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## Research article

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# Four new species of *Tipula* (*Sinotipula*) Alexander (Diptera, Tipulidae) from China and a new replacement name in *Tipula* (*Vestiplex*) Bezzi, 1924

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**Abstract.** Fourteen species of the subgenus *Sinotipula* (Diptera, Tipulidae) were previously known to occur in China. Here four species are described and illustrated as new to science: *Tipula* (*Sinotipula*) *drolma* sp. nov., *T. (S.) forcipicauda* sp. nov., *T. (S.) heminga* sp. nov. and *T. (S.) longiloba* sp. nov. The following three species are redescribed: *T. (S.) exquisita* Alexander, 1935, *T. (S.) hobsoni* Edwards, 1928 and *T. (S.) wardi* Edwards, 1928, and a key to the species of *Tipula* (*Sinotipula*) from China is presented. We also give a new replacement name for *Tipula* (*Vestiplex*) *bucera* Yang, Li, Pan, Liu & Yang, 2021, i.e., *T. (V.) curvicornis* nom. nov.

**Keywords.** Crane flies, redescription, Sichuan, Tibet, Tipulinae.

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## Introduction

The subgenus *Sinotipula* was erected by Alexander (1935) for the species *Tipula exquisita* Alexander, 1935. It currently includes 64 known species and subspecies worldwide, distributed in the Oriental (31 taxa) and the Nearctic (20 taxa) Realms (Oosterbroek 2022). Adults of this subgenus are frequently recorded in or near canyons with swift streams, and Gelhaus (2002) recorded numerous larvae of *T. (S.) commiscibilis* Doane, 1912 under submerged rocks in a swift stream of the western United States. To date, 14 species are known from China, recorded mainly from western Sichuan and the Himalayas.

Subgenus *Sinotipula* is characterized by the following features: usually grey and pale brown variegated wings; cell m usually with small dark or pale spots at posterior margin; discal cell usually wide, longer than petiole of cell m<sub>1</sub>; claws with a tooth in male; gonocoxite and sternite 9 virtually fused; tergite 9 large and tumid; ventral surface of tergite 9 with complex sclerotized armature in some species; outer gonostylus large and complex (Alexander 1935).

In this paper, four new species are added to the fauna of China, and descriptions and illustrations of three previously known species are provided to improve the recognition of these taxa. A key to the species of *Sinotipula* in China is presented.

## Material and methods

The specimens were studied and illustrated with an Olympus SZ61 stereo microscope. Details of coloration were checked on dried specimens, while some specimens were preserved in alcohol (C<sub>2</sub>H<sub>5</sub>OH). Genitalic preparations of males were made by immersion in a heated lactic acid solution (C<sub>3</sub>H<sub>6</sub>O<sub>3</sub> >85%, 95–97°C) for 4–6 minutes and cooled down to room temperature. After examination, genitalia were transferred to fresh glycerine (C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>) and stored in a microvial attached to the specimen. Type specimens are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing. All pictures were adjusted and assembled into plates with Adobe Photoshop 2022. The morphological terminology mostly follows Cumming & Wood (2017) and de Jong (2017).

## Institutional acronyms

BMNH = The Natural History Museum, London, UK  
CAU = China Agricultural University, Beijing, China  
USNM = National Museum of Natural History, Washington DC, USA

## Textual research on place names in Sichuan-Tibet (documented name, Chinese Pinyin and Chinese)

Toll and References: Baidu Map, Google Map, Graham & Wetmore (2006).

Yin-Kuan-Tsai = Yingguanzhai = 营官寨, located in present-day Ganzi Prefecture, Sichuan Province  
Yu-Long-Gong = near Longtougou = 康定龙头沟附近, in present-day Kangding County, Sichuan Prov.  
Zya-Ha Pass = north Yulongxi Canyon = 玉龙西的北部峡谷, located in present-day Ganzi Prefecture, Sichuan Province  
Tang-Gu = Tanggu = 汤古镇, located in present-day Jiulong County, Sichuan Province  
Yien-Long-Shien = near Sanyanlong Township = 三岩龙乡附近, located in present-day Jiulong County, Sichuan Province  
Dushong La = Duoxionglā = 多雄拉, located in present-day Linzhi County, Xizang Autonomous Region

## Morphological abbreviations

adm = adminiculum  
an lb = anal lobe  
bk = beak  
gc = gonocoxite  
ig = inner gonostylus  
l bk = lower beak  
o b l = outer basal lobe  
og = outer gonostylus  
st 9 = sternite nine  
tg 9 = tergite nine  
tg 10 = tergite ten

## Results

Class Insecta Linnaeus, 1758  
 Order Diptera Linnaeus, 1758  
 Family Tipulidae Latreille, 1802  
 Subfamily Tipulinae Kertész, 1902  
 Genus *Tipula* Linnaeus, 1758

Subgenus *Sinotipula* Alexander, 1935

### Key to species of *Sinotipula* from China (males)

1. Posterior margin of tergite 9 with a pair of triangular projections (Fig. 60) .....2  
 – Posterior margin of tergite 9 without triangular projections .....4
2. Sternite 9 with a pair of projections (Fig. 55) .....3  
 – Sternite 9 without projections .....*T. (S.) trilobata* Edwards, 1928
3. Cell  $r_5$  with a long white spot (Fig. 57); outer gonostylus with long lobes (Fig. 63) .....  
 .....*T. (S.) longiloba* sp. nov.  
 – Cell  $r_5$  with a small white spot; outer gonostylus without long lobes .....  
 .....*T. (S.) thibetana* de Meijere, 1904
4. Posterior margin of tergite 9 with a large toothed plate (Fig. 21); outer gonostylus approxi-  
 mately boat-shaped, inner gonostylus with small, sharp beak .....5  
 – Posterior margin of tergite 9 without toothed plate; outer gonostylus not boat-shaped or inner  
 gonostylus without small, sharp beak .....7
5. Lower part of lower beak of inner gonostylus without protuberance; white spot of cell r-m  
 small .....*T. (S.) gregoryi* Edwards, 1928  
 – Lower part of lower beak of inner gonostylus with protuberance (Fig. 24); white spot of cell  
 r-m large .....6
6. Protuberance of lower part of lower beak of inner gonostylus long; cell  $r_4$  without a V-shaped  
 white spot .....*T. (S.) exquisita* Alexander, 1935  
 – Protuberance of lower part of lower beak of inner gonostylus short; cell  $r_4$  with a V-shaped  
 white spot .....*T. (S.) shennongana* Yang & Yang, 1992
7. Hypopygium extremely swollen; posterior margin of tergite 9 with stout projections .....8  
 – Hypopygium normal or slightly swollen; posterior margin of tergite 9 without stout projections  
 .....9
8. Posterior margin of tergite 9 with one pair of stout projections; upper margin of outer  
 gonostylus with a large concavity (Fig. 11) .....*T. (S.) drolma* sp. nov.  
 – Posterior margin of tergite 9 with two pairs of stout projections; upper margin of outer  
 gonostylus without large concavity .....*T. (S.) heminga* sp. nov.
9. Outer gonostylus without projections or lobes; cell  $m_1$  with a white V-shaped spot .....  
 .....*T. (S.) persplendens* Alexander, 1935  
 – Outer gonostylus with projections or lobes; cell  $m_1$  without a white V-shaped spot .....10
10. Posterior margin of tergite 9 with stubby hairs .....11  
 – Posterior margin of tergite 9 without stubby hairs .....13

11. Body brown; outer gonostylus rod-shaped, slender .....*T. (S.) gracilirostris* Alexander, 1938  
– Body grey; outer gonostylus dichotomous, wide .....12
12. Flagellar segments black; concavity of outer gonostylus U-shaped ....*T. (S.) bodpa* Edwards, 1928  
– Flagellar segments brownish yellow; concavity of outer gonostylus V-shaped .....  
.....*T. (S.) griseipennis* Brunetti, 1912
13. Tooth-like protrusions of posterior margin of tergite 9 extended medially (Fig. 71); outer gonostylus with a large concavity .....*T. (S.) wardi* Edwards, 1928  
– Tooth-like protrusions of posterior margin of tergite 9 not extended; outer gonostylus without a large concavity .....14
14. Tooth-like protrusions of posterior margin of tergite 9 large and thick; posterior margin of cell  $m_1$ – $m_4$  with many large white spots .....*T. (S.) gloriosa* Alexander, 1935  
– Tooth-like protrusions of posterior margin of tergite 9 small and thin; posterior margin of cell  $m$  with many tiny white or black spots .....15
15. Sternite 9 without projections; outer gonostylus rod-shaped .....*T. (S.) hingstoni* Edwards, 1928  
– Sternite 9 with projections; outer gonostylus approximately navicular .....16
16. Ventral surface of tergite 9 with teeth; inner gonostylus with a small finger-like protrusion .....  
.....*T. (S.) hobsoni* Edwards, 1928  
– Ventral surface of tergite 9 without tooth; inner gonostylus without a finger-like protrusion .....  
.....*T. (S.) forcipicauda* sp. nov.

Note: *T. (S.) waltoni* Edwards, 1928, only described for the female, is not listed in the key.

*Tipula (Sinotipula) drolma* sp. nov.

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Figs 1–13

**Chinese name**

白度母华大蚊

**Diagnosis**

Prescutum almost wholly reddish brown; pleuron with a reddish brown stripe extended from head to upper part of anatergite. Posterior margin of tergite 9 flattish, with a pair of robust finger-like protrusions curved downward; adminiculum medially with a pair of slender protrusions; caudal end of outer gonostylus with an extended hook-like protrusion.

**Etymology**

The species is named after the name of White Tara in Tibetan Buddhism, which represents rescue and longevity. ‘Drolma’ is the Latin transliteration of a Tibetan phrase, and the Chinese name is ‘白度母’. Corresponding to its related species, ‘*T. (S.) krishna*’, krishna in Hinduism represents protection and love, and its Chinese name is ‘黑天’; the literal meaning of the Chinese names corresponds to the color of their gonostylus.

**Material examined**

**Holotype**

CHINA • ♂; Xizang, Yadong County, Qing Dynasty Customs Site; 27°25'11" N, 88°55'51" E; 3041 m a.s.l.; 1 Aug. 2020; Qicheng Yang leg.; light trap; CAU.

### Paratypes

CHINA • 1 ♂ (wings with breakage); Xizang, Yadong County, Qing Dynasty Customs Site; 27°25'20" N, 88°55'13" E; 3137 m a.s.l.; 4 Aug. 2020; Yucheng Zheng leg.; light trap; CAU • 1 ♀; same collection data as for holotype; CAU.

### Description

#### Male

MEASUREMENTS. Body length 23.5–24.2 mm, wing length 29.0–30.0 mm, antenna length 4.0–4.6 mm (n = 2).

HEAD (Figs 1, 3). Mainly reddish brown velvety. Occiput brown with reddish brown mid-longitudinal stripe extended to frontal tubercle. Rostrum and nasus reddish brown. Setae on head black. Frontal tubercle, vertex and narrow dorsal parts of rostrum and nasus with white pruinescence, pruinescence of vertex distinct. Antennal scape brown, pedicel and flagellar segments dark yellow, except flagellar segment 11 black, flagellar segments 3–10 slightly dark at base. Proboscis reddish brown, black at outer margin. Palpal segment 1 pale brown, segments 2 and 3 yellow, and segment 4 black.

THORAX (Figs 1, 3). Mainly pale brown to reddish brown velvety. Pronotum yellow with reddish brown mid-longitudinal and lateral stripes extended to head and mesothorax. Prescutum almost wholly reddish brown, with four vague olive-grey stripes, median stripes broadened anteriorly and gradually narrowed posteriorly. Scutum brown, with four vague olive-grey spots. Scutellum brown. Mediotergite brown with uneven white pruinescence, posterior margin with two yellow parts separated by brown part. Membrane between prescutum and pleuron yellow, consistent with pronotum. Pleuron mainly dark yellow with a reddish brown stripe extended from head to upper part of anatergite. Junction of anepisternum and katapisternum with a large brown spot with white pruinescence. Upper margin and anterior part of katatergite and lower part of anepimeron with white pruinescence, pruinescence brown at lower margin and posterior margin. Meron and metapleuron with irregular brown spot and slight pruinescence. Setae on thorax brown. Legs with coxae brownish yellow, femora and tibiae pale brown, tarsi brownish black, claw with a black tooth. Setae on legs dark brown. Wing variegated grey with numerous small pale and dark grey areas; veins and cell Sc bright yellow; pterostigma pale brown; petiole of cell  $m_1$  distinctly shorter than discal cell (Fig. 4). Halter with stem pale yellow, knob brownish yellow.

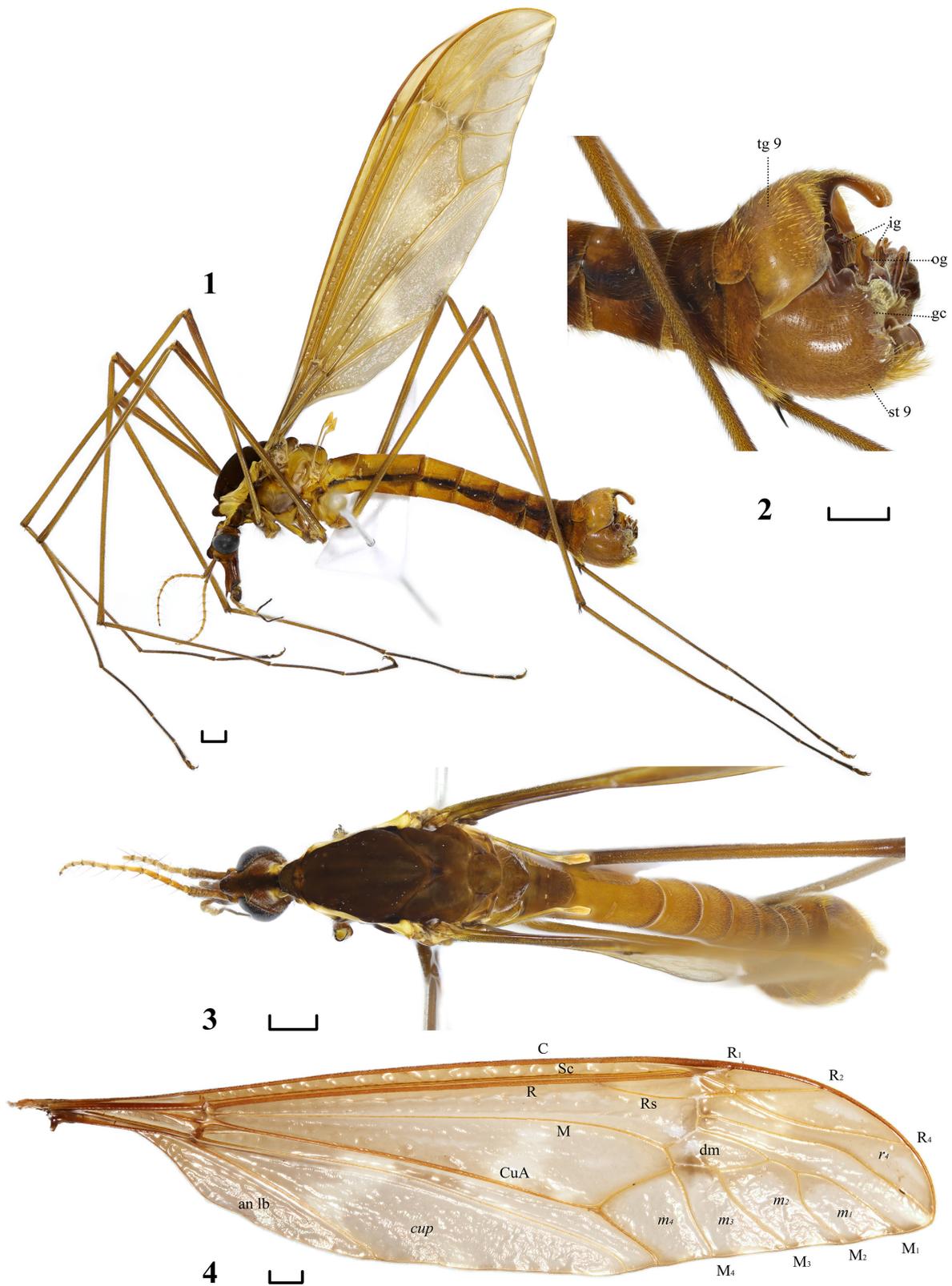
ABDOMEN (Fig. 1). Mainly brownish yellow. Abdominal tergites each with two black lateral stripes. Abdominal segment 1 pale yellow, segments 4–7 reddish. Setae on abdomen golden.

HYPOPYGIUM (Figs 2, 7–13). Mainly reddish brown, except tergite 9 yellowish brown, large and hemispherical. Gonocoxite and sternite 9 virtually fused, except ventral surface of sternite 9 with vague suture. Posterior margin of gonocoxite slightly extended, petaloid. Posterior margin of tergite 9 flattish, with a pair of robust finger-like protrusions curved downward, ventrally with a ridged protrusion. Sternite 9 with two long golden tufts near caudal margin; posterior margin of sternite 9 with a pair of nearly oval protrusions and a pair of small finger-like protrusions at middle. Adminiculum slim, medially with a pair of slender protrusions. Both gonostyli reddish brown, embedded (Figs 12–13). Outer gonostylus with a large U-shaped depression on top, caudal end with a long hook-like protrusion (Fig. 11). Inner gonostylus slanted, basally with a long, sharp protrusion; lower site of lower beak with a beak-like protrusion (Fig. 10).

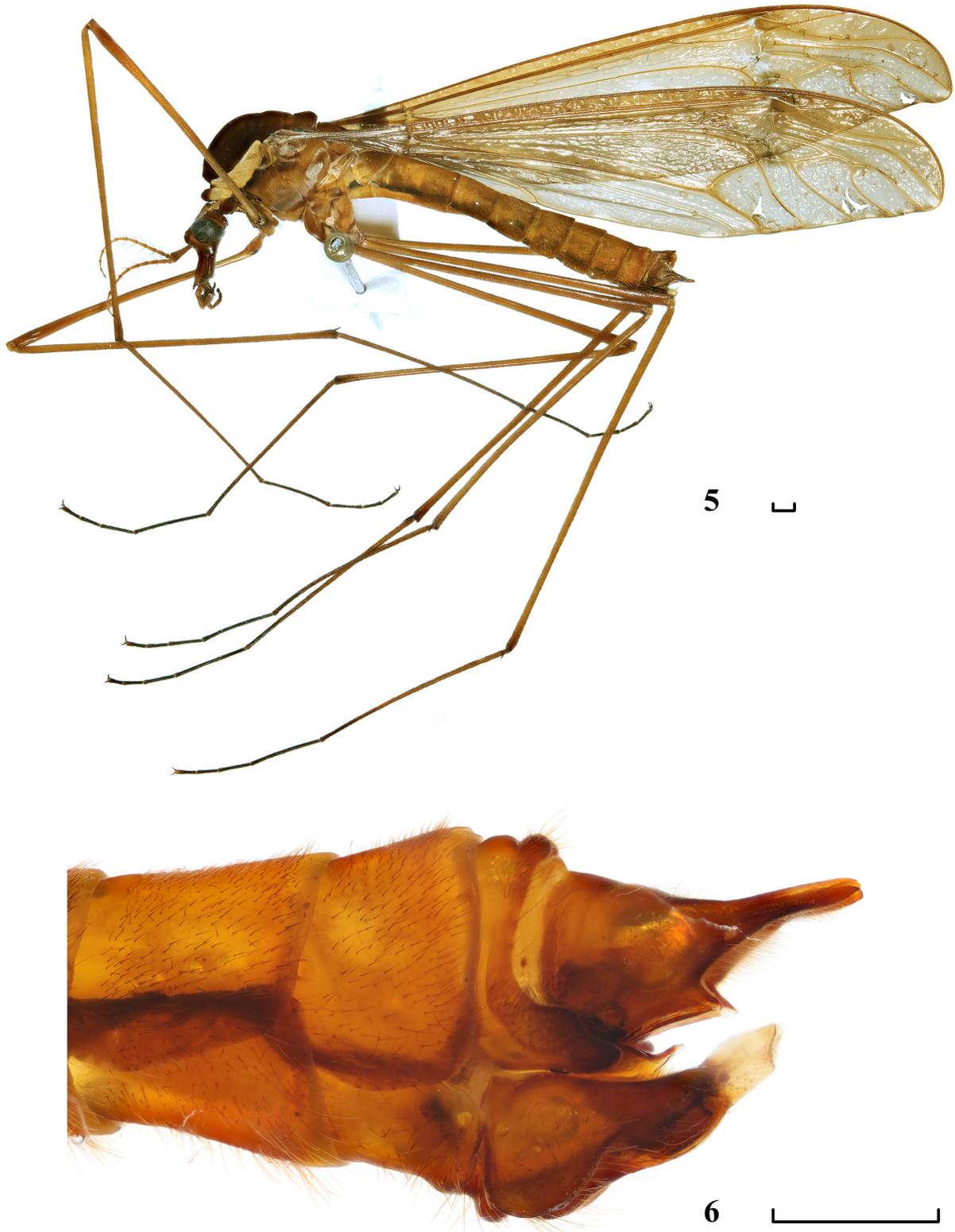
#### Female

MEASUREMENTS. Body length 24.0 mm, wing length 31.6 mm, antenna length 4.8 mm (n = 1).

Body color slightly darker than in male. Antenna redder than in male. Brown and black parts of legs paler than in male. Claw without tooth. Wing same as in male, except angle of bifurcation of cell  $m_1$

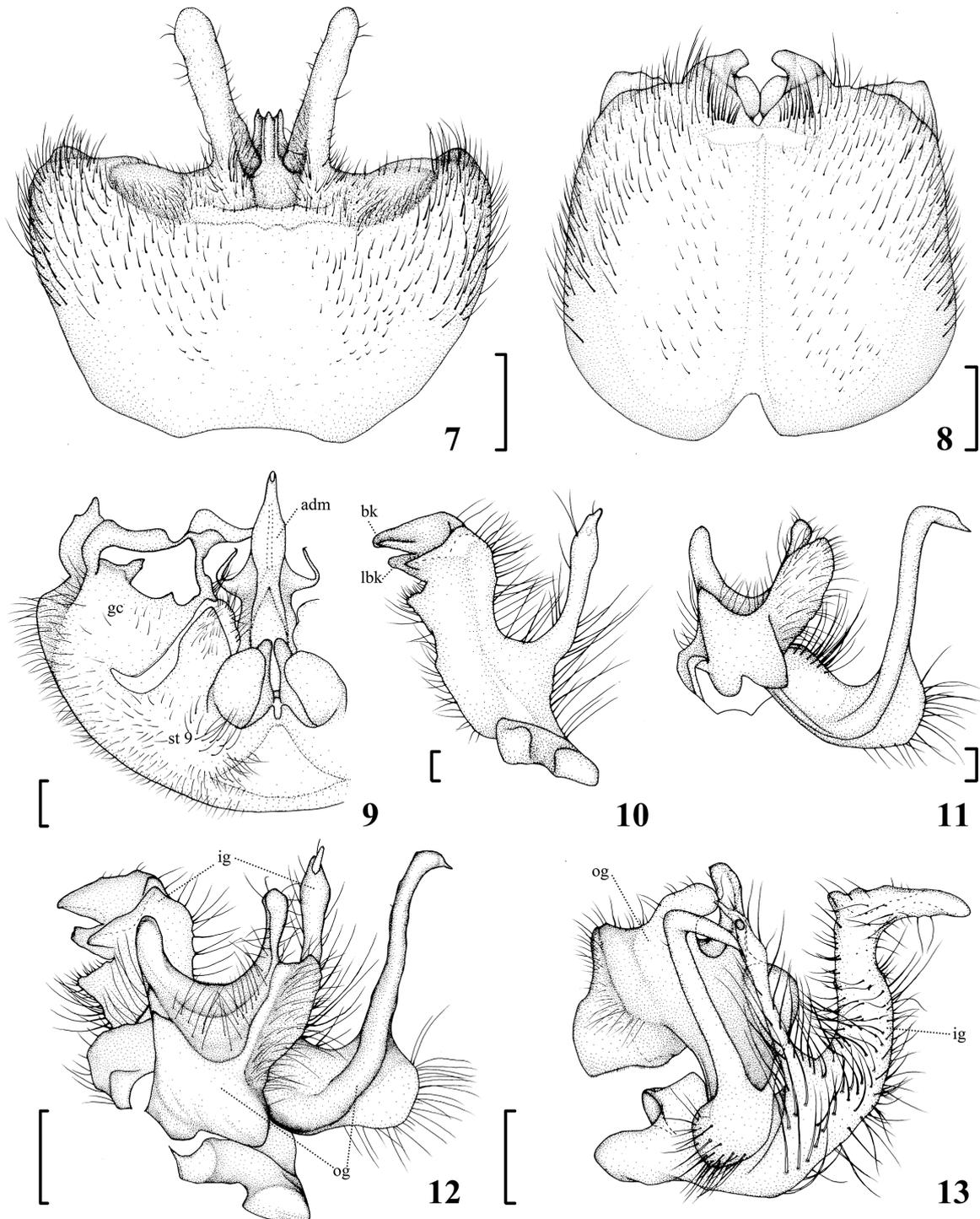


**Figs 1–4.** *Tipula* (*Sinotipula*) *drolma* sp. nov., holotype, ♂ (CAU). 1. Habitus, lateral view. 2. Hypopygium, lateral view. 3. Head and thorax, dorsal view. 4. Wing. Abbreviations: see Material and methods. Scale bars = 1.0 mm.



**Figs 5–6.** *Tipula* (*Sinotipula*) *drolma* sp. nov., paratype, ♀ (CAU). **5.** Habitus, lateral view. **6.** Ovipositor, lateral view. Scale bars = 1.0 mm.

slightly greater. Black stripes of abdominal tergites narrow and pale. Other characteristics as in male (Fig. 5).



**Figs 7–13.** *Tipula (Sinotipula) drolma* sp. nov., holotype, ♂ (CAU). 7. Tergite 9, dorsal view. 8. Sternite 9, ventral view. 9. Hypopygium, rear view. 10. Inner gonostylus, lateral external view. 11. Outer gonostylus, lateral external view. 12. Gonostylus, lateral external view. 13. Gonostylus, lateral internal view. Abbreviations: see Material and methods. Scale bars: 7–8 = 1 mm; 9, 12–13 = 0.5 mm; 10–11 = 0.2 mm.

OVIPOSITOR. Short. Posterior margin of tergite 9 with two obtuse protrusions laterally. Infra-anal plate triangular. Fused valvulae slightly upturned. Sternite 8 with a pair of flattened semicircular elevations laterally. Hypo valve short, curved outward (Fig. 6).

### Distribution

China (Xizang).

### Remarks

The new species is similar to *T. (S.) krishna* Alexander, 1962 from Sikkim, India, but the latter differs in the following characters: both gonostyli heavily sclerotized and blackened, the outer gonostylus medially with an acute tooth, cell  $r_4$  without white spot at posterior margin (Alexander 1962).

*Tipula* (*Sinotipula*) *exquisita* Alexander, 1935  
Figs 14–24

### Chinese name

精美华大蚊

### Diagnosis

Prescutum dark yellow with four distinct brown stripes; wing variegated grey with numerous small pale and dark grey areas, pale yellow around veins; posterior margin of gonocoxite with a pair of long-haired lobes; posterior margin of sternite 9 with a pair of smooth lobes folded at apex.

### Material examined

CHINA – **Sichuan** • 2 ♂♂; Xiangcheng City, Niding Canyon (尼丁峡谷); 29°4' N, 99°40' E; 3488 m a.s.l.; 11 Jul. 2020; Bingtao Du leg.; sweeping; CAU • 5 ♂♂; Daocheng City, near Zhagu Temple (扎古寺); 28°47' N, 100°9' E; 4217 m a.s.l.; 14 Jul. 2020; Bingtao Du leg.; light traps; CAU. – **Qinghai** • 1 ♂; Menyuan City, Xianmi Town, Meihua Village (梅花村); 37°17' N, 102°8' E; 3109 m a.s.l.; 30 Jul. 2021; Xinyue Guo leg.; sweeping; CAU • 1 ♀; Menyuan City, Qihankai (祁汉开); 37°9' N, 102°2' E; 2658 m a.s.l.; 30 Jul. 2021; Qicheng Yang leg.; light traps; CAU.

### Photo material

CHINA • Holotype, ♂; Yin-Kuan-Tsal; 13–15 000 feet a.s.l.; 25 Jul. 1930; D.C. Graham leg.; USNM (photos by Yan Li) • ♀, allotype; Yu-Long-Gong; 14 000 feet a.s.l.; 14 Aug. 1930; D.C. Graham leg.; USNM (photos by Yan Li) • Paratype; same collection data as for holotype; USNM (photos by Yan Li).

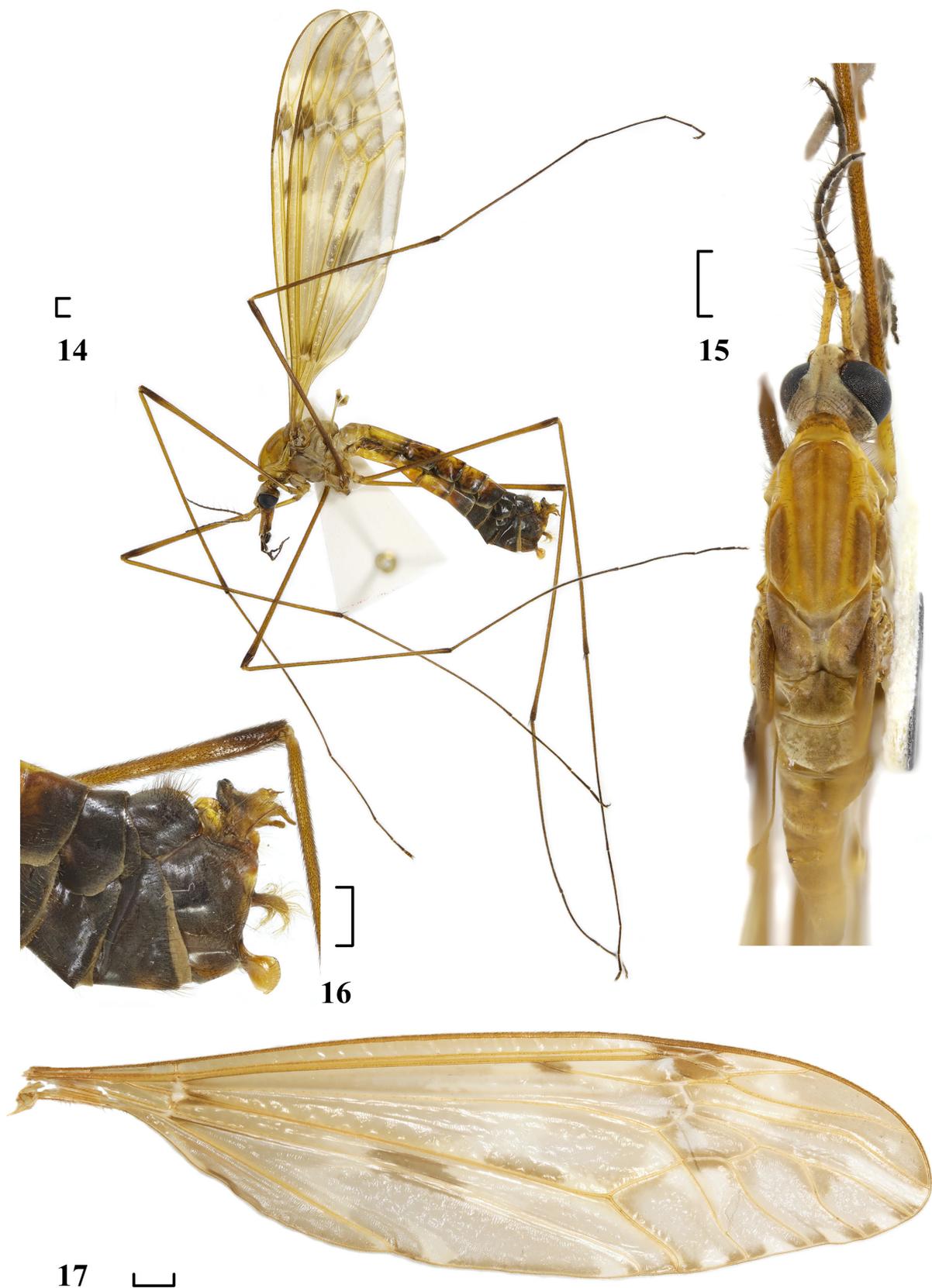
### Redescription

#### Male

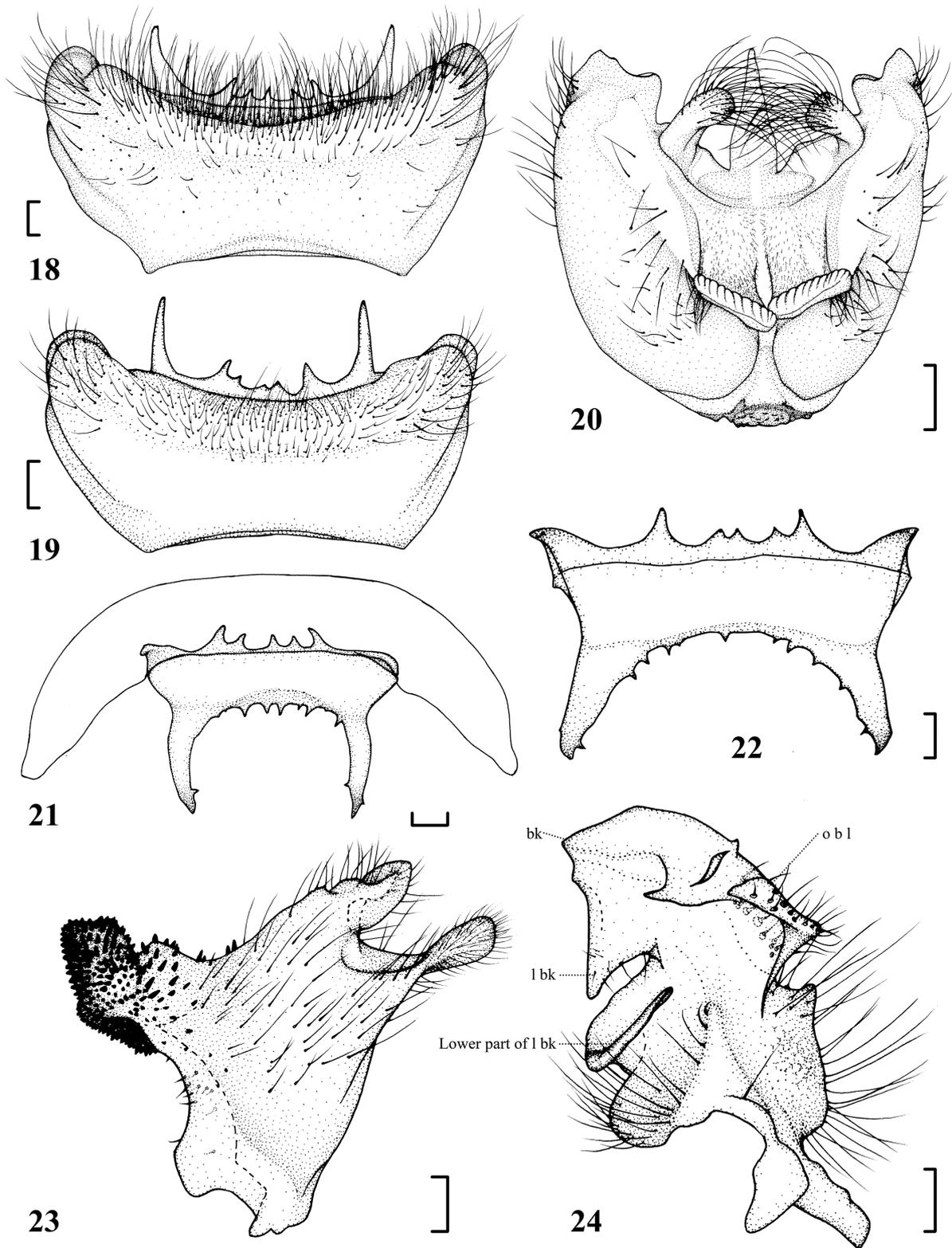
MEASUREMENTS. Body length 20.0–21.5 mm, wing length 23.8–25.0 mm, antenna length 4.6–4.8 mm (n = 3).

HEAD (Figs 14–15). Mainly yellowish brown. Occiput brown with dark brown mid-longitudinal stripe. Rostrum yellowish brown with a dark brown middle stripe extended from rostrum apically to face, nasus yellowish brown, postgena dark brown. Setae on head dull black. Antennal scape and pedicel yellow, flagellar segments dark brown, flagellar segments 1–3 slightly yellow. Proboscis black. Palpus dark brown, segment 4 slightly pale brown.

THORAX (Figs 14–15). Mainly brownish yellow, dark areas with slight white pruinescence. Pronotum dark yellow, brown at middle. Prescutum dark yellow with four brown stripes, all stripes with dark



**Figs 14–17.** *Tipula (Sinotipula) exquisita* Alexander, 1935, ♂ (CAU). **14.** Habitus, lateral view. **15.** Head and thorax, dorsal view. **16.** Hypopygium, lateral view. **17.** Wing. Scale bars = 1.0 mm.



**Figs 18–24.** *Tipula* (*Sinotipula*) *exquisita* Alexander, 1935, ♂♂ (CAU). **18.** Tergite 9, dorsal view (near Zhagu Temple). **19.** Tergite 9, dorsal view (Qihankai). **20.** Hypopygium, ventral view. **21.** Tergite 9, rear view (near Zhagu Temple). **22.** Plate of tergite 9, rear view (Qihankai). **23.** Outer gonostylus, lateral external view. **24.** Inner gonostylus, lateral external view. Scale bars: 18–19, 21–24 = 0.2 mm; 20 = 0.5 mm.

brown margins, median stripes broadened anteriorly and gradually narrowed posteriorly, lateral stripes slightly dark. Scutum and scutellum brown with blurry dark areas. Mediotergite pale brown. Pleuron mainly dark brown, with white pruinescence. Anepisternum with less pruinescence and an indistinct dark stripe on upper portion. Setae on thorax golden and dark brown. Legs with femora and tibiae brownish yellow, apex dark brown, tarsi dark brown, femora of some specimens dark brown near basal part. Claw with a black tooth near middle. Setae on legs black. Wing variegated grey with numerous small pale and dark grey areas; veins and cell Sc bright yellow, pale yellow around veins; pterostigma brown; petiole of cell  $m_1$  distinctly shorter than discal cell (Fig. 17). Halter with stem and knob yellow, except knob dark brown at middle.

**ABDOMEN** (Fig. 14). Mainly yellow to black. Abdominal segments 1–5 yellow, segment 7 yellow to black outward, all tergites with black posterior margin and black lateral stripes, tergites 2–7 with short grey lateral pruinescence on posterior and lateral stripes, pruinescence varied among different specimens. Setae on tergites dark brown, but those on sternite golden.

**HYPOPYGIUM** (Figs 16, 18–24). Mainly black. Posterior margin of tergite 9 with a transversely quadrate sclerotized toothed plate, dorsal and ventral border of plate each with two long protrusions and small irregular teeth. Gonocoxite and sternite 9 fused, posterior margin of gonocoxite with a pair of long-haired lobes, posterior margin of sternite 9 with a pair of smooth, folded lobes. Outer gonostylus wide with dense black spines anteriorly and with two short lobes posteriorly (Fig. 23). Inner gonostylus with very short beak and a large sloping notch; outer basal lobe complicated (Fig. 24).

#### **Female**

Apart from the genitalia, similar to male; cercus and hypovalve short.

#### **Distribution**

China (Sichuan, Qinghai).

#### **Remarks**

In all male specimens from Niding Canyon, Zhagu Temple and Meihua Village, the size and position of the small teeth of tergite 9 are not fixed. The specimens from Qinghai (Meihua Village and Qihankai) are darker than those from Sichuan (Niding Canyon and Zhagu Temple). There was no difference in the gonostylus among all observed specimens. Thus, we considered them to be the same species (Alexander 1935; Edwards 1928).

#### *Tipula (Sinotipula) forcipicauda* sp. nov.

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Figs 25–33

#### **Chinese name**

钳尾华大蚊

#### **Diagnosis**

Prescutum reddish brown; pleuron with a reddish-brown stripe extended from head to lower part of calypter; calypter pitch-black on lower portion; posterior margin of sternite 9 with a pair of pincer-like protrusions.

#### **Etymology**

This species is named after the shape of the protrusions on sternite 9, the Latin compound word ‘*forcip-cauda*’ meaning ‘pincer-like cauda.’

## Material examined

### Holotype

CHINA • ♂; Xizang, Yadong County, Qing Dynasty Customs Site; 27°25'20" N, 88°55'13" E; 3137 m a.s.l.; 4 Aug. 2020; Yuetian Gao leg.; light trap; CAU.

### Paratype

CHINA • 1 ♂; Xizang, Yadong County, Boluoka (波洛卡); 27°23'3" N, 88°58'22" E; 2774 m a.s.l.; 3 Aug. 2020; Yuetian Gao leg.; light trap; CAU.

## Description

### Male

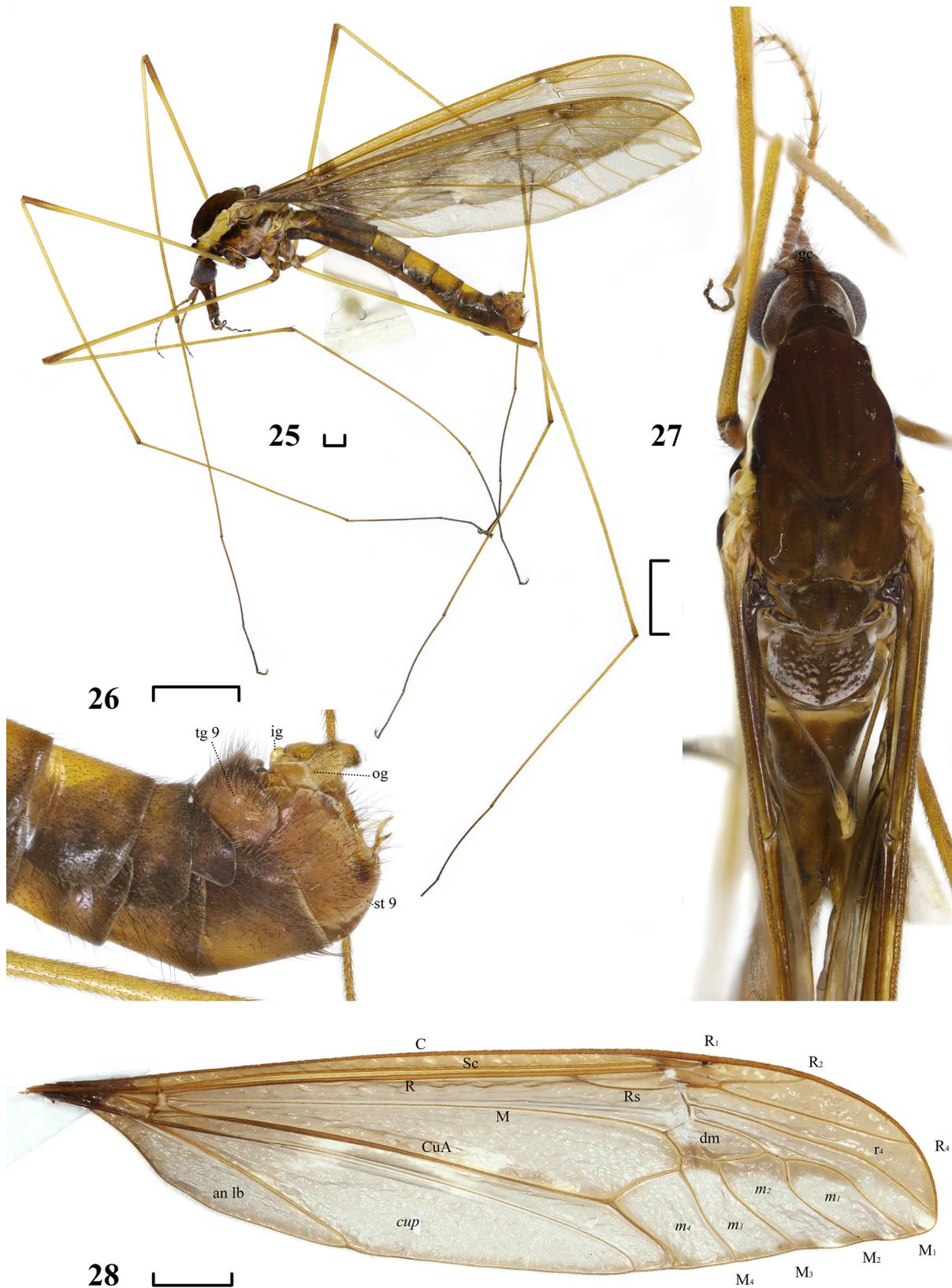
MEASUREMENTS. Body length 18.6–19.5 mm, wing length 23.2–24.5 mm, antenna length 4.2–4.6 mm (n = 2).

HEAD (Figs 25, 27). Mainly reddish brown. Occipital stripe black, extended to frontal tubercle. Rostrum and nasus reddish brown. Setae on head black. Frontal tubercle, base of scape and posterior margin of eye with white pruinescence, pruinescence of posterior margin of eye extended to neck. Antennal scape and pedicel yellowish brown, flagellar segments dark yellow, except segment 11 black, flagellar segments 1–10 slightly dark at base. Proboscis brownish black. Palpal segments 1 and 2 dark brown, segment 3 brownish yellow and segment 4 black, except base brownish yellow.

THORAX (Figs 25, 27). Mainly pale brown and reddish brown velvety. Pronotum light yellow with reddish brown mid-longitudinal and lateral stripes extended to head and mesothorax. Prescutum almost wholly reddish brown, with four vague, slightly pale stripes, median stripes broadened anteriorly and gradually narrowed posteriorly. Scutum reddish brown with vague spots. Scutellum and mediotergite dark brown, mediotergite with uneven white pruinescence, but extensive at posterior margin. Membrane between prescutum and pleuron light yellow, consistent with pronotum. Pleuron mainly brown with a reddish-brown stripe extended from head to lower part of calypter, calypter pitch-black on lower portion. Pleuron with extensive white pruinescence except anepisternum. Anepisternum reddish brown on upper portion, pale brown on lower portion. Pruinescence of katapisternum dark brown on lower portion. Anepimeron reddish brown on upper portion, pale brown on lower portion. Katapisternum pale brown. Meron yellowish brown. Metakatepisternum brown. Katatergite dark brown on upper portion, brownish yellow on lower portion. Setae on thorax black. Legs with coxae yellowish brown but brown at lower margin, lower part of coxae with pruinescence, trochanter with black spot ventrally, femora yellow with black basal margin and pale brown apex, tibiae yellow with apex slightly dark, tarsomere 1 yellow, tarsomeres 2–4 greyish black, claw with a black tooth. Setae on legs brown. Wing variegated grey with numerous small pale and dark grey areas, veins and cell Sc bright yellow, pterostigma dark brown, petiole of cell  $m_1$  less than  $\frac{1}{3}$  as long as discal cell (Fig. 28). Halter with stem greyish brown, knob yellow with black base.

ABDOMEN (Fig. 25). Mainly yellowish brown. Abdominal tergites 3–6 yellow, sternites 5–6 yellow, all tergites dark brown at posterior margin and with black lateral stripes, posterior margin of tergites 2–6 dark with small grey lateral corners. Setae on abdomen black.

HYPOPYGIUM (Figs 25, 29–33). Brown. Tergite 9 with a pair of small tooth-like protrusions, apically slightly truncated, but without sclerotized structure on ventral surface. Gonocoxite and sternite 9 fused. Gonocoxite with a tuft of hairs at posterior margin. Posterior margin of sternite 9 with a pair of pincer-like protrusions and with a pair of tufts near base of protrusions. Adminiculum spear-shaped, basally connected with protrusions of sternite 9. Outer gonostylus approximately boat-shaped, caudal lobe shorter than anterior protrusion (Fig. 32). Inner gonostylus pistol-shaped with obtuse beak slightly swollen (Fig. 31).



**Figs 25–28.** *Tipula (Sinotipula) forcipicauda* sp. nov., holotype, ♂ (CAU). **25.** Habitus, lateral view. **26.** Hypopygium, lateral view. **27.** Head and thorax, dorsal view. **28.** Wing. Abbreviations: see Material and methods. Scale bars = 1.0 mm.

**Female**

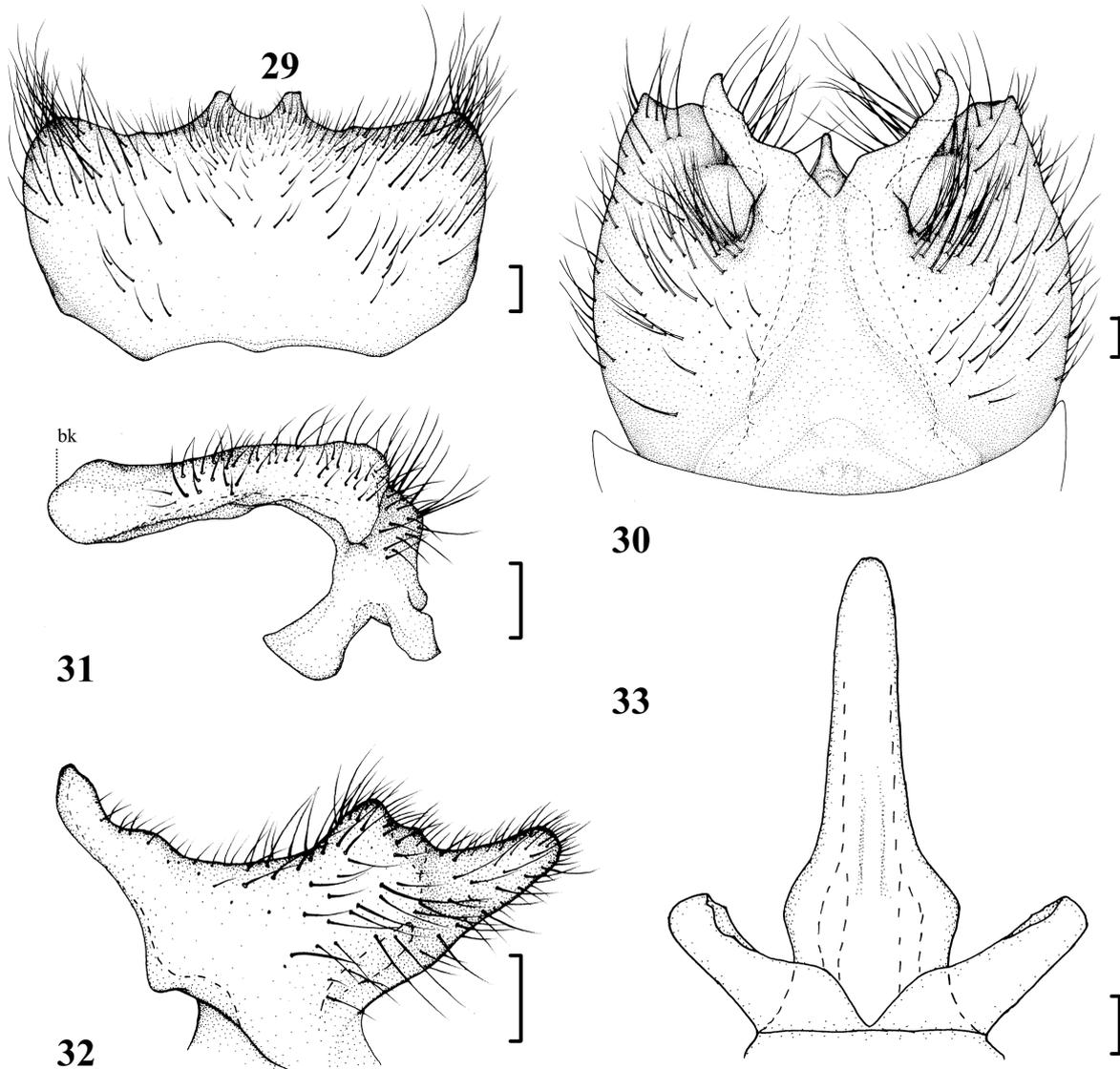
Unknown.

**Distribution**

China (Xizang).

**Remarks**

This new species is similar to *T. (S.) arjuna* Alexander, 1962 and *T. (S.) arjunoides* Alexander, 1961. However, in *T. (S.) arjuna* the petiole of cell  $m_1$  is about  $\frac{1}{2}$  as long as the cell, the tooth-like protrusions of tergite 9 are short and rounded and sternite 9 has no special protrusion (Alexander 1962). In *T. (S.) arjunoides*, the hypopygium is yellow, the protrusions of tergite 9 are forked and the inner gonostylus is compressed at the middle (Alexander 1961).



**Figs 29–33.** *Tipula* (*Sinotipula*) *forcipicauda* sp. nov., holotype, ♂ (CAU). 29. Tergite 9, dorsal view. 30. Hypopygium, ventral view. 31. Inner gonostylus, lateral external view. 32. Outer gonostylus, lateral external view. 33. Adminiculum, ventral view. Scale bars = 0.2 mm.

*Tipula (Sinotipula) heminga* sp. nov.

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Figs 34–43

**Chinese name**

鹤鸣华大蚊

**Diagnosis**

Prescutum almost dark brown, reddish brown laterally, with four slightly brown, vague stripes; tergite 9 with two pairs of horn-like protrusions, middle pair directed outward and side pair directed inward.

**Etymology**

This species is named after the shape of the outer and inner gonostyli, similar to the crane courtship call pose, the word ‘*heming*’ being from the Chinese ‘鹤鸣’ in the ancient Chinese poetry collection ‘Book of Songs (Xiaoya, Heming),’ literally meaning the crane is chirping.

**Material examined**

**Holotype**

CHINA • ♂; Xizang, Chayu County; 28°39' N, 97°28' E; 2360 m a.s.l.; mid-Jun. 2020; Hui Wang leg.; light trap; CAU.

**Description**

**Male**

MEASUREMENTS. Body length 25.2 mm, wing length 28.0 mm, antenna length 5.2 mm (n = 1).

HEAD (Figs 34–35). Reddish brown. Occipital middle dark. Rostrum and nasus dull reddish brown. Setae on head black. Gena, postgena and posterior margin of eye with white pruinescence. Antennal scape and pedicel brown, flagellar segments dark yellow except base slightly dark. Proboscis brownish black. Palpus dull reddish brown.

THORAX (Figs 34–35). Mainly yellowish brown and dark brown velvety. Pronotum light yellow with reddish brown mid-longitudinal and lateral stripes extended to head and mesothorax. Prescutum almost dark brown, reddish brown laterally, with four slightly brown, vague stripes, median stripes broadened anteriorly and gradually narrowed posteriorly. Scutum dark brown with four brown spots. Scutellum and mediotergite dark brown, mediotergite with uneven white pruinescence. Membrane between prescutum and pleuron light yellow. Anepisternum and anepimeron brownish black on upper portion, yellowish brown on lower portion. Katepisternum with a large dark brown spot with pruinescence on upper portion. Meron yellowish brown. Setae on thorax golden. Legs with coxae orangish brown, trochanter with black spot ventrally, femora yellowish brown with slightly dark apex, tibiae yellowish brown, tarsi dark brown. Setae on legs brown. Wing variegated pale yellowish brown with cream and dark brown areas, pterostigma dark brown, petiole of cell  $m_1$  less than  $\frac{1}{3}$  as long as discal cell (Fig. 37). Halter with stem and knob yellowish brown, knob slightly darkened.

ABDOMEN (Figs 34–35). Mainly yellowish brown. All tergites with dark brown lateral stripes. Setae on abdomen golden.

HYPOPYGIUM (Figs 36, 38–43). Dark brown. Tergite 9 with two pairs of horn-like protrusions, middle pair directed outward and outer pair directed inward, ventrally with two pairs of tooth-like protrusions. Gonocoxite and sternite 9 fused. Posterior margin of sternite 9 with a pair of protrusions bearing a small



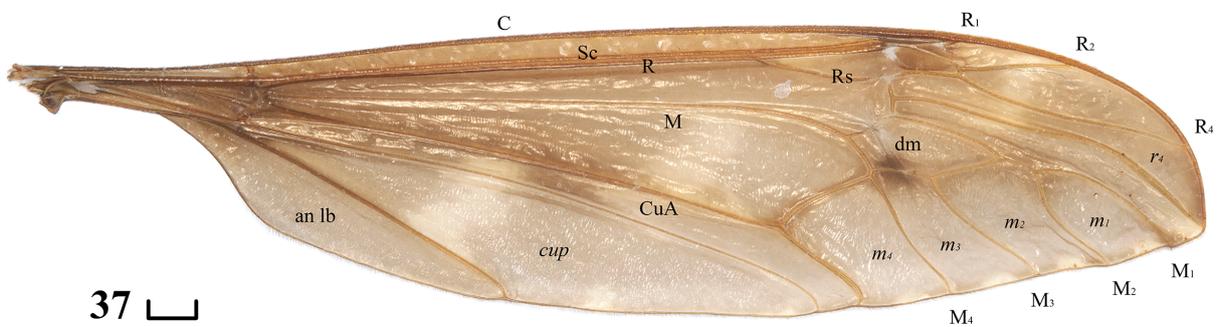
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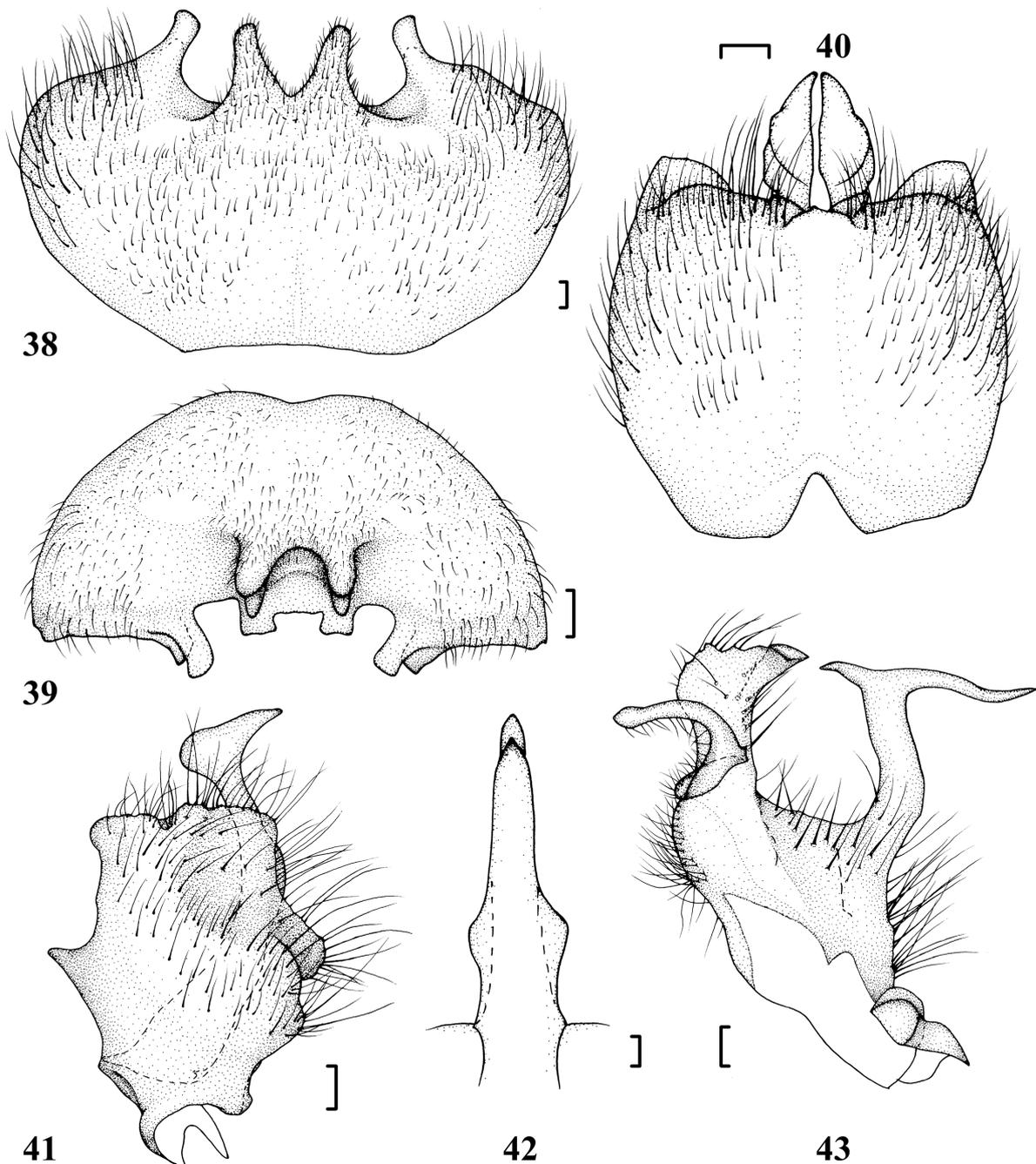
37

**Figs 34–37.** *Tipula* (*Sinotipula*) *heminga* sp. nov., holotype, ♂ (CAU). **34.** Habitus, lateral view. **35.** Head and thorax, dorsal view. **36.** Hypopygium, lateral view. **37.** Wing. Abbreviations: see Material and methods. Scale bars = 1.0 mm.

protrusion near base (Fig. 36). Adminiculum spear-shaped, slightly widened near basal  $\frac{1}{3}$ . Outward part of outer gonostylus nearly square, anterior margin with a small triangular protrusion; inward part slender, like a crane head (Fig. 41). Inner gonostylus with a recurved finger-like protrusion at anterior margin and a large, nearly T-shaped protrusion at posterior margin (Fig. 43).

**Female**

Unknown.



**Figs 38–43.** *Tipula (Sinotipula) heminga* sp. nov., holotype, ♂ (CAU). **38.** Tergite 9, dorsal view. **39.** Tergite 9, rear view. **40.** Hypopygium, ventral view. **41.** Outer gonostylus, lateral external view. **42.** Adminiculum, ventral view. **43.** Inner gonostylus, lateral external view. Scale bars: 38–39, 41–43 = 0.2 mm; 40 = 0.5 mm.

### Distribution

China (Xizang).

### Remarks

The new species is similar to *T. (S.) krishna* Alexander, 1962 and *T. (S.) drolma* sp. nov., but in *T. (S.) krishna* the tergite 9 only has a pair of protrusions, and the gonostyli are simple. In *T. (S.) drolma* sp. nov. the protrusions of tergite 9 are longer than in *T. (S.) heminga* sp. nov., the protrusion of sternite 9 has no small protrusion, and the adminiculum has a pair of slender protrusions at the middle.

### *Tipula* (*Sinotipula*) *hobsoni* Edwards, 1928

Figs 44–53

### Chinese name

白眉华大蚊

### Diagnosis

Mainly orange; prescutum dark brown, wing pale yellow with grey areas, pterostigma yellow; tergite 9 with a pair of tooth-like protrusions at posterior margin; outer gonostylus wide and flat, with two horn-like protrusions anteriorly and two slender lobes posteriorly.

### Material examined

CHINA – Xizang • 1 ♂; Yadong City, Qing Dynasty Customs Site; 27°25'11" N, 88°55'51" E; 3041 m a.s.l.; 1 Aug. 2020; Qicheng Yang leg.; light trap; CAU • 1 ♂; Yadong City; 3300 m a.s.l.; 11 Jul. 2018; Qicheng Yang leg.; sweeping; CAU.

### Photo material

CHINA • Holotype; Yatung; 4500 feet a.s.l.; A.E. Hobson leg. ; BMNH (photos by Jinlong Ren).

INDIA • 1 ♂; Sikkim, Namnasa; 9500 feet a.s.l.; 12 Mar. 1959; Schmid leg.; USNM (photos by Yan Li) • 1 ♂; Sikkim, Shingla; 10400 feet; 30 Jun. 1959; Schmid leg.; USNM (photos by Yan Li).

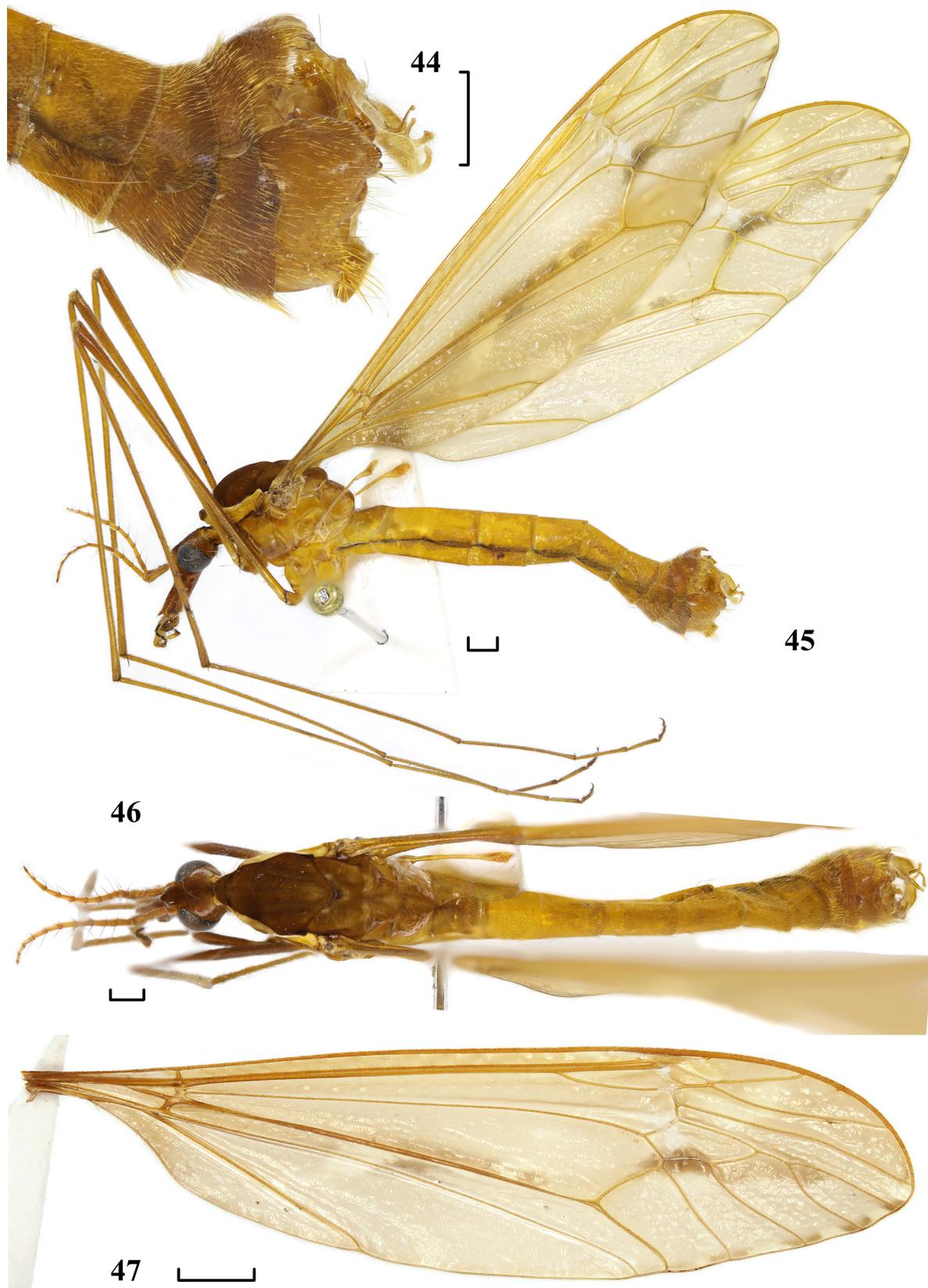
### Redescription

#### Male

MEASUREMENTS. Body length 22.0–22.6 mm, wing length 25.0–25.2 mm, antenna length 5.0–5.5 mm (n = 2).

HEAD (Figs 45–46). Mainly brown. Occiput with two areas with white pruinescence. Rostrum and nasus brown. Setae on head dark brown. Antenna orange with white appressed pubescence, bases of flagellar segments slightly dark. Proboscis brown. Palpal segments 1 and 2 yellow, segments 3 and 4 dark brown.

THORAX (Figs 45–46). Mainly orange. Pronotum reddish brown at middle, extended to head and anepimeron. Prescutum dark brown with four blurry brown stripes, all stripes with reddish brown margins, median stripes broadened anteriorly and gradually narrowed posteriorly. Scutum dark brown, with four brown blurry spots. Scutellum and mediotergite brown, mediotergite with abundant, uneven pruinescence, except on middle portion. Pleuron mainly orange with slight white pruinescence. Anepisternum yellowish brown, dark on upper portion, membranous suture with prescutum dark brown; katepisternum, anepimeron, epimeron and metapleuron with brown areas. Setae on thorax pale yellow. Legs with femora and tibiae brownish yellow, apically slightly dark; tarsi brownish yellow. Claw with a black tooth basally. Setae on legs dark brown. Wing pale yellow with grey areas, pterostigma yellow,

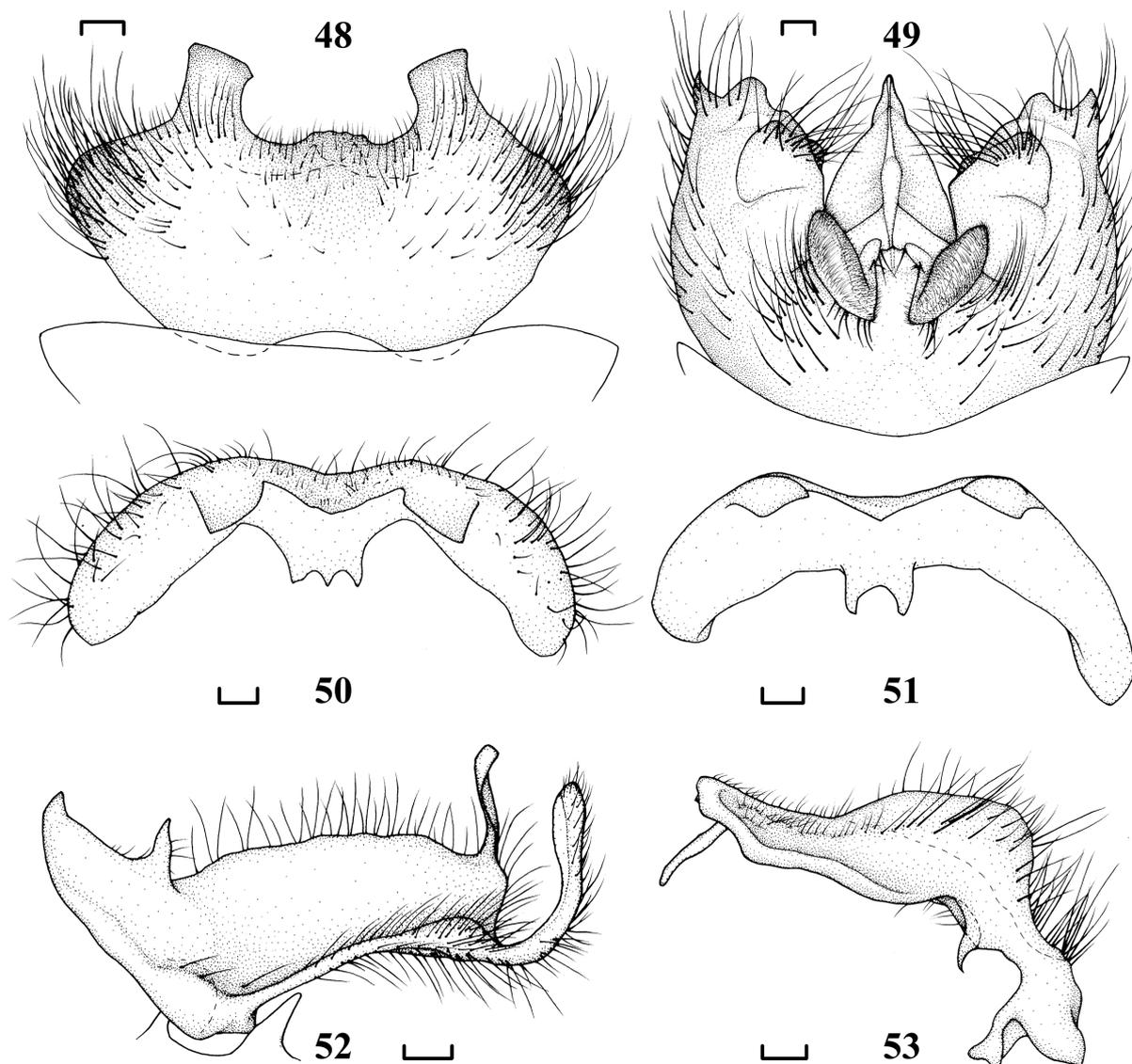


**Figs 44–47.** *Tipula (Sinotipula) hobsoni* Edwards, 1928, ♂ (CAU). **44.** Hypopygium, lateral view. **45.** Habitus, lateral view. **46.** Head and thorax, dorsal view. **47.** Wing. Abbreviations: see Material and methods. Scale bars = 1.0 mm.

long spot of cell *cua* dark grey, spot of  $M_3$  base basally dark grey, petiole of cell  $m_1$   $\frac{1}{3}$  as long as discal cell (Fig. 47). Halter with yellow stem and orange knob.

ABDOMEN (Figs 45–46). Mainly yellow. All tergites with slender black lateral stripes, sternites and tergites 6–8 dark at lateral margin. Setae on abdomen golden.

HYPOPYGIUM (Figs 44, 48–53). Mainly yellowish brown. Posterior margin of tergite 9 with a pair of tooth-like protrusions slightly slanted at tip, ventrally with two or three teeth. Gonocoxite and sternite 9 fused, sternite 9 with a pair of pubescent oval protrusions. Adminiculum wide basally, narrow apically, with a slender protuberance at middle. Outer gonostylus wide and flat, with two horn-like protrusions anteriorly and two slender lobes posteriorly (Fig. 52). Inner gonostylus recurved, inside concave, outside bulged, apex with a finger-like protrusion (Fig. 53).



**Figs 48–53.** *Tipula* (*Sinotipula*) *hobsoni* Edwards, 1928, ♂♂ (CAU). **48.** Tergite 9, dorsal view (Yadong City). **49.** Hypopygium, ventral view. **50.** Tergite 9, rear view (Yadong City). **51.** Tergite 9, rear view (Qing Dynasty Customs Site, Yadong City). **52.** Outer gonostylus, lateral external view. **53.** Inner gonostylus, lateral external view. Scale bars = 0.2 mm.

### Female

Apart from the genitalia, similar to male; cercus and hypovalve short.

### Distribution

China (Xizang); India (Sikkim).

### Remarks

In the male specimen from Shingla, Sikkim (USNM), the distance between the two protrusions on tergite 9 is narrower than in that from Namnasa, Sikkim (USNM) or Yadong City, Xizang (CAU). The distance between the two protrusions of tergite 9 might not be a stable special feature in *Sinotipula*. In the specimen from the Qing Dynasty Customs Site in Yadong City, tergite 9 is asymmetrical (possibly damaged), and the ventral surface of tergite 9 has two teeth (Fig. 51). In holotype, the ventral surface of tergite 9 has two teeth (Edwards 1928), but in the specimens from Yadong City and some individuals from Sikkim (USNM), the ventral surface of tergite 9 has three teeth (Fig. 50) (Alexander 1970).

### *Tipula (Sinotipula) longiloba* sp. nov.

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Figs 54–64

### Chinese name

长叶华大蚊

### Diagnosis

Wing variegated dark grey with numerous small cream and black areas, cell  $r_4$  posteriorly with a small cream spot, cream spot of cell r-m long; tergite 9 with a pair of sharp triangular protrusions; caudal lobe of outer gonostylus long.

### Etymology

This species is named after the shape of the caudal lobe of the outer gonostylus, the Latin compound word ‘*lobus*’ means ‘lobe’.

### Material examined

#### Holotype

CHINA • ♂; Sichuan, Xiangcheng County, Fozhuxia (佛珠峡); 28°27'00" N, 100°20'24" E; 3045 m a.s.l.; 10 Jul. 2020; Bintao Du leg.; sweeping; CAU.

#### Paratypes

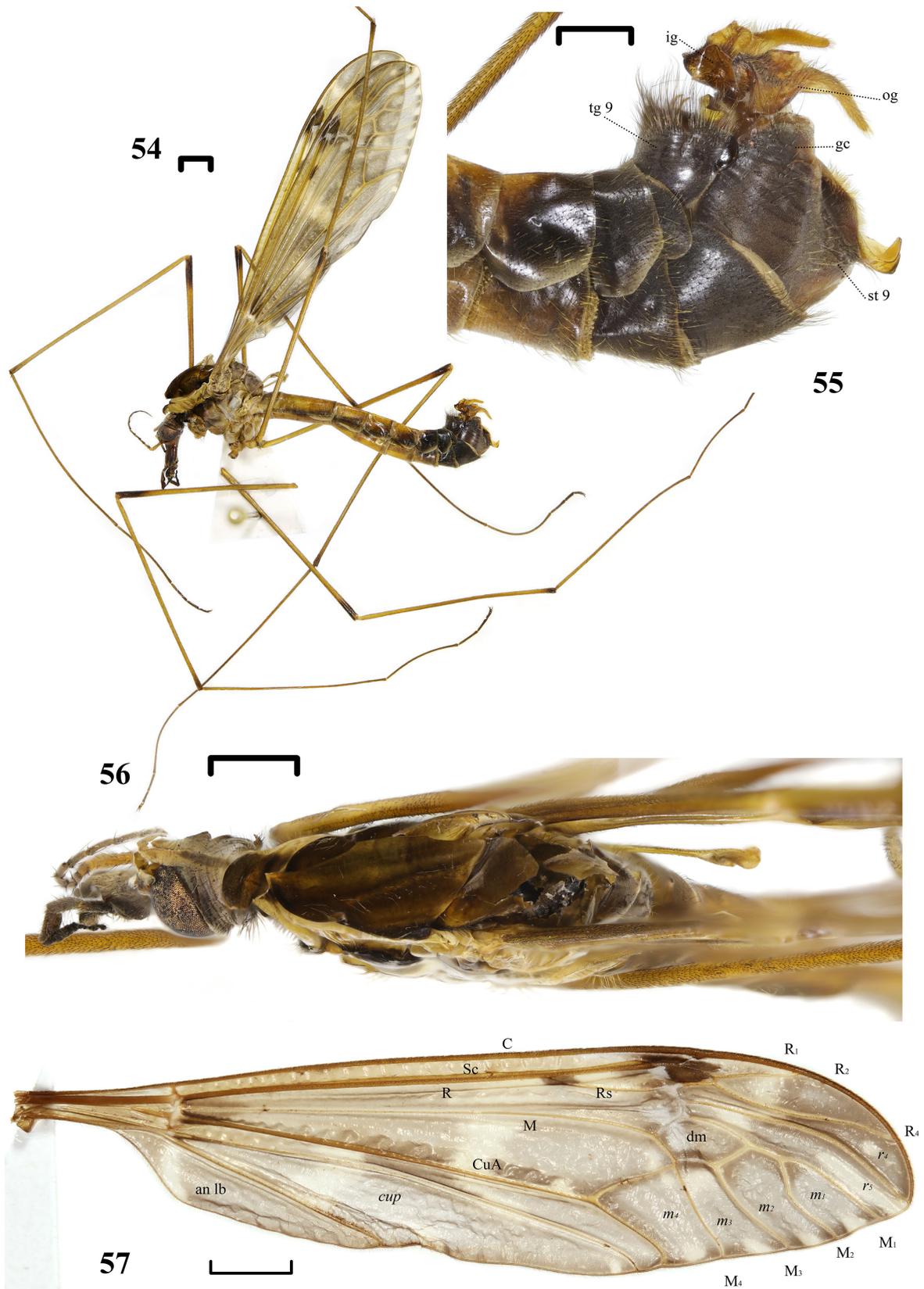
CHINA • 1 ♂, 1 ♀; Sichuan, Daocheng County, Yading Scenic Area (亚丁风景区); 29°4'44" N, 99°54'48" E; 3135 m a.s.l.; 16 Jul. 2020; Bintao Du leg.; sweeping; CAU.

### Description

#### Male

MEASUREMENTS. Body length 21.2–23.2 mm, wing length 22.2–24.5 mm, antenna length 4.5–4.9 mm (n = 2).

HEAD (Figs 54, 56). Mainly dark brown. Occipital stripe olive grey, extended to vertex, an olive-grey line present on vertex extended to frontal tubercle. Rostrum and nasus brown. Setae on head black. Occiput, postgena and posterior margin of eye with grey pruinescence. Antennal scape and pedicel brownish



**Figs 54–57.** *Tipula* (*Sinotipula*) *longiloba* sp. nov., holotype, ♂ (CAU). **54.** Habitus, lateral view. **55.** Hypopygium, lateral view. **56.** Head and thorax, dorsal view. **57.** Wing. Abbreviations: see Material and methods. Scale bars: 54, 56–57 = 1.0 mm; 55 = 0.5 mm.

yellow, flagellar segments greyish brown, each flagellar segment dark at base. Proboscis black. Palpal segment 1 black with pale apex, segments 2 and 3 brown, and segment 4 black.

**THORAX** (Figs 54, 56). Mainly brownish yellow to dark brown velvety. Pronotum yellow with dark brown mid-longitudinal and lateral stripes extended to head and mesothorax. Prescutum almost wholly dark brown, with four vague olive-grey stripes, median stripes slightly lighter than lateral stripes, broadened anteriorly and gradually narrowed posteriorly, a faint yellow, narrow stripe present between median stripes, areas of two rows of median hairs with somewhat narrow yellow stripes. Scutum reddish brown, with four vague olive-grey spots, virtually confluent, scutum with grey pruinescence at posterior margin. Scutellum and mediotergite dark brown with grey pruinescence. Membrane between prescutum and pleuron yellow, consistent with pronotum. Pleuron mainly brownish yellow, with a reddish-brown stripe extended from head to lower part of calypter. Pleuron with extensive white pruinescence except anepisternum. Katepisternum greyish brown on upper portion. Setae on thorax pale yellow. Legs with coxae yellow and white pruinescent, trochanter with black spot ventrally, femora yellow with brownish black apex, tibiae yellow with brown apex, tarsomere 1 yellow with dark apex, tarsomeres 2–3 yellowish brown, tarsomeres 4–5 dark greyish brown. Claw with a black triangular tooth. Setae on legs dark brown with golden lustre. Wing variegated dark grey with numerous small cream and black areas, veins and cell Sc bright yellow, pterostigma black, petiole of cell  $m_1$  less than  $\frac{1}{2}$  as long as discal cell length, M2 with a large obtuse angle, cell  $r_4$  posteriorly with a small cream spot, cream spot of cell r-m long (Fig. 57). Halter mainly brownish yellow, stem dark with pale yellow base, knob greyish brown medially.

**ABDOMEN** (Fig. 54). Mainly brownish yellow, Abdominal tergites 6–9 and sternites 7–9 pitch-black, sternite 6 brownish black at posterior half, all tergites with black lateral stripes, lateral margins of tergites with discontinuous greyish white narrow stripes. Setae on tergites black, but those on sternite golden.

**HYPOPYGIUM** (Figs 55, 60–64). Mainly black, gonostylus dark yellow. Tergite 9 with a quadrate sclerotized toothed plate on ventral surface, four angles of plate each with a subtriangular protrusion, ventral border of plate with some small teeth and a lamellar protrusion. Tergite 10 translucent with a pair of long gonostyli. Gonocoxite and sternite 9 fused. Posterior margin of sternite 9 with short hairs and a pair of lobate, setose protrusions near base. Adminiculum sharp. Inner side of outer gonostylus with many spines, caudal lobe long, about  $\frac{1}{2}$  as long as outer gonostylus (Fig. 63). Inner gonostylus with sharp beak, beak wide basally; outer basal lobe stick-shaped (Fig. 64).

### Female

**MEASUREMENTS.** Body length 29.8 mm, wing length 31.9 mm, antenna length 4.6 mm ( $n = 1$ ).

Body color darker than in male. Pleuron mainly dark brown, with much white pruinescence. Claw without tooth. Cell  $r_4$  posteriorly without cream spot, cell  $m_1$  slightly longer than in male, pterostigma paler than in male. Black stripes of abdomen wide, tergites and sternites black at posterior margin. Other characteristics same as in male (Fig. 58).

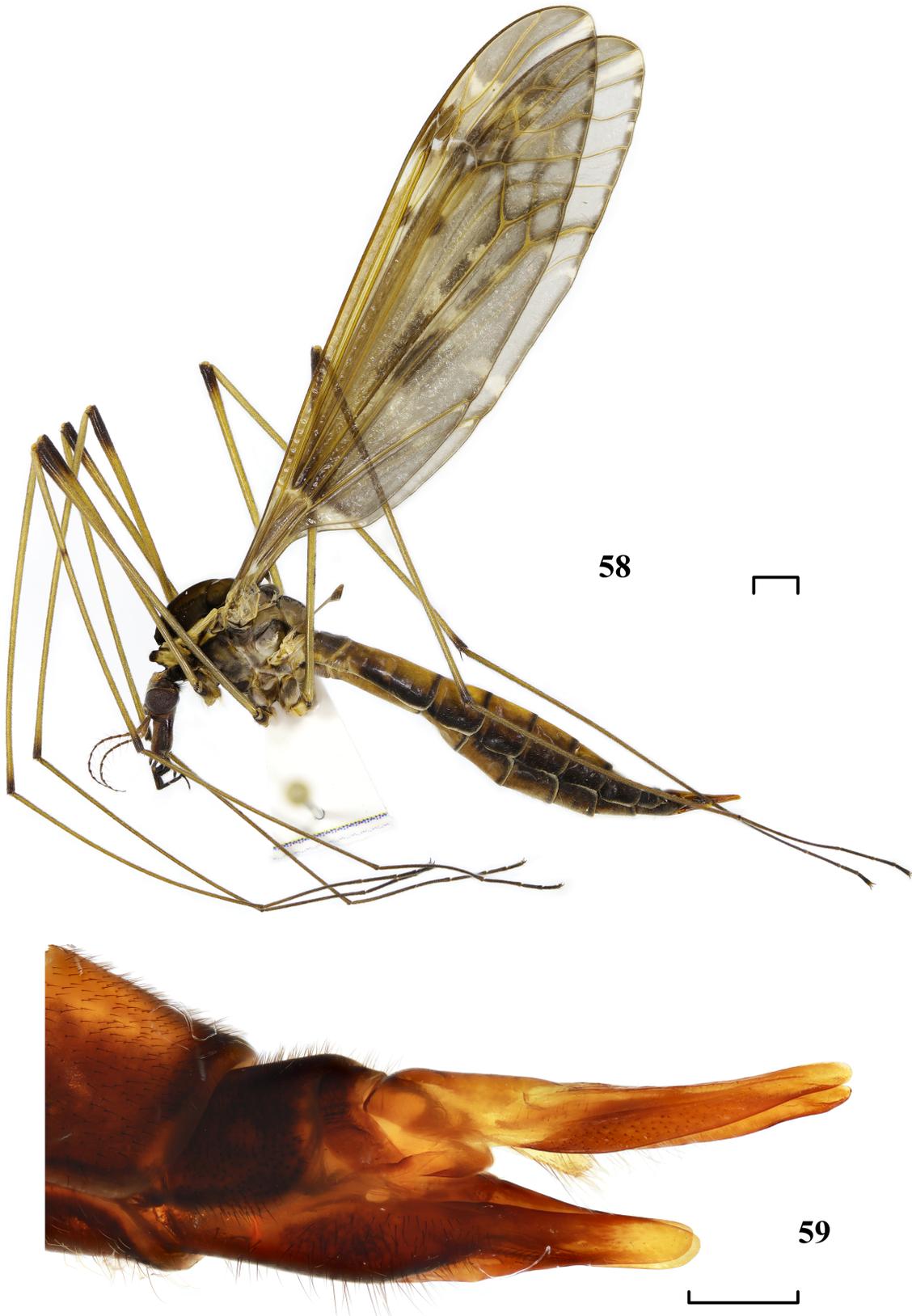
**OVIPOSITOR.** Long. Infra-anal plate membranous. Fused valculae obtuse. Hypo valve long, apex obtuse (Fig. 59).

### Distribution

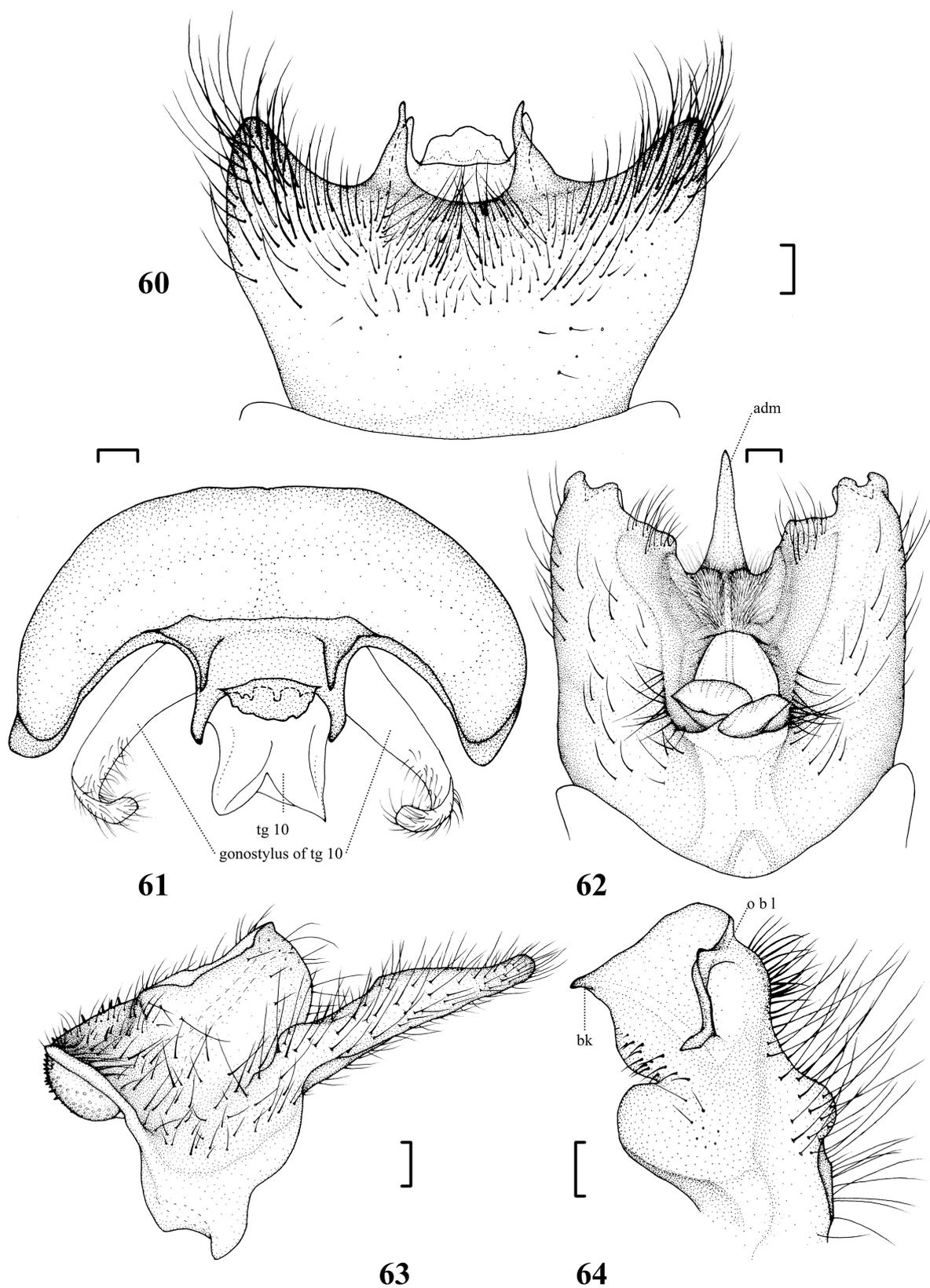
China (Sichuan).

### Remarks

This new species is similar to *T. (S.) arjunoides* Alexander, 1961 and *T. (S.) exquisita* Alexander, 1935. However, in *T. (S.) arjunoides* the lower part of tergite 9 has no protrusions, the outer gonostylus has no



**Figs 58–59.** *Tipula* (*Sinotipula*) *longiloba* sp. nov., paratype, ♀ (CAU). **58.** Habitus, lateral view. **59.** Ovipositor, lateral view. Scale bars: 58 = 2.0 mm; 59 = 1.0 mm.



**Figs 60–64.** *Tipula (Sinotipula) longiloba* sp. nov., holotype, ♂ (CAU). **60.** Tergite 9, dorsal view. **61.** Tergite 9, rear view. **62.** Hypopygium, ventral view. **63.** Outer gonostylus, lateral external view. **64.** Inner gonostylus, lateral external view. Scale bars = 0.2 mm.

spines and the inner gonostylus is clavate (Alexander 1961). In *T. (S.) exquisita* the prescutum is yellow, the tergite 9 has many small protrusions and the caudal lobe of the outer gonostylus is short (Alexander 1935).

*Tipula* (*Sinotipula*) *wardi* Edwards, 1928  
Figs 65–76

**Chinese name**

白背华大蚊

**Diagnosis**

Thorax mainly greyish black velvety with much white pruinescence, prescutum dark brown; posterior margin of tergite 9 with a pair of tooth-like protrusions, protrusions extended medially.

**Material examined**

CHINA – **Yizang** • 1 ♂; Linzhi City, Sejila Mountain (色季拉山); 29°38' N, 94°40' E; 4500 m a.s.l.; Aug. 2020; Enyong Chen leg.; light trap; CAU • 1 ♂, 1 ♀; Linzhi City, Sejila Mountain; 3000–5000 m a.s.l.; Jun.–Aug. 2020; Zhaohui Pan leg.; light trap; alcohol soaked, black in color; CAU • 1 ♀; Milin City, Yusong Village (玉松村); 29°11'40" N, 94°3'27" E; 2920 m a.s.l.; 23 Apr. 2019; Qicheng Yang leg.; light trap; CAU.

**Photo material**

CHINA • Holotype, ♂; Tsangpo Valley, Dushong La; 10 500 feet; 26 Jun. 1924; F. Kingdon Ward leg.; BMNH (photos by Jinlong Ren).

NEPAL • 1 ♂; Dingpache; 4400 m a.s.l.; 2 Jun. 1964; W. Dieel leg.; USNM (photos by Yan Li).

INDIA • 1 ♂; Kumaon; 9500 feet; 16 May 1958; Schmid leg.; USNM (photos by Yan Li) • 1 ♂; Sikkim Donkung; 15 750 feet; 22 Jun. 1959; Schmid leg.; USNM (photos by Yan Li) • 1 ♂; Sikkim Tangshing; 12 200 feet; 17 Apr. 1959; Schmid leg.; USNM (photos by Yan Li).

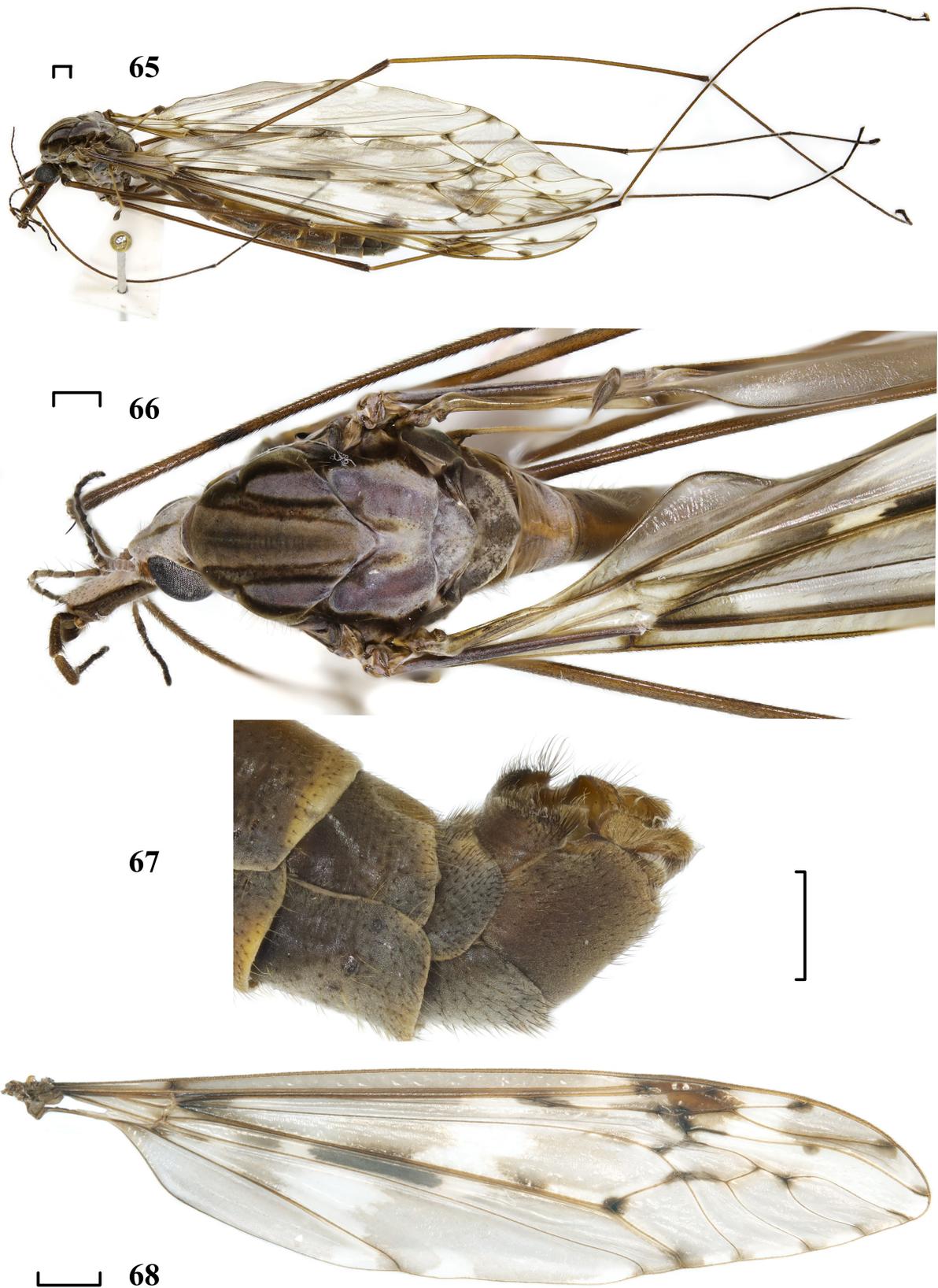
**Redescription**

**Male**

MEASUREMENTS. Body length 23.0–24.2 mm, wing length 28.8–30.5 mm, antenna length 4.0–4.2 mm (n = 2).

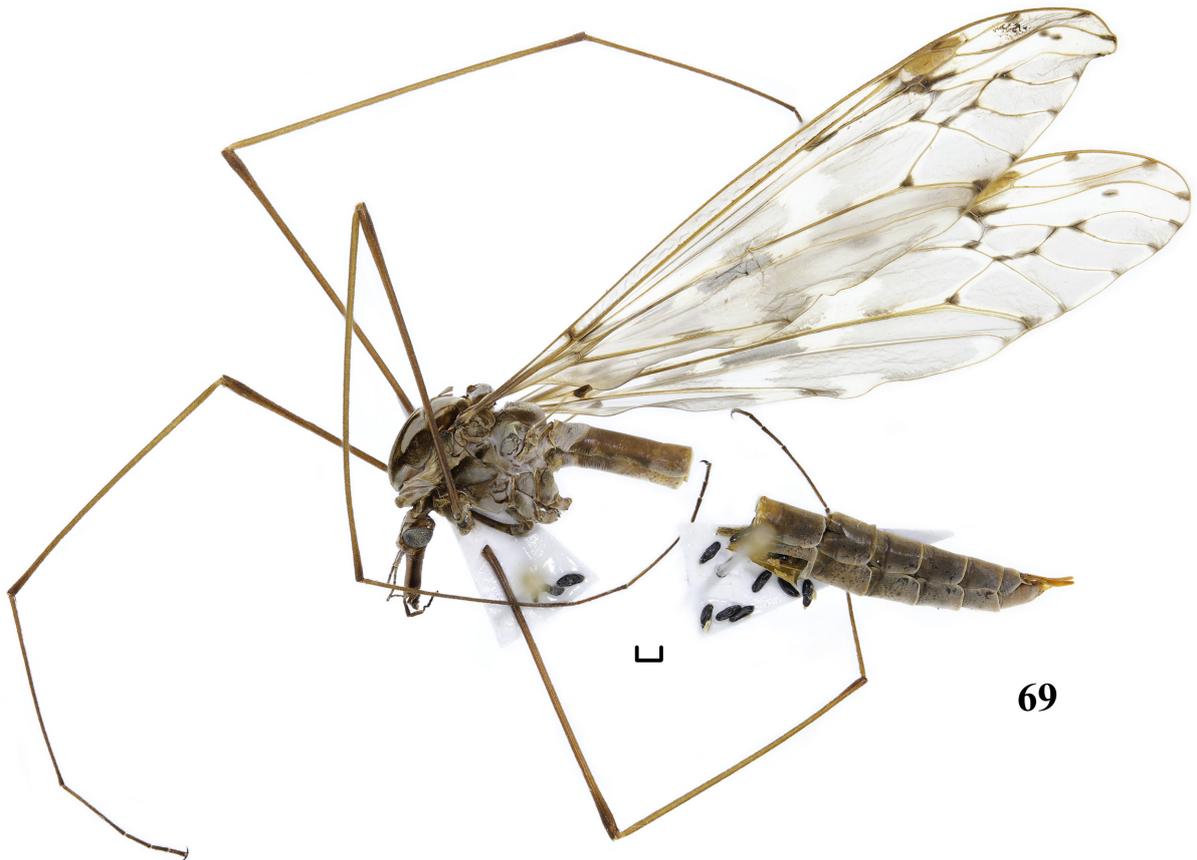
HEAD (Figs 65–66). Mainly dark brown. Occipital stripe olive grey, extended to frontal tubercle, wide at middle. Rostrum and nasus brown. Setae on head dark brown. Occiput, rostrum and nasus with abundant greyish white pruinescence. Antennal scape and pedicel pale brown; flagellar segments brown to black, darkened gradually to segment 11. Antenna with abundant white appressed pubescence. Proboscis brownish black. Palpal segments 1 and 2 brownish black, segment 3 dark brown, segment 4 black.

THORAX (Figs 65–66). Mainly greyish black velvety. Pronotum greyish brown with black lateral stripe extended to head and anepimeron. Prescutum dark brown with four stripes, all stripes with reddish brown margins, median stripes olive grey, broadened anteriorly and gradually narrowed posteriorly, stripes with abundant bluish white pruinescence on both sides. Scutum dark brown with four spots bearing broad bluish white pruinescence, virtually confluent, background color of spots reddish brown, anterior margin of scutum with four small olive-grey spots connected with stripes of prescutum. Scutellum and



**Figs 65–68.** *Tipula (Sinotipula) wardi* Edwards, 1928, ♂ (CAU). **65.** Habitus, lateral view. **66.** Head and thorax, dorsal view. **67.** Hypopygium, lateral view. **68.** Wing. Abbreviations: see Material and methods. Scale bars = 1.0 mm.

mediotergite dark brown with abundant pruinescence, except posterior margin. Pleuron mainly greyish brown with extensive bluish white pruinescence. Anepisternum brown with pruinescence and with brownish black stripe on upper portion; anepimeron with a dull black spot. Setae on thorax dark brown. Legs with dark brown coxae bearing white pruinescence, trochanter with black spot ventrally, femora dark brown with dark apex, tibiae yellowish brown with dark brown apex, tarsi dark brown. Claw with a black triangular tooth basally. Setae on legs dark brown. Wing variegated grey with numerous small white, brown and bluish grey areas, veins and cell Sc pale brown, pterostigma brown, petiole of cell  $m_1$

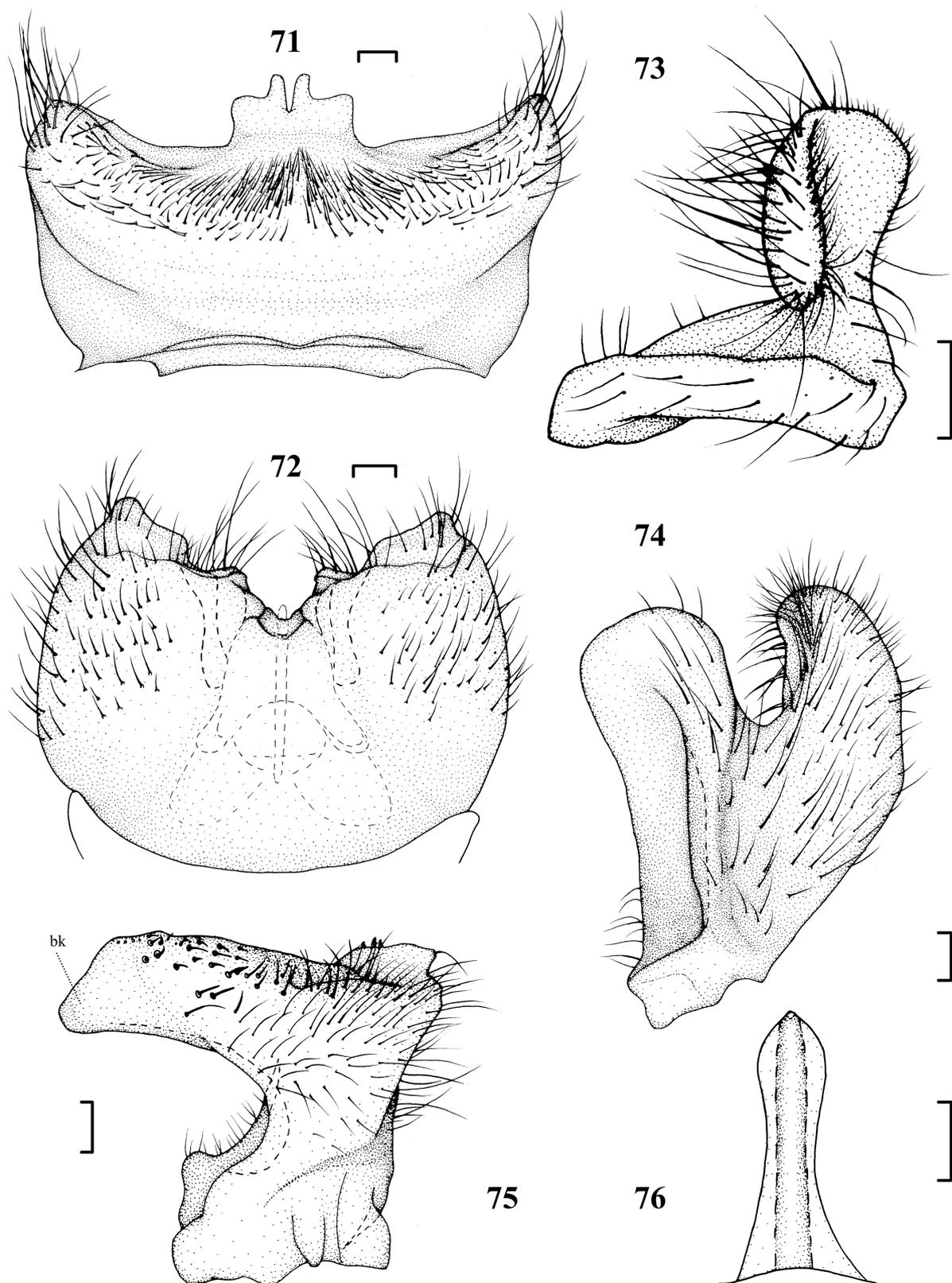


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70

**Figs 69–70.** *Tipula* (*Sinotipula*) *wardi* Edwards, 1928, ♀ (CAU). **69.** Habitus, lateral view. **70.** Ovipositor, lateral view. Scale bars = 1.0 mm.



**Figs 71–76.** *Tipula (Sinotipula) wardi* Edwards, 1928, ♂ (CAU). 71. Tergite 9, dorsal view. 72. Hypopygium, ventral view. 73. Outer gonostylus, lateral external view. 74. Outer gonostylus, dorsal view. 75. Inner gonostylus, lateral external view. 76. Adminiculum, ventral view. Scale bars: 71–73, 76 = 0.2 mm; 74–75 = 0.1 mm.

$\frac{1}{3}$  as long as discal cell, long spot of cell cua dark bluish grey, spots dull grey at intersection of veins (Fig. 68). Halter with yellowish brown stem and brownish black knob.

ABDOMEN (Fig. 65). Mainly dark brown. All tergites with black lateral stripes, sternites and lateral margins of tergites with white pruinescence. Setae on abdomen golden.

HYPOPYGIUM (Figs 67, 71–76). Mainly dark brown. Posterior margin of tergite 9 with a pair of tooth-like protrusions, elongate medially. Gonocoxite and sternite 9 virtually fused, except ventral surface of sternite 9 with vague suture. Aedeagus dark; adminiculum subhyaline, narrow, but apically slightly wider. Outer gonostylus roughly V-shaped, inner half of lobe folded (Figs 73–74). Inner gonostylus short, pistol-shaped, with slant beak (Fig. 75).

#### Female

MEASUREMENTS. Body length 27.4 mm, wing length 33.5 mm, antenna length 3.6 mm (n = 1).

Body color same as in male. Apex of femora slightly paler than in male. Wing color paler than in male, spots of cell  $r_5$  varied, one wing with two spots in cell  $r_5$  centrally, another wing with only one spot, position inconsistent with that in male (Fig. 69).

OVIPOSITOR. Posterior margin of tergite 9 with a slender protrusion laterally. Infra-anal plate short. Fused valculae slender. Hypo valve short, apically slightly upturned (Fig. 70).

#### Distribution

China (Xizang); India; Myanmar; Nepal.

#### Remarks

We compared the four specimens we obtained (CUA), the holotype (BMNH), and specimens from Nepal and India (Kumaon and Sikkim) (USNM). The species is not completely consistent regarding the size, location or number of dark spots within cell  $r_5$ . Even in the female specimen from Milin (CUA), the markings on the two wings are asymmetrical (Fig. 69). However, what is certain is that the hypopygium of the male specimens is exactly the same.

Subgenus *Vestiplex* Bezzi, 1924

*Tipula* (*Vestiplex*) *curvicornis* nom. nov.

This is a replacement name for *Tipula* (*Vestiplex*) *bucera* Yang, Li, Pan, Liu & Yang, 2021 (Yang *et al.* 2021: 169), described from China. It is preoccupied by the secondary primary homonym *Tipula* (*Lunatipula*) *bucera* Alexander, 1927 from Canada and USA (Alexander 1927).

#### Etymology

This species is named after the shape of the gonocoxite, the Latin ‘*corv-cornis*,’ meaning ‘bearing horns’, a third declension adjective.

#### Discussion

In specimens of *Tipula* (*Sinotipula*) *exquisita*, *T. (S.) hobsoni* and *T. (S.) longiloba* sp. nov. that we examined, some structures on tergite 9 are variable. The small teeth on the tergal ventral plate show differences in position, orientation, size, etc. Thus, these differences may not be used as a basis for classification in *Sinotipula*. However, we cannot rule out that this is related to attrition during mating, since these small teeth are very thin and weak. We hope to find more evidence in future biological studies.

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