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A NEW SPECIES OF *SYBISTROMA* MEIGEN, 1824 (DIPTERA: DOLICHOPODIDAE) FROM CHINA

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Summary. A new species *Sybistroma genriki* sp. n. from the Yunnan province of China is described. It belongs to *S. incisa* group of species, differing from other species in mostly yellow antenna with arista-like stylus much longer than postpedicel; postpedicel elongated, much longer than wide, acute apically; stylus apical, with dark and white apical swelling; lower postocular setae white; legs mostly yellow except mostly black mid and hind coxae and brown-black distal spot on hind femur. A key to 11 species from Sichuan and Yunnan is provided, based mainly on male secondary sexual characters. The known distribution of the dolichopodine genus *Sybistroma* Meigen, 1824, is briefly discussed.

Key words: Diptera, Dolichopodidae, *Sybistroma*, taxonomy, new species, key, Sichuan, Yunnan, Oriental Region.

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Резюме. Из китайской провинции Юннань описан новый вид *Sybistroma genriki* sp. n. Он относится к группе видов *S. incisa*, отличаясь от других представителей группы следующими признаками: усики большей частью желтые,

ариста значительно длиннее 3-го членика усиков, длина которого почти в 3 раза больше ширины, ариста вершинная, с черно-белым расширением на вершине; нижние заглазничные щетинки белые; ноги большей частью желтые, с черными средними и задними тазиками и коричнево-черным пятном на вершине задних бедер. Составлен по самцам определитель 11 видов *Sybistroma*, известных из провинций Сычуань и Юннань. Предполагается, что горные леса провинций Сычуань, Юннань, Шэньси, Хэнань и Ганьсу являются центром видовой разнообразия рода в Восточной Азии.

INTRODUCTION

Until 2005 the genus *Sybistroma* Meigen, 1824, belonging to the subfamily Dolichopodinae, had long been supposed to be Mediterranean in distribution, with five known species (Negrobov, 1991). The genus has been recently expanded to include *Hypophyllus* Haliday, 1832, *Ludovicus* Rondani, 1843, *Nodicornis* Rondani, 1843, and some species of *Hercostomus* Loew, 1857 (Brooks, 2005; Grichanov, 2012). Now *Sybistroma* contains more than 50 species described mainly from the Palaearctic and Oriental (China) Regions. A single Afrotropical species, *S. bogoria* (Grichanov, 2004), has been described from Kenya (Grichanov, 2004, as *Ludovicus*).

Most males of *Sybistroma* can be distinguished by their modified antenna (reduced pedicel, postpedicel sometimes enlarged, stylus often with one or more lamellae) and hypopygial morphology (tripartite arrangement of basiventral lobes and hypandrium in ventral view). Males lacking modified antennae are distinguished by the possession of elongate setulose apicoventral epandrial lobes of hypopygium (Brooks, 2005). Females of *Sybistroma* cannot readily be distinguished from those of *Hercostomus*.

Yang *et al.* (2011) provided the last key to Chinese (both Palaearctic and Oriental) species. A new species, *Sybistroma genriki* **sp. n.**, from the Yunnan province is here described and illustrated. In addition, a key to males of 11 species from Sichuan and Yunnan is provided. With the new species in this paper, the Chinese fauna of *Sybistroma* now totals 29 species. Their diagnostic characters were described and illustrated by Yang *et al.* (2011).

MATERIAL AND METHODS

The paper is based on material in the collections of the Zoological Institute of the Russian Academy of Sciences, St Petersburg (ZIN). Specimens were studied and photographed using a ZEISS Discovery V-12 stereo microscope and an AxioCam MRc5 camera. Morphological terminology and abbreviations follow Cumming & Wood (2017) and Grichanov & Brooks (2017). The lengths of the podomeres are given in millimetres. Body length is measured from the base of the antenna to the tip of abdominal segment 6. Wing length is measured from the base to the wing apex. The figures showing the hypopygium in lateral view (e.g., Fig. 1F) are oriented as it appears on the intact specimens, with the morphologically ventral surface of the genitalia facing upwards, dorsal surface downwards, anterior end facing right and posterior end facing left.

TAXONOMY

Genus *Sybistroma* Meigen, 1824

Type-species: *Dolichopus discipes* Germar, 1821, by subsequent designation (Westwood, 1840).

NOTES. See Brooks (2005) and Yang *et al.* (2011) for generic diagnosis and synonymy. Combining species from different genera with *Sybistroma*, Brooks (2005: 120) was inaccurate in checking gender endings, using all genders: masculine (*eucerus*, *flavus*, *inornatus* etc.), neuter (*obscurillum*, *sphenopterum*) and feminine (*setosa*). Yang *et al.* (2011) used masculine gender for Chinese species. Grichanov & Kazerani (2014) proposed the use of feminine ending, following Schiner's and Negrobov's proposal. I use here the feminine gender for all species names.

Key to the species of *Sybistroma* Meigen from Sichuan and Yunnan (males)

This key builds extensively on Yang *et al.* (2011) but has scattered modifications based on material examined for the present study in ZIN collection, plus the inclusion of a new species.

1. Antenna with postpedicel rather short, as long as wide, obtuse apically 2
 - Postpedicel elongated, distinctly longer than wide, acute apically 3
2. Postocular setae wholly black (Yunnan) *S. compressa* (Yang et Saigusa, 2001)
 - Middle and lower postocular setae yellow (Sichuan, Yunnan) *S. acutata* (Yang, 1996)
3. Cercus nearly quadrate, with a big apical incision, or nearly triangular with obliquely concave outer margin 4
 - Cercus not as stated above 7
4. Hind femur with 1 long ventral bristle basally; cercus somewhat triangular, with obliquely incised outer margin (Sichuan) *S. emeishana* (Yang, 1998)
 - Hind femur without ventral bristles; cercus somewhat quadrate, with a big apical incision ...
..... 5
5. Middle and lower postocular setae pale; arista-like stylus with black swollen apex (Henan, Shaanxi, Sichuan) *S. flava* (Yang, 1996)
 - Postocular setae wholly black; arista-like stylus not swollen apically 6
6. Antenna with only basal ventral area of postpedicel dark yellow; postpedicel long (Sichuan) *S. binigra* (Yang et Saigusa, 1999)
 - Antenna with postpedicel wholly yellow; postpedicel short, triangular (Sichuan)
..... *S. longaristata* (Yang et Saigusa, 1999)
7. Middle and lower postocular setae pale; lower calypter with yellow hairs 8
 - Postocular setae wholly black; lower calypter with black hairs 9
8. Postpedicel 2.4 times longer than wide; arista-like stylus with two dark swellings (Gansu, Ningxia, Sichuan, Shanxi) *S. incisa* (Yang, 1999)
 - Postpedicel 2.9 times longer than wide; arista-like stylus with one black and white swelling (Yunnan) *S. genriki* sp. n.
9. Arista-like stylus subapical; antenna blackish with extreme base of postpedicel yellow (Sichuan) *S. sichuanensis* (Yang, 1998)
 - Arista-like stylus dorsal or subdorsal 10

10. Thorax and abdomen partly yellow; postpedicel with additional arista-like process apically (Henan, Shaanxi, Yunnan) *S. biaristata* (Yang, 1999)
 – Thorax and abdomen metallic green (at most with metapleuron yellow); apex of postpedicel swollen, wholly black, without additional arista-like process (Yunnan)
 *S. yunnanensis* (Yang, 1998)

***Sybistroma genriki* Grichanov, sp. n.**

<http://zoobank.org/NomenclaturalActs/0DCB4A4C-F646-420F-8CF1-666ED051344F>

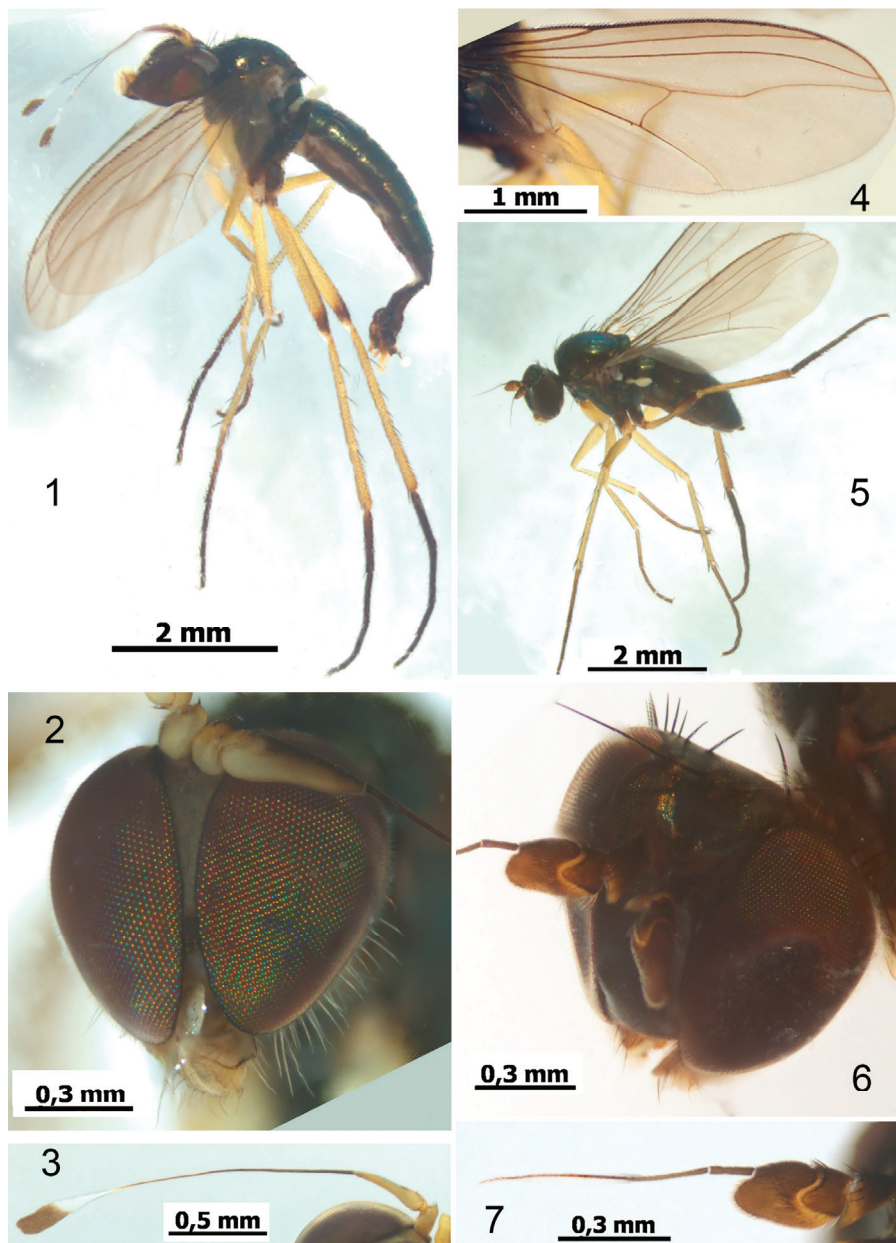
Figs 1–13

TYPE MATERIAL. Holotype – ♂ (dried), **China**: “CH, Yunnan, ENE Shangri-La, 2.55 km N Mizhu, Potatso NP, 27°53’35” N / 99°54’18” E, H=3935 m, 11.VI 2019, Belousov, Davidian, Kabak leg.” [ZIN]. Paratypes (in ethanol): 1♂, 4♀, same data as holotype; 1♂, 2♀, “CH, Yunnan, NW Shangri-La, 2.25 km E Nixi, 28°04’10” N / 99°31’05” E, H=3835 m, 13.VI 2019, Belousov, Davidian, Kabak leg.”; 2♂, 4♀, “CH, Yunnan, E Shangri-La, 3.45 km NE Hongpocun Vill., 27°50’52” N / 99°49’57” E, H=3675 m, 07.VI 2019, Belousov, Davidian, Kabak leg.”. The holotype has its male terminalia dissected and stored in glycerin in a microvial pinned with the source specimen. Types are deposited in the collection of the Zoological Institute of the Russian Academy of Sciences.

DESCRIPTION. Male. Head. Antenna with first three segments mostly yellow, with scape and postpedicel blackish dorsally; arista-like stylus mostly black, but snow-white at apex of filiform part and at basal 1/3 of apical swelling; scape with dorsal setae; pedicel reduced (from outer view), slightly protruded into postpedicel (from inner view); postpedicel conoid, 2.9 times as long as high; stylus apical, microscopically haired, with fused segments 1 and 2; apical swelling of stylus truncated at apex, 4 times as long as wide; length (mm) of scape, pedicel, postpedicel, stylus, 0.18/0.06/0.38/1.66; frons bronze-blue-black, grey pollinose; eyes finely haired; face black, weakly whitish grey pollinose; ratio of height to width under antennae to width at clypeus, 12/4/1; palpus yellow, sparsely covered with small black setae; proboscis yellow; upper postocular setae black; middle and lower postocular setae white.

Thorax. All bristles black; pronotum pubescent, with black hairs; mesonotum grey pollinose; 6 dorsocentral setae; acrostichals short, biserial; pleura dark, with weak grey pruinosity; scutellum with 2 strong setae, 2 fine lateral setae.

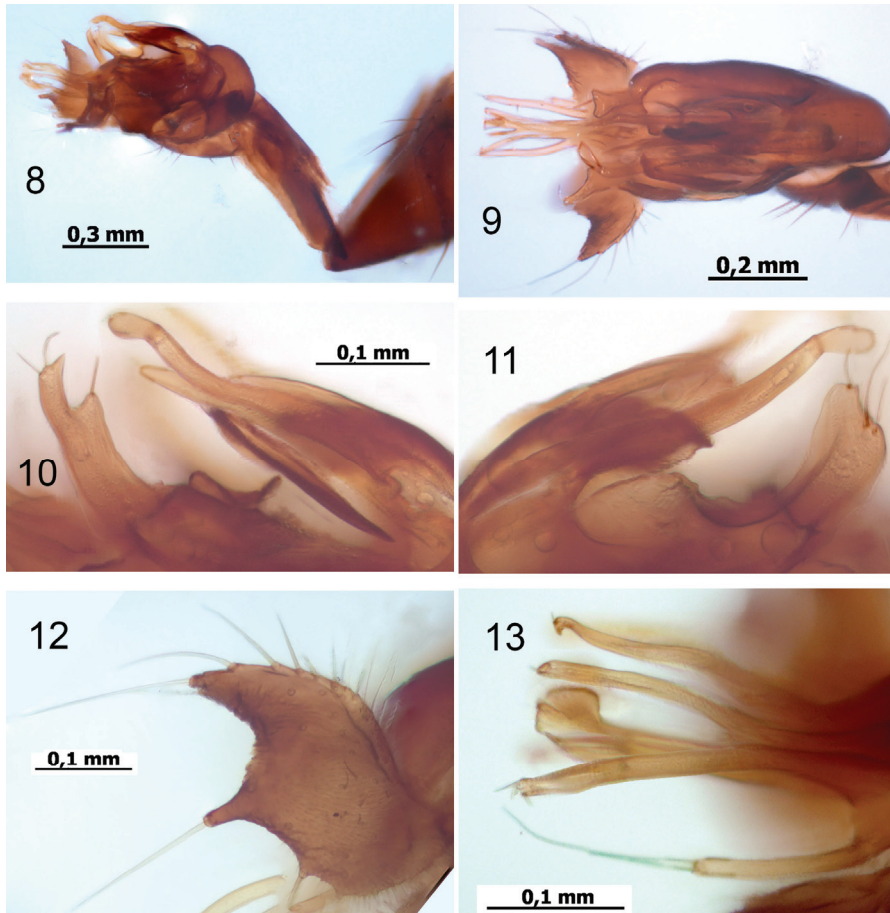
Legs mostly yellow; mid and hind coxae mostly black; hind femur brown-black at apex; fore and mid tarsi from tip of basitarsus and hind tarsus black; hairs and setae black; all tarsi simple; fore leg with coxa bearing white and brown hairs laterally and strong black setae apically, femur without subapical posterior seta, tibia with 2 short anterodorsal, 2 strong posterodorsal setae, no long apicoventral seta; mid leg with coxa bearing some brown and black hairs laterally and 1 strong seta, femur with 1 anterior subapical seta, tibia with 3 anterodorsal, 3 posterodorsal, 2 anteroventral, 1 posteroventral and 4 apical setae; hind leg with coxa bearing 1 strong seta, femur with 1 anterior subapical seta and some posterodorsal cilia, tibia with 2 anterodorsal,



Figs 1–7. *Sybistroma genriki* sp. n. 1 – male habitus; 2 – male head; 3 – male antenna; 4 – male wing; 5 – female habitus; 6 – female head; 7 – female antenna.

4 posterodorsal and 4–5 ventral setae. Femur, tibia and tarsomere (from first to fifth) length ratio: fore leg: 1.07/1.1/0.67/0.28/0.23/0.16/0.13, mid leg: 1.33/1.72/0.99/0.39/0.3/0.21/0.17, hind leg: 1.77/2.14/0.75/0.61/0.42/0.24/0.23.

Wing. Membrane greyish, veins brown; R1 thickened; costa thickened, with short brown setae dorsally; R2+3 almost straight, R4+5 curved towards M1+2 in apical fourth, M and R4+5 slightly convergent distally, becoming parallel at apex; M joining costa right before wing apex; ratio of costal section between R2+3 and R4+5 to that between R4+5 and M1+2: 0.57/0.13, distal part of M4 2.2 times longer than dm-m; anal vein distinct; lower calypter yellow, with black cilia; halter yellow.



Figs 8–10. *Sybistroma genriki* sp. n., male. 8 – postabdomen, lateral view; 9 – hypopygium, ventral view; 10 – epandrial lobes and phallus, left lateral view; 11 – epandrial lobes, right lateral view; 12 – cercus, outer view; 13 – postgonite and lobes of surstylus.

Abdomen. Green-black and shiny, with black hairs and marginal setae; 7th segment as long as hypopygium; 8th segment black, with black cilia. Male genitalia with epandrium black, elongate-oval, 1.7 times as long as high; hypandrium flanked laterally by long and thin basiventral epandrial lobes forming tripartite arrangement in ventral view; basiventral epandrial lobes symmetrical, each lobe spear-shaped with flat apical knob; phallus thin and long, with large sclerotized lateral projections (parameral sheath); surstylus yellow, with 2 long and thin lobes; ventral lobe straight, with short apical setae; dorsal lobe of surstylus deeply bifurcated, with dorsal arm half as long as ventral arm, with 1 long apical seta; postgonite thin, as long as surstylus, trilobed at apex; cercus dark brown; 2 times longer than wide, with 2 wide distal emarginations, with light and dark simple setae, short basally and long distally (Fig. 12).

MEASUREMENTS. Body length 4.5 mm, antenna length 2.2 mm, wing length 4 mm, wing width 1.4 mm, hypopygium length 0.8 mm.

FEMALE. Similar to male except lacking male secondary sexual characters, otherwise as follows. Body length 3.9 mm, antenna length 0.9 mm, wing length 4.3 mm. Face black, weakly grey pollinose, nearly parallel-sided; ratio of its height to width at clypeus, 0.45/0.25; antenna mostly blackish brown, yellow ventrally; postpedicel ovate, nearly 1.5 times as long as high; stylus dorsoapical, bisegmented; length (mm) of scape, pedicel, postpedicel, stylus (segments 1 and 2), 0.2/0.14/0.26/0.12/0.67.

DIAGNOSIS. Antenna mostly yellow, with stylus much longer than postpedicel; postpedicel elongated, 2.9 times as long as high, acute apically; arista-like stylus apical, with dark and white apical swelling; lower postocular setae white; legs mostly yellow except mostly black mid and hind coxae and brown-black distal spot on hind femur; all tarsi simple, mostly dark. This species belongs to *S. incisa* group of species and keys to *S. apicicrassa* (Yang et Saigusa, 2001) known from Henan and Shaanxi provinces of China (Yang *et al.*, 2011). Its cercus superficially resembles the cercus of *S. incisa*, but the latter species differs from the new species in the short antennal postpedicel, preapical arista-like stylus, two dark swellings on stylus, entirely yellow hind femur, fine morphological characters of hypopygium (Yang *et al.*, 2011: fig. 692). *S. apicicrassa* differs from the new species in the simple cercus, dark swelling on stylus, entirely yellow hind femur, fine morphological characters of hypopygial appendages (Yang *et al.*, 2011: fig. 678).

ETYMOLOGY. The species is named for the Russian entomologist, Dr. Genrik Davidyan, one of the collectors of the type series.

DISCUSSION

The Palaearctic and Oriental parts of China numbers 28 described species of *Sybistroma* being confined often to some local regions of the country (Yang *et al.*, 2011). The authors included 26 recognized Chinese species into their key. The fauna of the Shaanxi province contains 13 species known usually from neighboring provinces Henan, Gansu and some others. The fauna of the Sichuan and Yunnan

provinces numbers now 11 mainly upland species. Mountains of Sichuan and Yunnan are covered mostly with subtropical evergreen broadleaf forests (see Map of Ecoregions, 2017). Shaanxi, Henan, Gansu and some neighboring provinces are covered with temperate broadleaf and mixed forests (including such ecoregions as Qin Ling Mountains deciduous forests and Daba Mountains evergreen forests). These two parts of China are apparently the centers of *Sybistroma* species diversity in East Asian area of the genus distribution. Himalayas, Karakoram mountain ranges and deserts of Central Asia separate the Chinese fauna from the fauna of West and Central Asia (eastward to Iran, Afghanistan and Tajikistan) with no common species. It is also worth noting that the genus is unknown from Mongolia and Siberia.

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