

# Two new species of the genus *Tachydromia* (Diptera: Empididae) from Shaanxi, China

Yan GU<sup>1, 2</sup>, Wei ZENG<sup>1</sup>, Junhua ZHANG<sup>2①</sup>, Ding YANG<sup>1①</sup>

1. Department of Entomology, College of Plant Protection, China Agricultural University, Beijing 100193, China

2. Institute of Plant Quarantine, Chinese Academy of Inspection and Quarantine, Beijing 100029, China

**Abstract:** *Tachydromia* Meigen is a somewhat large genus in the family Empididae with 112 known species distributed worldwide. Ten species were previously known to occur in China. Here the genus *Tachydromia* is newly recorded from Shaanxi. The following two new species belonging to the *Tachydromia arrogans* species group are described: *Tachydromia basiflava* **sp. nov.** and *Tachydromia crassisetosa* **sp. nov.** A key to the species of *Tachydromia* from China is provided.

**Key words:** dance fly; taxonomy; key

中国陕西合室舞虻属 *Tachydromia* 二新种（双翅目：舞虻科）

顾岩<sup>1, 2</sup>, 曾玮<sup>1</sup>, 张俊华<sup>2①</sup>, 杨定<sup>1①</sup>

1. 中国农业大学植物保护学院昆虫学系, 北京 100193; 2. 中国检验检疫科学院植物检疫所, 北京 100029

**摘要:** 合室舞虻属 *Tachydromia* Meigen 是舞虻科中较大的属, 已知 112 种分布世界各地。我国以前已知 10 种。本文首次发现合室舞虻属在陕西有分布, 记述如下 2 新种: 基黄合室舞虻 *Tachydromia basiflava* **sp. nov.** 和粗鬃合室舞虻 *Tachydromia crassisetosa* **sp. nov.**, 均属于白毛合室舞虻种团 *Tachydromia arrogans* species group, 并编制中国合室舞虻属分种检索表。

**关键词:** 舞虻; 分类; 检索表

## Introduction

*Tachydromia* Meigen is characterized by the humerus very large, mesoscutum distinctly longer than broad, fore femur strongly thickened, and wing often banded or spotted without cell cup (Chvála 1975). It is distributed worldwide with 112 known species (Yang *et al.* 2007, 2018), of which 10 species have been recorded from China (Saigusa & Yang 2002; Yang & Grootaert 2006; Grootaert *et al.* 2008; Yang *et al.* 2018). The major references dealing with the Oriental and Palaearctic *Tachydromia* are as follows: Chvála (1970, 1975), Grootaert *et al.* (2008), Shamshev & Grootaert (2008), and Yang *et al.* (2010).

Here the genus *Tachydromia* is reported from Shaanxi Province for the first time. Two species belonging to the *Tachydromia arrogans* species group are described as new to science.

Accepted 1 April 2021. Published 25 June 2021. Published online 28 May 2021.

① Corresponding authors, E-mails: zhangjh@caiq.org.cn; dyangcau@126.com

A key to the species of *Tachydromia* from China is provided.

## Material and methods

The specimens were examined and illustrated using a ZEISS Stemi 2000–c. Genitalic preparations were made by macerating the apical portion of the abdomen in cold 10% NaOH for about 6 hours. The type specimens are deposited in the Entomological Museum of China Agricultural University (CAU), Beijing. The following abbreviations are used: acr — acrostichal bristle(s); av — anteroventral bristle(s); dc — dorsocentral bristle(s); h — humeral bristle(s); npl — notopleural bristle(s); oc — ocellar bristle(s); prsc — prescutellar bristle(s); psa — postalar bristle(s); pv — posteroventral bristle(s); sc — scutellar bristle(s).

## Taxonomy

### Key to species of *Tachydromia* from China

1. Propleuron shining black..... 2
- Propleuron pale grey pollinose..... 3
2. Occiput shining black with long black bristles. China (Yunnan)..... *T. mengyangensis*
- Occiput pollinose with long white bristles. China (Yunnan)..... *T. yunnanensis*
3. Wing with one very wide median band or 2 broad brownish bands separated along entire length or partly connected..... 4
- Wing with more or less distinct brownish patch near wing apex..... 8
4. Wing with one very wide median band..... 5
- Wing with two broad brownish bands separated along entire length or partly connected..... 6
5. Hind femur blackish with narrow base brownish yellow; fore femur with weak brownish pv. China (Shaanxi)..... *T. basiflava* **sp. nov.**
- Hind femur blackish brownish yellow except apical half blackish; fore femur with thick dark brown pv. China (Shaanxi)..... *T. crassisetosa* **sp. nov.**
6. Palpus black; laterotergite with thin finger-like projection. China (Henan)..... *T. digitiformis*
- Palpus yellow; laterotergite without finger-like projection..... 7
7. All tarsomere 1 yellowish; mid femur without distinct ventral bristles; left epandrial lamella with long apical bristles, left cercus long with pointed apex. China (Yunnan)..... *T. menglunensis*
- Hind tarsomere 1 (except tip) brownish yellow; mid femur with two rows of blackish ventral bristles; left epandrial lamella with only short bristles; left cercus large, wide with a blunt tip bearing a short projection laterally. China (Henan)..... *T. henanensis*
8. Halter with brown to black knob. China (Guangdong)..... *T. guangdongensis*
- Halter with yellow knob..... 9
9. Hind femur entirely yellow; only fore tarsomere 5 darkened on apical half. China (Yunnan); Thailand..... *T. terricoloides*
- Hind femur brown on apical part; tarsomeres more darkened..... 10
10. Palp yellowish brown; fore tibia entirely brownish, but extreme base yellow. China (Yunnan); Thailand..... *T. thaica*
- Palp pale yellow; fore tibia at most brownish apically..... 11

11. Fore tarsomeres 4–5 brown; mid tibia yellow; hind femur on apical half (except for apex) blackish; hind tibia in basal 2/3 blackish. China (Henan) ..... *T. longyuwanensis*  
 -. Only fore tarsomere 5 darkened on apical part; mid tibia blackish; hind femur darkened on apex; hind tibia yellow. China (Taiwan) ..... *T. bistigma*

1. ***Tachydromia basiflava* sp. nov.** (Fig. 1)

Description. Male. Body length 2.1–2.15 mm. Wing length 2.1–2.2 mm.

Head somewhat shiny black with thin pale gray pollen. Eyes dark brown or dull black, narrowly separated on frons; face very narrow, distinctly narrower than frons. Hairs and bristles on head blackish, hairs on upper occiput bristle-like, bristles thick; 2 oc, 1 vt. Antenna dark brown except pedicel brown; first flagellomere very short oval, a little longer than wide; style bare, dark brown, 3.6 times as long as antennal segments combined. Palpus brown, elongate with silvery grey hairs and 1 black thick apical bristle slightly shorter than palpus.

Thorax somewhat shiny black with thin pale gray pollen, but a large densely pollinose patch on propleuron between humerus and fore coxa; hypopleuron also densely pollinose. Hairs on mesoscutum minute, brownish yellow; bristles dark brown, thick; minute brownish yellow acr irregularly uniseriate; minute brownish yellow dc uniseriate. 1 npl, 1 psa; scutellum with two pairs of sc, basal pair very short, apical pair long, thick. Legs mostly brownish yellow; fore femur with blackish dorsal band, mid femur brown or dark brown at tip, hind femur blackish except with narrow base; all tibiae blackish. All tarsi from tip of tarsomere 2 dark brown outwards. Hairs and bristles on legs brown to dark brown except those on coxae dark yellow. Fore femur strongly and mid femur weakly thickened. Fore femur 1.7 times thicker than hind femur, with row of short weak av and pv brownish; mid femur 1.15 times thicker than hind femur, with row of brownish yellow av and dark brown pv (basal pv rather dense). Fore tibia club-shaped, weakly swollen with row of dark brown av. Mid tibia with row of very short av and slightly long pv; apical spur weak, somewhat acute. Wing hyaline with very wide brown middle band. Squama brownish yellow with dark yellow hairs. Halter brown.

Abdomen nearly straight, shining blackish; hypopygium weakly swollen, narrower than pregenital segments; hairs and bristles dark brown.

Genitalia (Figs 1C–F). Right lamella large and broad, apically with one short lobate inner process; right surstylus rather long with some short teeth on apical margin. Left lamella short and wide; left surstylus with short thick inner process irregular in shape and long thick outer process. Right cercus slightly long, apically narrowed; left cercus thick, apically distinctly narrowed and nearly hook-like.

Female. Unknown.

**Holotype.** ♂, **China**, Shaanxi, Zhouzhi, Huangnibaping, 1623 m, 05-VII-2020, Bing ZHANG. **Paratype.** 1♂, same data as holotype (CAU).

**Etymology.** This specific epithet refers to the narrow base of the hind femur brownish yellow.

**Diagnosis.** Palpus brown. Fore femur with blackish dorsal band, mid femur brown or dark brown at tip, hind femur blackish with narrow base brownish yellow. Fore femur with weak brownish pv. Wing with very wide middle brown band.

This new species is somewhat similar to *Tachydromia monocercus* Shamshev & Grootaert from Thailand, but may be separated from the latter by the wing with one very wide median band. In *T. monocercus*, the wing has two broad brownish bands partly connected

(Shamshev & Grootaert 2008).

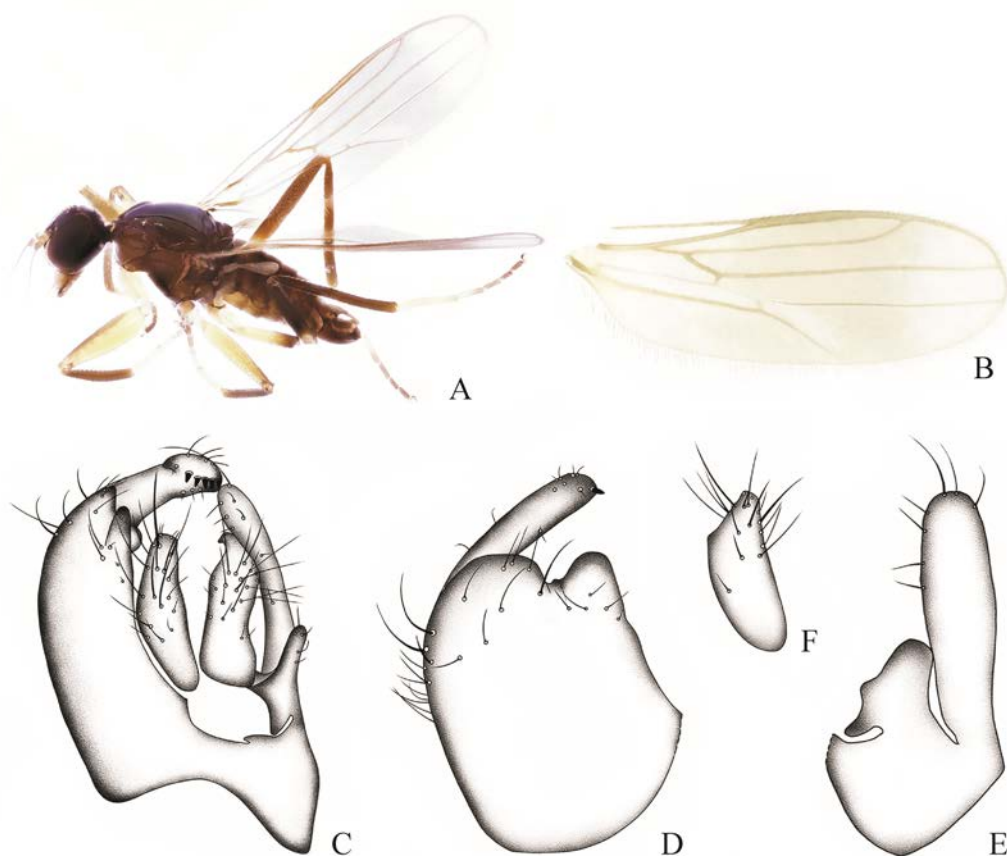


Figure 1. *Tachydromia basiflava* **sp. nov.** ♂. A. Male habitus; B. Wing. C. Genitalia, dorsal view; D. Right epandrial lamella; E. Left epandrial lamella; F. Right cercus, lateral view.

## 2. *Tachydromia crassisetosa* **sp. nov.** (Fig. 2)

Description. Male. Body length 2.0–2.2 mm. Wing length 2.1–2.2 mm.

Head somewhat shiny black with thin pale gray pollen. Eyes dark brown, narrowly separated on frons; face very narrow, distinctly narrower than frons. Hairs and bristles on head black, hairs on upper occiput bristle-like, bristles thick; 2 oc, 1 vt. Antenna dark brown except pedicel brown; first flagellomere very short oval, a little longer than wide; style bare, dark brown, about 4 times as long as antennal segments combined. Proboscis dark brown; palpus dark yellow, elongate with silvery grey hairs and 1 blackish thick apical bristle slightly shorter than palpus.

Thorax somewhat shiny blackish or black with thin pale gray pollen, but a large densely pollinose patch on propleuron between humerus and fore coxa; hypopleuron also densely pollinose. Hairs on mesoscutum rather sparse, minute, brownish yellow; bristles black, thick; minute brownish yellow acr irregularly uniseriate; minute brownish yellow dc uniseriate; 1 npl, 1 psa; scutellum with two pairs of sc, basal pair very short, apical pair long, thick. Legs mostly brownish yellow except mid coxa dark brown and hind coxa brown basally; fore femur with

blackish dorsal band on apical 4/5, mid femur brown or dark brown at tip, apical half of hind femur blackish; all tibiae blackish; all tarsi from tip of tarsomere 2 brown to dark brown outwards. Hairs and bristles on legs brown to dark brown except those on coxae dark yellow. Fore femur strongly and mid femur weakly thickened. Fore femur 1.65 times thicker than hind femur, with row of short weak brown av and thick dark brown pv; mid femur 1.1 times thicker than hind femur; mid femur weakly thickened, 1.2 times as thick as hind femur, with row of brownish yellow av and dark brown pv (basal pv rather dense). Fore tibia club-shaped, weakly swollen with row of dark brown av. Mid tibia with row of very short av and slightly long pv; apical spur weak, somewhat acute. Wing hyaline with very wide brown middle band. Squama brownish yellow with dark yellow hairs. Halter brown.

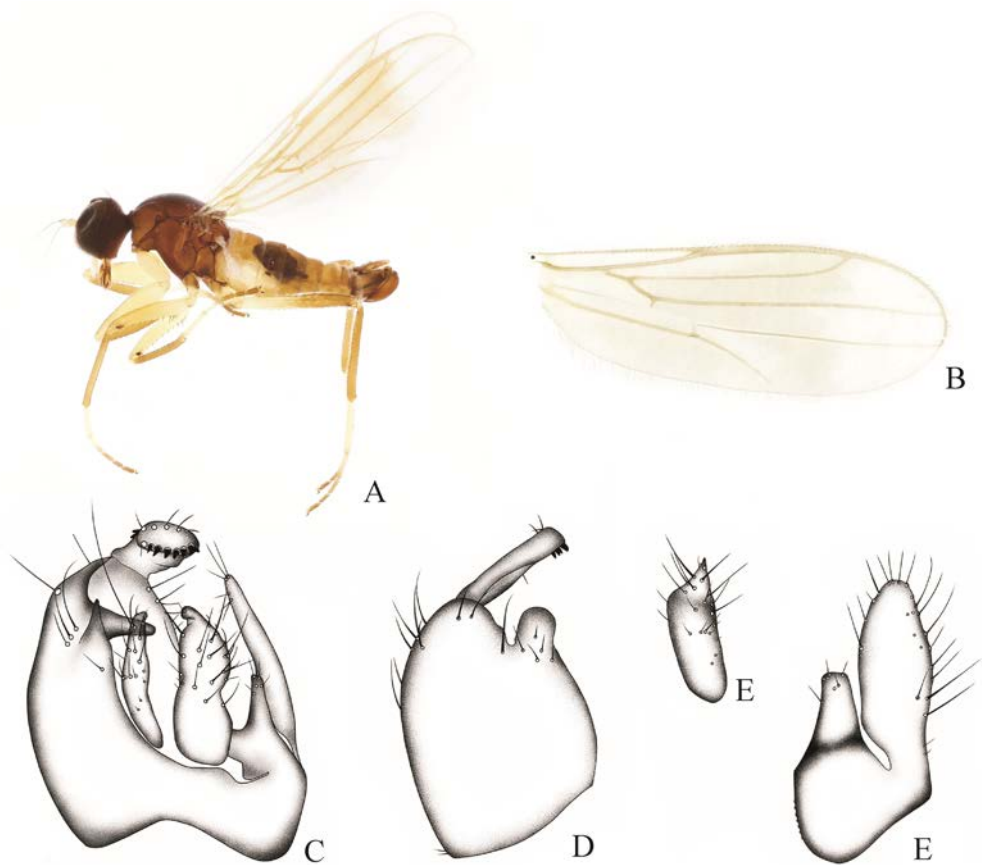


Figure 2. *Tachydromia crassisetosa* sp. nov. ♂. A. Male habitus; B. Wing. C. Genitalia, dorsal view; D. Right epandrial lamella; E. Left epandrial lamella; F. Right cercus, lateral view.

Abdomen nearly straight, shining blackish; hypopygium weakly swollen, narrower than pregenital segments; hairs and bristles dark brown.

Genitalia (Figs 2C–F). Right lamella large and broad, apically with two inner processes (one process thin finger-like and strongly directed inwards, another process short lobate); right surstylus rather long with some short teeth on apical margin. Left lamella short and wide; left surstylus with short finger-like inner process and long thick outer process. Right cercus

slightly short, apically acute in lateral view; left cercus rather thick, apically much narrowed.

Female. Body length 2.3–2.5 mm. Wing length 2.4–2.5 mm.

**Holotype.** ♂, **China**, Shaanxi, Zhouzhi, Huangnibaping, 1623 m, 05-VII-2020, Bing ZHANG (CAU). **Paratypes.** 6♂3♀, same data as holotype; 32♂41♀, Shaanxi, Zhouzhi, Taibai Mountain, 1711 m, 30-VII-2015, Xuankun LI (CAU).

Etymology. This specific epithet refers to the thick pv of the fore femur.

Diagnosis. Palpus dark yellow. Fore femur with blackish dorsal band, mid femur brown or dark brown at tip, apical half of hind femur blackish. Fore femur with thick dark brown pv. Wing with very wide brown middle band.

This new species is somewhat similar to *Tachydromia monocercus* Shamshev & Grootaert from Thailand, but may be separated from the latter by the wing with one very wide median band. This new species is very similar to *Tachydromia basiflava* **sp. nov.**, but may be separated from the latter by the fore femur with thick pv, right cercus apically somewhat acute and right lamella apically with two inner processes.

## Acknowledgements

We are grateful to Dr. Xuankun LI and Mr. Bing ZHANG for collecting the specimens. This research was supported by the National Natural Science Foundation of China (31970444, 31772497).

## References

- Chvála M. 1970. Revision of Palaearctic species of the genus *Tachydromia* Meig. (= *Tachista* Loew) (Diptera, Empididae). *Acta Entomologica Musei Nationalis Pragae*, 38(1969): 415–524.
- Chvála M. 1975. The Tachydromiinae (Dipt. Empididae) of Fennoscandia and Denmark. I. *Fauna Entomologica Scandinavica*, 3: 1–336.
- Grootaert P, Yang D & Shamshev I. 2008. *Tachydromia* Meigen from Yunnan (China), (Diptera, Hybotidae). *Annalis Zoologici*, 58(3): 561–566.
- Saigusa T & Yang D. 2002. Empididae (Diptera) from Funiu Mountains, Henan, China (I). *Studia Dipterologica*, 9: 519–543.
- Shamshev I & Grootaert P. 2008. New and little-known species of the genus *Tachydromia* Meigen (Diptera, Hybotidae) from Thailand. *Zootaxa*, 1830: 21–36.
- Yang D & Grootaert P. 2006. Notes on *Tachydromia* from China (Diptera: Hybotidae). *Transactions of the American Entomological Society*, 132: 133–135.
- Yang D, Wang MQ, Zhu YJ & Zhang LL. 2010. *Diptera: Empidoidea. Insect Fauna of Henan*. Science Press, Beijing, 418 pp.
- Yang D, Zhang KY, Yao G & Zhang JH. 2007. *World Catalog of Empididae (Insecta: Diptera)*. China Agricultural University Press, Beijing, 599 pp.
- Yang D, Zhang LL & Zhang KY. 2018. *Species Catalog of China. Vol. 2. Animals, Insecta (VI), Diptera (2), Orthorrhaphous Brachycera*. Science Press, Beijing, 387 pp.