

A new species of *Hercostomus* (Diptera: Dolichopodidae) from Shennongjia National Nature Reserve, Hubei, China

Ruosi LIU¹, Yong BIAN¹, Yishan GUO², Ding YANG³^①

1. Science and Technology Research Center of China Customs, Beijing 100026, China

2. Qingdao Dagang Customs, Qingdao, Shandong 266011, China

3. Department of Entomology, China Agricultural University, Beijing 100193, China

Abstract: During our study of Dolichopodidae from Shennongjia National Nature Reserve in Hubei, a new species of *Hercostomus*, *Hercostomus nimbosus* Liu & Yang **sp. nov.**, belonging to the *Hercostomus baishanzuensis* group, was found. It is described here and compared with its similar species.

Key words: Empidoidea; Dolichopodinae; taxonomy

中国湖北神农架寡长足虻属一新种记述（双翅目：长足虻科）

刘若思¹，边勇¹，郭怡杉²，杨定³^①

1. 中国海关科学技术研究中心，北京 100026；2. 青岛大港海关，山东 青岛 266011；3. 中国农业大学昆虫学系，北京 100193

摘要：记述中国湖北神农架自然保护区的寡长足虻属 1 新种：云寡长足虻 *Hercostomus nimbosus* Liu & Yang **sp. nov.**，隶属百山祖寡长足虻种团。提供了该种的整体图和解剖生殖器图，并与近似种进行了比较。

关键词：舞虻总科；长足虻亚科；分类

Introduction

The genus *Hercostomus* in the subfamily Dolichopodinae currently has 474 known species worldwide. Among them, 236 species occurred in China (Yang *et al.* 2011). But little is known about this group from Hubei, China. There were four known species in Hubei with only one in Shennongjia National Nature Reserve.

Shennongjia National Nature Reserve is located between the Yangtze River and the Hanshui River, where Hubei and Chongqing meet. It is officially included in the World Heritage List and awarded the title of “World Natural Heritage Site”. During our study of the long-legged flies from the Shennongjia National Nature Reserve, a new species of *Hercostomus* was found. Here we describe it and discuss its similar species.

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① Corresponding author, E-mail: dyangcau@126.com

Material and methods

The specimens on which this study is based were collected with sweep nets in Shennongjia National Nature Reserve, Hubei of China. The specimens are stored in 75% ethanol and deposited in the Entomological Museum of China Agricultural University (CAU), Beijing.

Photos were taken using a Leica DVM6 Microscopic imaging system and some photos were restacked with Helicon focus 6.0 software. The genitalia were cut off and deposited in potassium hydroxide (10%) for 12 hours.

Morphological terminology for adult structures mainly follow McAlpine (1981). Terms for the structures of the male genitalia follow Cumming and Wood (2009). The body length was measured from the insertion of the antenna to the apex of the genitalia in males. The following abbreviations are used: acr — acrostichal bristle; ad — anterodorsal bristle; av — anteroventral bristle; d — dorsal bristle; dc — dorsocentral bristle; LI — fore leg; LII — mid leg; LIII — hind leg; pd — posterodorsal bristle; tg — tergite; v — ventral bristle; CuAx ratio — length of m-cu/length of distal portion of CuA.

Taxonomy

The genus *Hercostomus* includes the following 5 species in Hubei of China

1. *H. beijingensis* Yang, 1996 — China (Beijing, Henan, Shaanxi, Hubei)
2. *H. hubeiensis* Yang & Saigusa, 2001 — China (Hubei)
3. *H. nimbosus* Liu & Yang **sp. nov.** — China (Hubei)
4. *H. shennongjiaensis* Yang, 1997 — China (Henan, Shaanxi, Hubei)
5. *H. wudangshanus* Yang, 1997 — China (Beijing, Henan, Shaanxi, Hubei, Yunnan)

Hercostomus nimbosus Liu & Yang **sp. nov.** (Figs. 1, 2)

Diagnosis. 5 strong dc, 5 pairs of irregular acr; legs mainly brown with fore and mid tibiae yellow; lateral epandrial lobe enlarged at apex; dorsal surstylus short and thick, widened at apex; ventral surstylus thin at base and apex, widened and curved at middle.

Description. Male (Fig. 1A). Body length 2.4 mm; wing length 2.4 mm.

Head metallic green with red compound eyes; eyes separated on face (Fig. 1B). Hairs and bristles on head black, postocular bristles (including postero-ventral hairs) brown to black. Antennal scape and pedicel dark brown to black, first flagellomere dark brown; first flagellomere elongated, 2 times wider than long; arista dark brown, short pubescent, basal segment 0.6 times distal segment (Fig. 1C). Proboscis brown with black hairs; palpus black with 1 strong bristle and 5 weak bristles (Fig. 1D).

Thorax metallic green. Hairs and bristles on thorax black; 5 strong dc, 5 pairs of irregular acr; one pair of scutellar bristles long and strong, longer than dc; proepisternum with 1 bristle on lower part.

Legs mainly brown; fore and mid tibiae yellow, hind tibia yellow with brown apex; fore and mid tarsomere 1 yellow to brown. Hairs and bristles on legs black. Fore and mid coxae with anterior bristles, hind coxa with 1 brown bristle at lower part. Hind trochanter with 1 outer bristle near middle. Fore femur with 1 pv at apex; mid femur with row of av; hairs on dorsal and ventral sides of hind femur long. Fore tibia with 1 weak ad at basal 1/3. Mid tibia with 1

weak ad at base, 2 ad, 2 pd, and 3–4 apical bristles. Hind tibia with 2 ad, 2–3 d, 3–4 apical bristles. Relative length of tibia and 5 tarsomeres of legs LI : 4.8 : 2.5 : 1.1 : 0.9 : 0.7 : 0.8 ; LII : 5.4 : 3.6 : 2.1 : 1.4 : 1.1 : 1.1 : 1.1 ; LIII : 7.1 : 2.1 : 1.5 : 1.5 : 2.3 : 1.5.



Figure 1. *Hercostomus nimbosus* Liu & Yang **sp. nov.**, holotype, ♂. A. Habitus, lateral view; B, D. Head, anterior and lateral views; C. Antenna, lateral view.

Wing hyaline, tinged brown; veins blackish, R_{4+5} and M parallel apically; CuAx ratio 0.6. Squama brown with brown hairs. Halter pale yellow.

Abdomen mainly metallic green; hairs and bristles on abdomen black. Tg 1–5 with normal hairs; tg 6 without hairs. Male genitalia (Fig. 2): epandrium somewhat rounded, 1.5 times longer than wide. Lateral epandrial lobe protruded, 2–3 times wider than longer, enlarged and bearing 2 weak bristles at apex, bearing 1 strong bristle at middle, bearing a hook-like protrusion at base. Dorsal lobe of surstylus short and thick, widened at apex; ventral lobe of surstylus thin at base and apex, widened and curved at middle. Cercus short with moderately long bristles, outer margin with distinct dentate process. Phallus thin.

Female. Unknown.

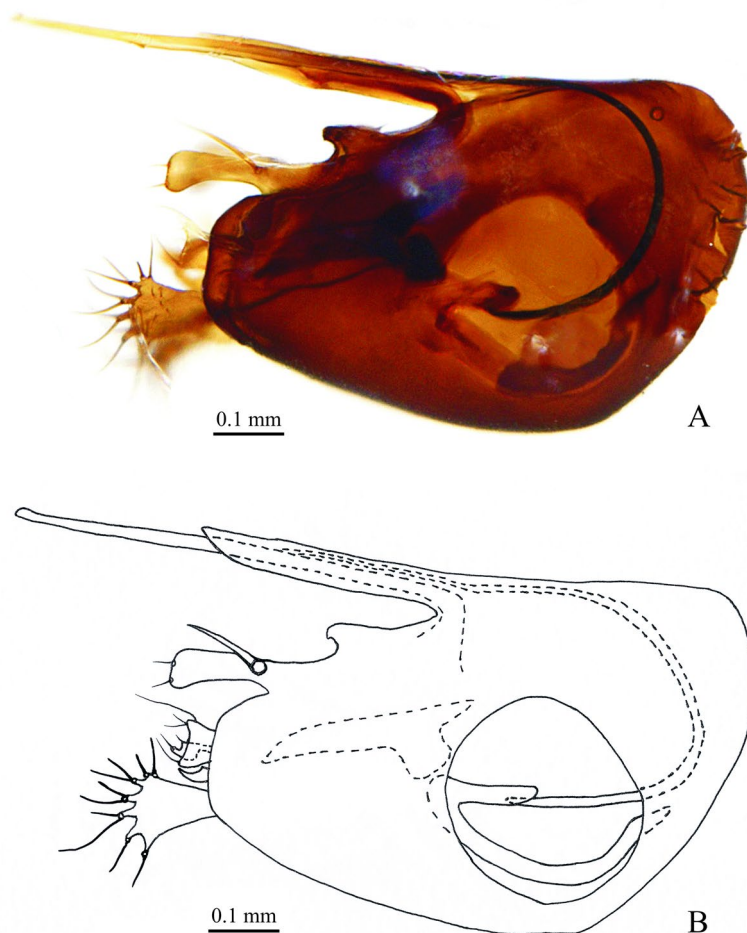


Figure 2. *Hercostomus nimbosus* Liu & Yang **sp. nov.**, holotype, ♂, genitalia, reversed lateral view. A. Deposited in glycerin; B. Hand drawing.

Holotype. ♂, **China**, Hubei, Shennongjia National Nature Reserve, Dajiu Lake, 31.48 N 110.03 E, 1,741 m, 23-VI-2023, leg. Jinzhou LIU.

Etymology. The specific epithet is derived from the Latin word “nimbosus” (cloudy), referring to Shennongjia’s year-round cloud-shrouded mountain climate.

Remarks. In the key to the Chinese species of *Hercostomus* (Yang *et al.* 2011), this new species runs to *H. baishuihensis* Yang & Saigusa, 2001, but the lateral epandrial lobe is enlarged at apex. In *H. baishuihensis*, the lateral epandrial lobe is not enlarged at apex (Yang *et al.* 2011). And the new species is also like *H. baishanzuensis* Yang & Yang, 1995, but the length of the basal segment of the arista is 0.6 times as long as the distal segment. In *H. baishanzuensis*, the basal segment of the arista is 0.2 times as long as the distal segment (Yang *et al.* 2011).

Discussion

There are 26 species in the *Hercostomus baishanzuensis* group known from China, with the following characteristics: enlarged first flagellomere and dentated outer margin of cercus; usually truncated lateral epandrial lobe, short medial epandrial lobe; irregular paired acr, rarely absent. Now most of the 237 Chinese *Hercostomus* species can be classified into 26 species group, and also 35 of them remain unclassified.

The diversity of *Hercostomus* is rich in China, but only 5 species are known in Hubei. The fauna of Shennongjia National Nature Reserve are in a transitional zone, between temperate zone and subtropical zone, and belong to the Oriental region, central zone and western mountain plateau subzone. Its biodiversity is particularly prominent, as are the same latitudes around the world, contributing to it being listed as a member of the International Network of Biosphere Reserves. So we anticipate more new species being discovered in this area.

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