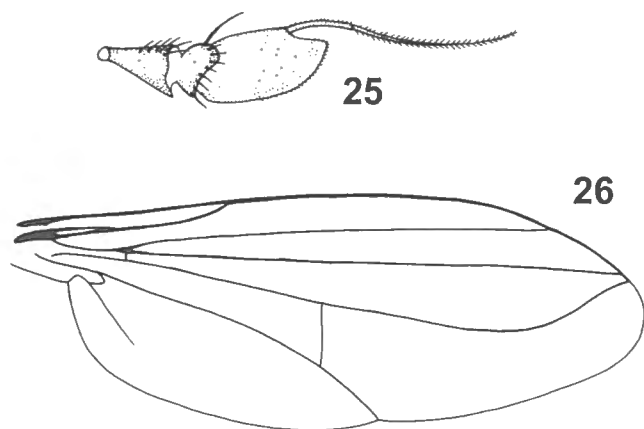
Diagnosis. Antenna wholly black; first flagellomere rather large and distinctly elongated with somewhat acute apex. All coxae yellow; hind femur yellow with black dorsal margin. Hind tarsomere 1 with 1 long v at base. CuAx 0.8.

Male. Body length 4.8 mm, wing length 4.3 mm.

Head metallic green with pale grey pollen; face rather wide, nearly as wide as first flagellomere. Hairs and bristles on head black; middle and lower postocular bristles yellow. Antenna wholly black; first flagellomere large and distinctly elongated (1.7 times longer than



Figs. 23-24 — *Ludovicicus neixianganus* sp. nov., male. 23. antenna (excluding scape), lateral view; 24. genitalia, lateral view.



Figs. 25-26 — *Paraclius stipiatus* sp. nov., male. 25. antenna, lateral view; 26. wing.

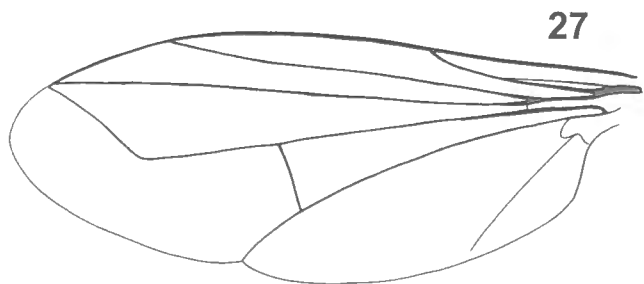
wide), somewhat acute apically; arista black with basal segment 0.4 times as long as apical segment. Proboscis brownish yellow and palpus yellow, with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 6-7 irregularly paired acr short and hair-like, 6 strong dc. Legs yellow; all coxae yellow; hind femur with black dorsal margin, but its apex not distinctly darker; mid and hind tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Fore tibia with 3 ad and 2 pd, without apv; mid tibia with 3 ad, 1 d, 4 pd and 3 av; hind tibia with 4 ad, 4 pd, 7 thin av; hind tarsomere 1 with a long v at base. Relative length of segments of legs LI 4.6: 2.6: 1.0: 0.8: 0.7: 0.75; LII 6.3: 3.5: 2.2: 2.0: 1.3: 1.0; LIII 7.0: 2.9: 3.7: 2.8: 1.9: 1.1. Wing slightly tinged with greyish brown; veins black, M1+2 curved downward and ended near R4+5; CuAx 0.8. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black. Male genitalia (missed during dissection): Cercus rather small, wide basally and narrowing toward apex, obtuse apically, and with long marginal hairs.

Female. Unknown.

Holotype male, Sichuan: Qincheng Mountain, 1998. VIII. 20, Ding YANG. (CAU)



Figs. 27 — *Paraclius adligatus* BECKER., male. 27. wing.

Distribution. China (Sichuan).

Remarks. This species is easily separated from other known species from China by having the first flagellomere rather large and distinctly elongated with somewhat acute apex.

13. *Paraclius adligatus* BECKER (Fig. 27)

Paraclius adligatus BECKER, 1922. *Capita zool.* 1(4): 13. Type locality: Taiwan and Assam (Sylhet).

Diagnosis. Eyes narrowly separated on face. Antenna wholly black. Middle and lower postocular hairs yellow. Scutellum with 6 bristles. Legs black; tibiae (except apex of hind tibia) yellow; fore and mid tarsomere 1 (except tips) yellow.

Specimen examined. 1 male, Hainan: Tongshi (340 m), 1960. III. 25, Xiaofu LI.

Distribution. China (Hainan, Taiwan); Oriental region. This species is recorded from the Chinese mainland for the first time.

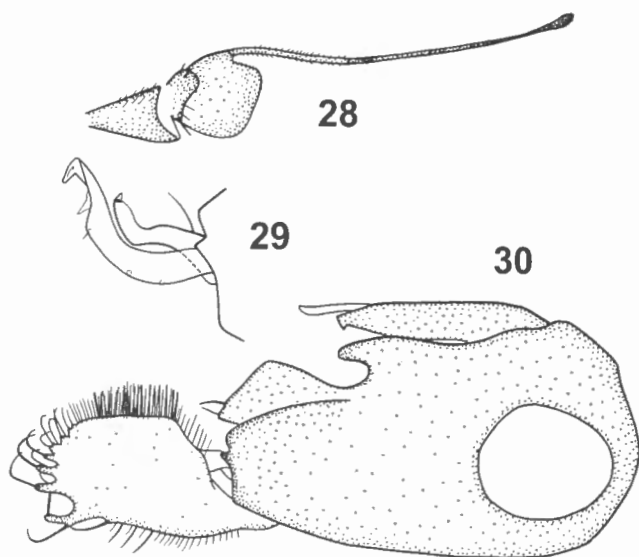
14. *Dolichopus henanus* sp. nov. (Figs. 28-30)

Diagnosis. Arista with swollen apex. Fore tarsus with apex of tarsomere 1 and entire tarsomeres 2-5 flattened, tarsomeres 2-3 rather wide. Hind femur with dense yellow ventral bristles on apical half.

Male. Body length 5.8 mm, wing length 5.3 mm.

Head metallic green with pale grey pollen; face rather wide, slightly narrower than first flagellomere. Hairs and bristles on head black; middle and lower postocular bristles yellow. Antenna wholly black; first flagellomere as long as wide, obtuse apically; arista black with swollen apex. Proboscis black and palpus dark yellow, with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 8 irregularly paired acr short and hair-like, 6 strong dc; scutellum with some pale marginal hairs. Legs yellow; fore coxa yellow with a black spot at antero-upper corner, mid and hind coxae black; fore tarsomere 5 (except narrow base) and mid tarsus from tarsomere 1 onward dark brown to black, apex of hind tibia and entire hind tarsus black. Fore tarsus with apex of tarsomere 1 and entire tarsomeres 2-5 flattened, tarsomeres 2-3 rather wide. Hairs and bristles on legs black; fore coxa with pale hairs on basal half, femora with pale hairs on ventral surface; hind femur with dense yellow ventral bristles on apical half. Fore and mid femora each with 1 preapical bristles. Fore tibia with 2 ad, 2 pd and 2-3 pv, without apv; mid tibia with 4 ad, 2 pd and 1 av; hind tibia



Figs. 28-30 — *Dolichopus henanus* sp. nov., male. 28. antenna, lateral view; 29. apical processes, lateral view; 30. genitalia, lateral view.

with 5 ad, 1 d, 5 pd and 1 av; hind tarsomere 1 with 3 d, 2 l and 5 short v. Hind femora dorso-apically with a somewhat long concavity bearing a row of yellow hairs on its inner margin. Relative length of segments of legs LI 6.9: 4.4: 2.1: 2.0: 1.8: 0.8; LII 9.4: 5.4: 3.0: 2.3: 1.7: 1.0; LIII 9.8: 5.0: 4.8: 2.9: 2.0: 1.0. Wing hyaline; veins black, costal callus punctiform; M1+2 bent without rudimentary M2, somewhat convergent with R4+5; CuAx 0.6. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black. Male genitalia (Fig. 29-30): Epandrium distinctly longer than wide, with wide lateral lobe; cercus nearly quadrate with some finger-like marginal denticles; hypandrium with curved acute tip.

Female. Unknown.

Holotype male, Henan: Xixia, 1998. VII. 18, Xueyou HU. (CAU)

Distribution. China (Henan).

Remarks. This species is easily separated from other known species from China by the peculiar shape of arista and fore tarsus.

15. *Hercostomus (Hercostomus) xixianus* sp. nov.
(Figs. 31-32)

Diagnosis. Postocular hairs wholly black. First flagellomere somewhat elongated with acute apex. Scutellum with yellow apical margin. Metapleuron yellow.

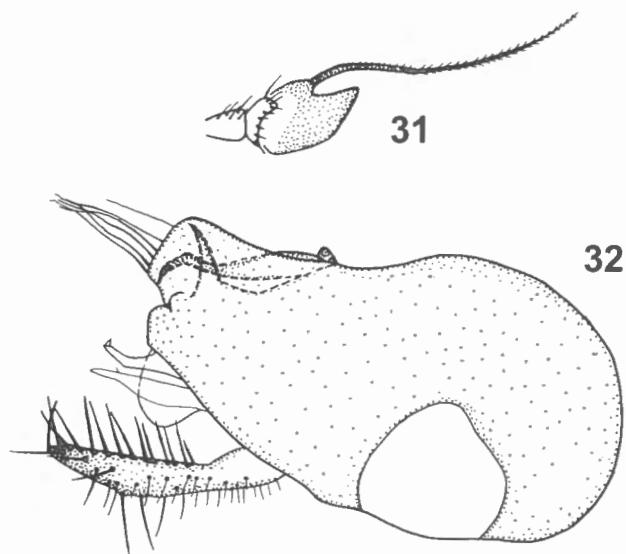
Male. Body length 2.7-3.0 mm, wing length 2.9-3.3 mm.

Head metallic green with pale grey pollen; face slightly narrower than first flagellomere. Hairs and bristles on head black; postocular bristles wholly black. Antenna yellow; first flagellomere black except base, somewhat elongated (1.6 times longer than wide), acute apically; arista black with basal segment 0.6 times as long as apical segment. Proboscis dark brownish yellow and palpus dark brown, with black hairs.

Thorax metallic green with pale grey pollen; scutellum with yellow apical margin.

Hairs and bristles on thorax black; 8-9 irregularly paired acr short and hair-like, 6 strong dc; scutellum with black or pale hairs on dorsal surface and apical margin. Legs yellow; all coxae yellow, mid coxa with a narrow black outer stripe; tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Mid and hind femora each with 1 preapical bristle. Fore tibia with 1 ad and 2 pd, without apv; mid tibia with 3 ad, 2 pd and 1 av; hind tibia with 2 ad, 3-4 pd, 3 thin av; hind tarsomere 1 with 1 v at base. Hind tibia dorso-apically with 1 small curved acute black projection below a bundle of hairs; tarsomere 1 basally with 1 black weak ridge-like projection on inner surface. Relative length of segments of legs LI 3.7: 1.9: 0.9: 0.55: 0.3: 0.3; LII 5.1: 2.6: 1.4: 1.2: 0.7: 0.4; LIII 5.4: 1.7: 2.2: 1.3: 1.0: 0.5. Wing slightly tinged with grey; veins black, R4+5 and M1+2 parallel apically; CuAx 0.55. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; terga 1-2 (except mid-posterior portion) and lateral margins of terga 3-4, sterna 1-4 yellow; hairs black. Male genitalia (Fig. 32): Epandrium much longer than wide, its lateral lobe rather wide with some long hairs; cercus strap-like with some strong bristles; hypandrium invisible in lateral view, with a long lateral arm curved and acute apically.



Figs. 31-32 — *Hercostomus (Hercostomus) xixianus* sp. nov., male. 31. antenna, lateral view; 32. genitalia, lateral view.

Female. Body length 3.3 mm, wing length 3.2 mm. Similar to male.

Holotype male, paratypes 2 males 1 female, Henan: Xixia, 1998. VII. 18-19, Xueyou HU. (CAU & IRSN)

Distribution. China (Henan).

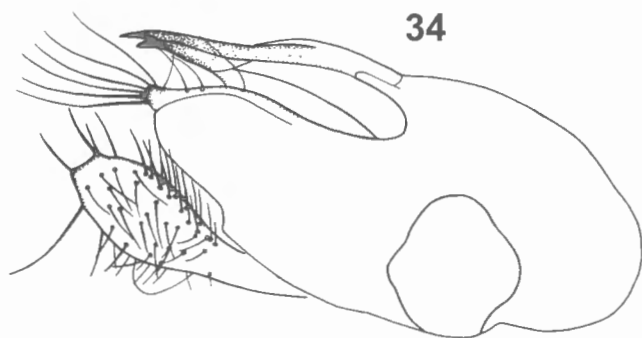
Remarks. This species is very similar to *H. (H.) qingchenganus* YANG from Sichuan in the scutellum with yellow apical margin and with black hairs on dorsal and apical margin, but may be separated from the latter by having a yellow metapleuron. In *qingchenganus*, the metapleuron is metallic green with lower portion somewhat pale (YANG, 1998a).

16. *Hercostomus (Hercostomus) flavimarginatus*
sp. nov.
(Figs. 33-34)

Diagnosis. Postocular hairs wholly black. First flagellomere not distinctly elongated, with somewhat acute apex. Metapleuron yellow. Abdominal terga 1-4 with yellow lateral margin. Lateral lobe on epandrium with some very long hairs.

Male. Body length 3.3 mm, wing length 3.3 mm.

Head metallic green with pale grey pollen; face slightly narrower than first flagellomere. Hairs and bristles on head black; postocular bristles (including ventral hairs) wholly black. Antennal scape and pedicel yellow with black dorsal surface; first flagellomere black except ventero-basal area yellow, not distinctly elongated (1.3 times longer than wide), somewhat acute apically; arista black with basal segment 0.6 times as long as apical segment.



Figs. 33-34 — *Hercostomus (Hercostomus) flavimarginatus* sp. nov., male. 33. antenna (excluding scape), lateral view; 34. genitalia, lateral view.

Proboscis dark yellow and palpus dark brown, with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 7-8 irregularly paired ac short and hair-like, 6 strong dc; scutellum with black or pale hairs on dorsal surface and apical margin. Legs yellow; all coxae yellow, mid coxa with a narrow black outer stripe; tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Mid and hind femora each with 1 preapical bristle. Fore tibia with 1 ad and 2 pd, without apv; mid tibia with 3 ad, 2 pd and 1 av; hind tibia with 3 ad, 3-4 pd, 5-6 thin and 1-2 thick av; hind tarsomere 1 with 1 rather long v at base. Hind tibia dorso-apically with 1 small curved and somewhat acute black projection below a bundle of hairs; tarsomere 1 basally with 1 black acute projection on inner surface. Relative length of segments of legs LI 4.1: 2.3: 1.2: 0.9: 0.7: 0.55; LII 5.8: 3.1: 1.8: 1.5: 1.0: 0.7; LIII 6.3: 2.2: 2.8: 1.8: 1.1: 0.75. Wing slightly tinged with grey; veins black, R4+5 and M1+2 weakly convergent apically; CuAx 0.5. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; terga 1-4 with yellow lateral margin, sterna 1-4 yellow; hairs black. Male genitalia (Fig. 34): Epandrium much longer than wide, its lateral lobe rather narrow with some long hairs; cercus band-like and somewhat sclerotized apically, with some strong bristles; hypandrium with a long lateral arm acute apically.

Female. Unknown.

Holotype male, Sichuan: Qingchengshan, 1998. VIII. 22, Ding YANG. (CAU)

Distribution. China (Sichuan).

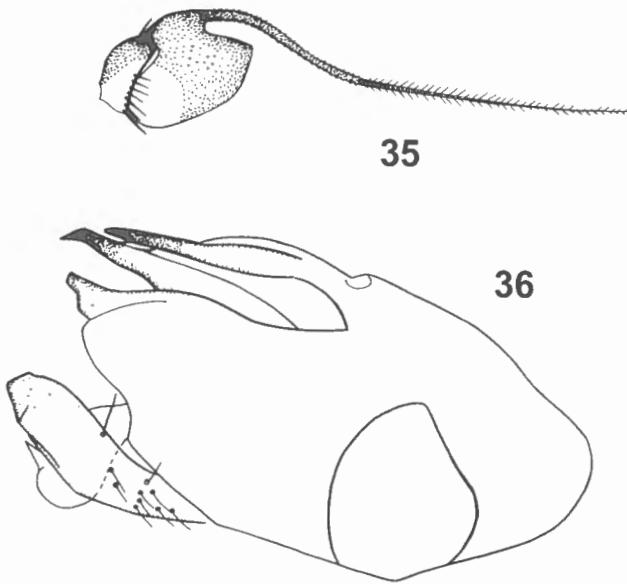
Remarks. This species is somewhat similar to *H. (H.) qingchenganus* YANG from Sichuan, but may be separated from the latter by having the scutellum wholly black and abdominal terga 1-4 with yellow lateral margin (YANG, 1998a).

17. *Hercostomus (Hercostomus) nudiusculus* sp. nov.
(Figs. 35-36)

Diagnosis. Postocular hairs wholly black. First flagellomere not distinctly elongated, with somewhat acute apex. Metapleuron yellow. Abdominal terga 1-4 with dark yellow lateral margin. Cercus slightly sclerotized and bare apically.

Male. Body length 3.7 mm, wing length 3.7 mm.

Head metallic green with pale grey pollen; face slightly narrower than first flagellomere. Hairs and bristles on head black; postocular bristles (including ventral hairs) wholly black. Antennal scape and pedicel yellow with black dorsal surface; first flagellomere black except ventero-basal area yellow, not distinctly elongated (1.3 times



Figs. 35-36 — *Hercostomus (Hercostomus) nudiusculus* sp. nov., male. 35. antenna (excluding scape), lateral view; 36. genitalia, lateral view.

longer than wide), somewhat acute apically; arista black with basal segment 0.6 times as long as apical segment. Proboscis dark brownish yellow and palpus black, with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 10 irregularly paired acr short and hair-like, 6 strong dc; scutellum with black or pale hairs on dorsal surface and apical margin. Legs yellow; all coxae yellow, mid coxa with a narrow black outer stripe; tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Mid and hind femora each with 1 preapical bristle. Fore tibia with 1 ad and 2 pd, without apv; mid tibia with 3 ad, 2 pd and 1 av; hind tibia with 3 ad, 2-3 pd and 2 av; hind tarsomere 1 with 1 rather long v at base. Hind tibia dorso-apically with 1 curved acute black projection below a bundle of hairs; tarsomere 1 basally with 1 black acute projection on inner surface. Relative length of segments of legs LI 4.4: 2.2: 1.2: 0.9: 0.6: 0.5; LII 6.2: 3.1: 1.9: 1.3: 1.0: 0.6; LIII 6.7: 2.1: 2.6: 1.85: 1.2: 0.75. Wing slightly tinged with grey; veins black, R4+5 and M1+2 convergent apically; CuAx 0.5. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; terga 1-4 with dark yellow lateral margin, sterna 1-4 yellow; hairs black. Male genitalia (Fig. 36): Epandrium much longer than wide, its lateral lobe rather narrow with narrowing apex; cercus band-like and slightly sclerotized and bare apically; hypandrium with a long lateral arm acute apically.

Female. Unknown.

Holotype male, Sichuan: Qingchengshan, 1998. VIII. 22, Ding YANG. (CAU)

Distribution. China (Sichuan).

Remarks. This species is very similar to *H.(H.) flavimarginatus* sp. nov., but may be separated from the latter by the lateral lobe on epandrium narrowing apically without very long hairs and cercus bare apically.

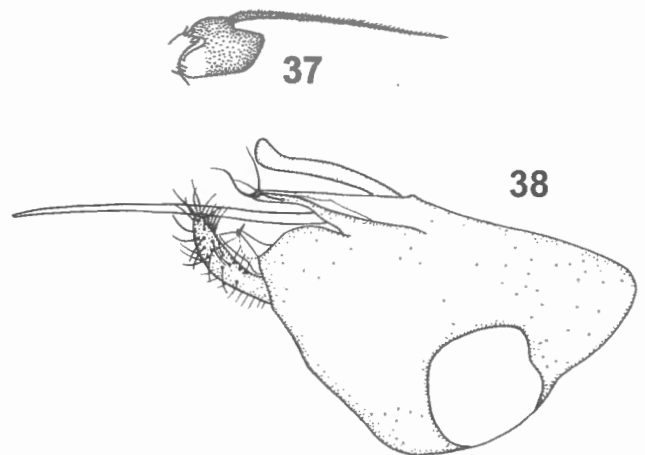
18. *Hercostomus (Hercostomus) binatus* sp. nov.
(Figs. 37-38)

Diagnosis. Antenna chiefly brownish yellow. Postocular hairs wholly black. Mid coxa blackish with dense hairs anteriorly.

Male. Body length 2.8 mm, wing length 2.8 mm.

Head metallic green with pale grey pollen; face slightly narrower than first flagellomere. Hairs and bristles on head black; postocular bristles (including ventral hairs) wholly black. Antenna brownish yellow; first flagellomere blackish except ventero-basal area pale brownish yellow, not distinctly elongated (1.3 times longer than wide), obtuse apically; arista black with basal segment 0.4 times as long as apical segment. Proboscis brownish, palpus black, with black hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 5-6 irregularly paired acr short and hair-like, 6 strong dc. Legs yellow; fore and hind coxae yellow, mid coxa blackish with dense hairs anteriorly; tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Mid and hind femora each with a preapical bristle. Fore tibia with 1 short pd, without apv; mid tibia with 2 ad, 2 pd and 1 av; hind tibia with 2 ad and 3 pd. Relative length of segments of legs LI 2.9: 1.3: 0.7: 0.6: 0.3: 0.3; LII 4.1: 2.0: 1.2: 1.0: 0.7: 0.4; LIII 4.6: 1.2: 1.9: 1.2: 0.85: 0.5. Wing slightly tinged with grey; veins blackish, R4+5 and M1+2 nearly parallel apically;



Figs. 37-38 — *Hercostomus (Hercostomus) binatus* sp. nov., male. 37. antenna (excluding scape), lateral view; 38. genitalia, lateral view.

CuAx 0.5. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black. Male genitalia (Fig. 38): Epandrium widest medially, with slender lateral lobe; cercus strap-like; hypandrium curved apically, with a long lateral arm.

Female. Unknown.

Holotype male, Henan: Neixiang, 1998. VII. 14, Xueyou Hu. (CAU)

Distribution. China (Henan).

Remarks. This species is similar to *H.(H.) shennongjiensis* YANG from Hubei, but may be separated from the latter by having the antenna chiefly brownish yellow and fore and mid coxae yellow. In *shennongjiensis*, the antenna and all coxae are black (YANG, 1997).

19. *Hercostomus (Hercostomus) henanus* sp. nov.
(Figs. 39-40)

Diagnosis. Antenna rather large and entirely black. Postocular hairs wholly black. Lateral portion or margin of terga 1-3 dark yellow to yellow.

Male. Body length 4.3 mm, wing length 4.7 mm.

Head metallic green with pale grey pollen; face distinctly narrower than first flagellomere. Hairs and bristles on head black; postocular bristles (including ventral hairs) wholly black. Antenna rather large and entirely

black; first flagellomere elongated (1.5 times longer than wide), obtuse apically; arista black with basal segment 0.7 times as long as apical segment. Proboscis brown and palpus dark brown, with black hairs.

Thorax metallic green with pale grey pollen; metapleuron yellow. Hairs and bristles on thorax black; 8-9 irregularly paired acr short and hair-like, 6 strong dc. Legs yellow; all coxae yellow; tarsi from tip of tarsomere 1 onward brown to dark brown. Hairs and bristles on legs black. Mid and hind femora each with a preapical bristle. Fore tibia with 1 ad and 2 pd, without apv; mid tibia with 4 ad, 2 pd and 2 av; hind tibia with 4 ad, 4 pd and 3-4 av; hind tarsomere 1 with 3 v. Relative length of segments of legs LI 4.9: 2.9: 1.7: 1.2: 0.8: 0.75; LII 7.3: 3.9: 2.2: 1.8: 1.2: 0.8; LIII 8.4: 2.7: 3.6: 2.1: 1.25: 0.9. Wing tinged with grey; veins black, R4+5 and M1+2 convergent apically; CuAx 0.65. Squama yellow with black hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; lateral part of terga 1-2 and lateral margin of tergum 3 dark yellow to yellow; hairs black. Male genitalia (Fig. 40): Epandrium longer than wide, its lateral lobe thick basally and acute apically; cercus band-like with a black marginal spine directed inward; hypandrium divided, with a furcate basal spine.

Female. Unknown.

Holotype male, Henan: Neixiang, 1998. VII. 14, Xueyou Hu. (CAU)

Distribution. China (Henan).

Remarks. This species is similar to *H.(H.) spiniger* YANG from Xizang, but may be separated from the latter by having the arista with basal segment distinctly shorter than apical segment. In *spiniger*, the basal segment of arista is as long as its apical segment (YANG, 1997).

Subfamily Hydrophorinae

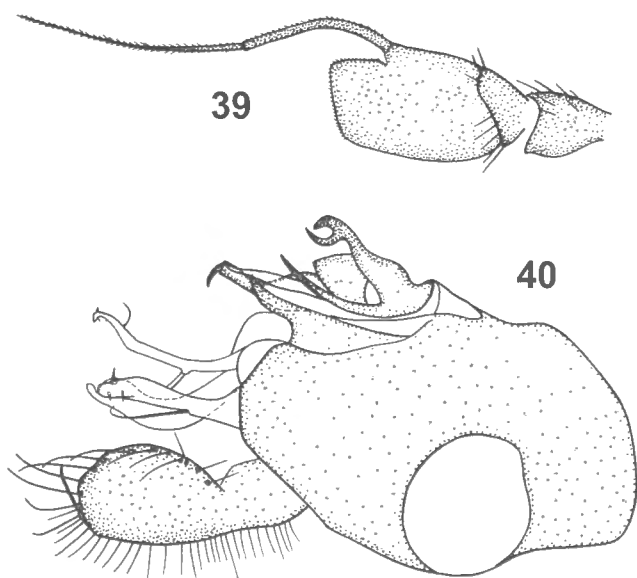
20. *Diostracus henanus* sp. nov.
(Figs. 41-44)

Diagnosis. Arista dorsal. Palpus yellow. 5 dc, 1 npl. Fore tarsomere 1 distinctly thickened. Crossvein m-cu strongly bent.

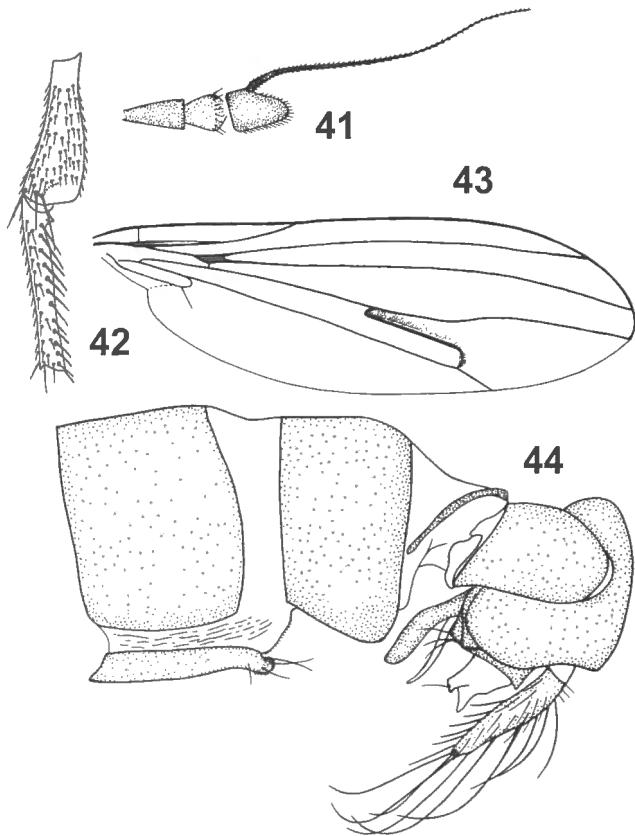
Male. Body length 5.5 mm, wing length 4.9 mm.

Head metallic green with pale grey pollen. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) pale. Antenna blackish; first flagellomere 1.3 times longer than wide, obtuse apically; arista very long and black.

Proboscis brown with pale hairs; palpus longer than wide and lobe-like, yellow with black hairs.



Figs. 39-40 — *Hercostomus (Hercostomus) henanus* sp. nov., male. 39. antenna, lateral view; 40. genitalia, lateral view.



Figs. 41-44 — *Diostracus henanus* sp. nov., male. 41. antenna, lateral view; 42. fore tarsomeres 1-2, lateral view; 43. wing; 44. apical portion of abdomen, lateral view.

Thorax metallic green with pale grey pollen; mesonotum with a central brown longitudinal band. Hairs and bristles on thorax black; acr absent, 5 strong dc, su absent, 1 npl (anterior npl absent); scutellum with 2 strong bristles; propleuron pale haired, with a pale bristle on lower portion. Legs black; trochanters and knees dark yellow. Hairs and bristles on legs black; coxae with pale hairs, fore coxa with dense hairs on anterior surface; femora with pale ventral hairs, mid femur with some long ventral hairs on basal half. Fore femur with a outer lateral bristle at base; mid and hind femora each with 1 preapical bristle. Fore tibia with 2-3 ad, 1-2 pd and 3 pv; mid tibia with 4 ad, 2-3 pd and 1 av; hind tibia with 4 ad, 3 pd and 3 av. Fore tarsomere 1 shorter than tarsomere 2, distinctly thickened. Relative length of segments of legs LI 5.3: 1.5: 1.85: 1.3: 0.85: 0.7; LII 8.2: 4.1: 1.35: 1.1: 0.75: 0.8; LIII 9.2: 3.9: 2.5: 1.8: 1.0: 0.9. Wing tinged with grey; veins blackish, R4+5 and M1+2 somewhat convergent apically, cell R4+5 widest medially (behind m-cu), m-cu strongly bent. Squama yellow with pale hairs. Halter dark yellow.

Abdomen metallic green with pale grey pollen; dorsum with pale and black hairs, venter with pale hairs. Male genitalia (Fig. 44): Sternum 4 with a lateral projection very short and somewhat rounded; epandrium nearly as

long as wide, widest apically; cercus strap-like with some very long marginal hairs; hypandrium curved, bifurcate apically.

Female. Unknown.

Holotype male, Henan: Neixiang, 1998. VII. 14, Xueyou HU. (CAU)

Distribution. China (Henan).

Remarks. This species is somewhat similar to *emeiensis* YANG from Sichuan, but may be separated from the latter by having 5 dc and fore tarsomere 1 distinctly thickened (YANG, 1998b).

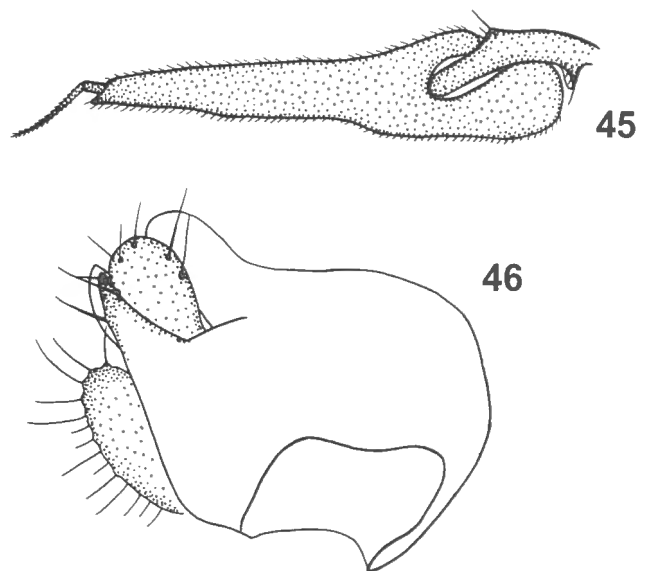
Subfamily Sympycninae

21. *Syntormon xinjiangensis* sp. nov. (Figs. 45-46)

Diagnosis. First flagellomere much elongated with very short arista. Fore coxa yellow, mid and hind coxae black. Hind tibia with a row of long pv; hind tarsomere 1 with 1 v and 1 pv at base.

Male. Body length 2.7 mm, wing length 3.3 mm.

Head metallic green with pale grey pollen; face with white pollen. Eyes narrowly separated. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) pale. Antenna black; first flagellomere much elongated (4.2 times longer than wide); arista very short (nearly as long as 1/5 of first flagellomere),



Figs. 45-46 — *Syntormon xinjiangensis* sp. nov., male. 45. antenna (excluding scape), inner lateral view; 46. genitalia, lateral view.

black. Proboscis black with black hairs; palpus black with pale hairs.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 13 irregularly uniserial acr, short and hair-like; 6 strong dc; scutellum with 2 black strong apical bristles, 2 pale apical hairs, 2 black hair-like lateral bristles.

Legs yellow; fore coxa yellow, mid and hind coxae black; fore and mid tarsi from tip of tarsomere 1 onward dark brown, hind tarsus dark brown. Hairs and bristles on legs black; coxae with pale hairs, fore coxa with pale bristles, mid coxa apically with black hairs and bristles, hind coxa with 1 black outer bristle. Mid tibia with 3 ad and 1 pd; hind tibia with 2-3 pd, 2 av and a row of 13-14 long pv. Fore tarsomere 1 with 2 v; hind tarsomere 1 with 1 v and 1 pv at base. Relative length of segments of legs LI 3.3: 1.85: 0.85: 0.7: 0.35: 0.4; LII 5.0: 2.2: 0.9: 0.7: 0.4: 0.6; LIII 6.0: 1.3: 1.3:?:?:?. Wing hyaline; veins black, R4+5 and M1+2 weakly convergent apically, CuAx ratio 0.75. Squama yellow with pale hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black, terga 1-3 with pale lateral hairs. Male genitalia (Fig. 46): Epandrium somewhat quadrate, cleft apically with somewhat acute dorsal lobe and wide ventral lobe; hypandrium rather wide and curved; cercus with weak marginal denticles.

Female. Unknown.

Holotype male, Xinjiang: Tomort, 1977. VI. 22, Yinheng HAN. (CAU)

Distribution. China (Xinjiang).

Remarks. This species is similar to *violovitshi* NEGROBOV from Russia, but may be separated from the latter by having the hind femur wholly yellow and hind tarsomere 1 with 1 v and 1 pv at base (NEGROBOV, 1975).

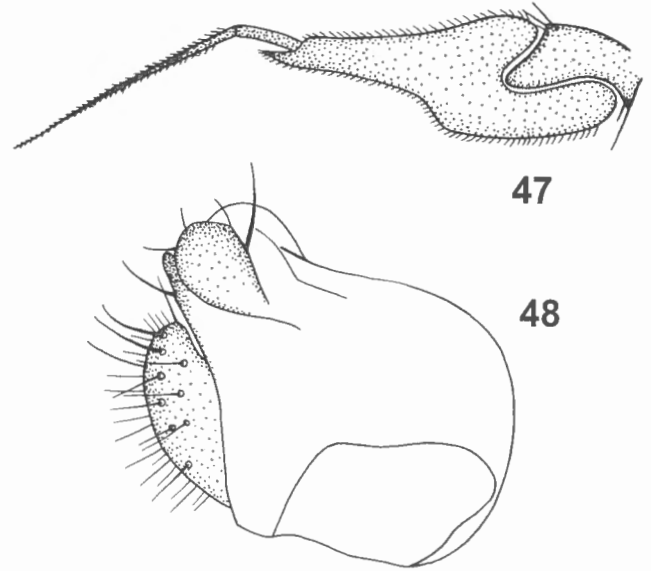
22. *Syntormon xizangensis* sp. nov. (Figs. 47-48)

Diagnosis. First flagellomere distinctly elongated with narrow apical portion. All coxae black except fore coxa blackish apically. Apex of hind femur black. Hind tibia with a row of long pv.

Male. Body length 2.5 mm, wing length 3.3 mm.

Head metallic green with pale grey pollen; face with dense white pollen. Eyes distinctly separated. Hairs and bristles on head black; middle and lower postocular bristles (including ventral hairs) pale. Antenna black; first flagellomere distinctly elongated (3.0 times longer than wide); arista 0.85 times as long as first flagellomere, black. Proboscis black with black hairs; palpus black with pale hairs.

Thorax metallic green with pale grey pollen. Hairs and



Figs. 47-48 — *Syntormon xizangensis* sp. nov., male. 47. antenna (excluding scape), inner lateral view; 48. genitalia, lateral view.

bristles on thorax black; 6-7 nearly biserial acr short and hair-like, 6 strong dc; scutellum with 2 strong apical bristles and some marginal hairs. Legs dark yellow; all coxae black except fore coxa blackish apically; apex of hind femur black; tarsi black. Hairs and bristles on legs black; fore coxa with pale hairs, mid coxa with pale hairs but apically with chiefly black hairs, hind coxa with 1 black outer bristle. Fore tibia with 1 long pv at base; mid tibia with 3 ad; hind tibia with 1 ad, 4 pd, 1 av and a row of 12-13 long pv. Fore tarsomere 1 with 2 v; mid tarsomere 1 with 5 v. Relative length of segments of legs LI 3.2: 1.65: 0.8: 0.55: 0.4: 0.4; LII 4.8: 1.9: 0.8: 0.7: 0.4: 0.4; LIII 5.8: 1.3: 1.2: 0.8: 0.6: 0.4. Wing hyaline; veins black, R4+5 and M1+2 weakly convergent apically, CuAx ratio 0.65. Squama yellow with pale hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black, terga 1-2 with pale lateral hairs. Male genitalia (Fig. 48): Epandrium somewhat quadrate, cleft apically with finger-like dorsal lobe and wide ventral lobe; hypandrium rather wide and curved; cercus band-like.

Female. Unknown.

Holotype male, Xizang: Chaya, 1976.VIII.16, Yinheng HAN. (CAU)

Distribution. China (Xizang).

Remarks. This species is similar to *ama* SMITH from Nepal, but may be separated from the latter by having the hind tibia not darker apically with a row of long pv and squama with pale hairs (SMITH, 1964).

Subfamily Sciapodinae

23. *Plagiozopelma pubescens* sp. nov.
(Fig. 49)

Diagnosis. Antennal scape and pedicel blackish to black, first flagellomere dark yellow and distinctly elongated. Fore and mid coxae blackish, hind coxa yellow. Fore tarsomeres 2-3 flattened laterally with long dorsal hairs.

Male. Body length 5.3-6.0 mm, wing length 5.5-6.3 mm.

Head metallic green with pale grey pollen; pollen on frons distinct; vertex distinctly excavated. Hairs and bristles on head black; middle and lower postocular bristles pale; frons with 1 short pale anterior hair on postero-lateral slope; gena with 4 yellow spine-like bristles. Antenna blackish to black; first flagellomere dark yellow and distinctly elongated (3.5 times longer than wide); scape vase-like; arista apical, long and black. Proboscis yellow with pale hairs; palpus yellow with pale hairs and 2 long black apical bristles.

Thorax metallic green with pale grey pollen. Hairs and bristles on thorax black; 2-3 irregularly paired ac strong, 2 strong posterior dc; scutellum with 2 strong apical bristles, 2 lateral bristles very short and hair-like. Legs yellow; fore and mid coxae blackish, hind coxa yellow; tarsomeres 2-5 dark brown. Hairs and bristles on legs black; coxae with pale hairs and bristles, fore coxa with 8 longer spine-like outer bristles and 9 short inner spine-like inner bristles; mid and hind coxae with 1 outer bristle; femora with pale ventral hairs on basal half. Mid tibia with 2 long ad and 2 short pd; hind tibia with 8-9 d and 8-9 v. Fore tarsomeres 2-3 flattened laterally, with long dorsal hairs. Relative length of segments of legs LI 7.6: 6.6: 2.0: 1.2: 0.8: 0.35; LII 11.7: 7.8: 2.7: 2.4: 0.85: 0.35; LIII 14.2: 6.2: 3.0: 1.8: 0.9: 0.7. Wing hyaline;

veins blackish, M1 curved forward and convergent with R4+5 apically, m-cu slightly bent. Squama yellow with blackish hairs. Halter yellow.

Abdomen metallic green with pale grey pollen; hairs black, terga 1-2 with pale lateral hairs. Male genitalia (Fig. 49): Epandrium nearly as long as wide, widest apically; surstylus large and distinctly concave, with a long finger-like projection at base (which has three bristles); cercus furcate basally.

Female. Unknown.

Holotype male, paratypes 2 males, Yunnan: Mangshi, 1955. V. 18, Xinchang YANG. (CAU & IRSN)

Distribution. China (Yunnan).

Remarks. This species is somewhat similar to *satoi* YANG from Guangxi, but may be separated from the latter by having the dark scape and pedicel and modified fore tarsus. In *satoi*, the antenna is yellow; fore tarsus normal (YANG, 1995).

24. *Plagiozopelma flavipodex* (BECKER)

Chrysosoma flavipodex BECKER, 1922. *Capita Zool.* 1(4): 156. Type locality: Papua New Guinea.

Diagnosis. Antenna yellow; first flagellomere conical; arista apical, nearly as long as 2/3 of body, with apical flag spatulate (which is black with pale base). Metapleuron (except short upper portion) yellow. Lateral scutellar bristles absent. Legs yellow. Crossvein m-cu straight.

Specimens examined. 2 males 1 female, Yunnan: Jinping (370-400 m), 1956. IV. 18-24, Keren HUANG.

Distribution. China (Yunnan); Nepal, Thailand, Indonesia, Philippines, Papua New Guinea, Australia. This species is re-described by BICKEL (1994).

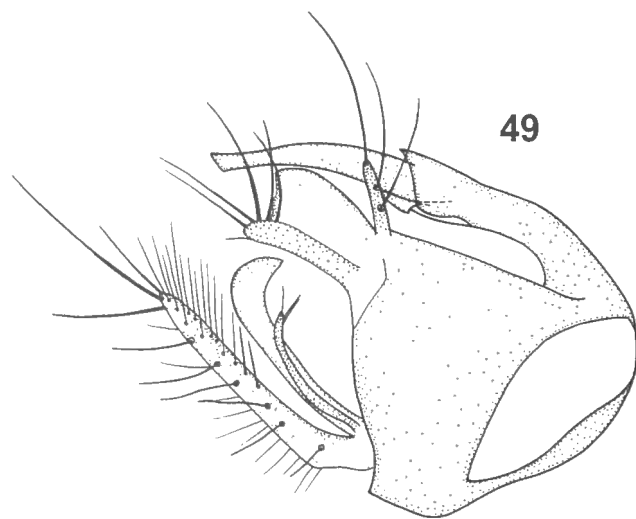


Fig. 49 — *Plagiozopelma pubescens* sp. nov., male. 49. genitalia, lateral view.

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