

Three new species of the genus *Platypalpus* (Diptera: Empididae) from Shennongjia, China

Xingnong XU^{1,2}, Chen LIN^{3①}, Xiaoyan LIU^{4①}, Ding YANG²

1. Spice and Beverage Research Institute, Chinese Academy of Tropical Agricultural Sciences, Wanning, Hainan 571533, China

2. College of Plant Protection, China Agricultural University, Beijing 100193, China

3. Institute of Life Science and Technology, Inner Mongolia Normal University, Hohhot, Inner Mongolia 010022, China

4. College of Plant Science and Technology, Huazhong Agricultural University, Wuhan, Hubei 430070, China

Abstract: *Platypalpus* Macquart is one of the largest genera in the family Empididae with over 560 known species distributed worldwide. Seventy five species were known to occur in China. Four species were known to occur in Shennongjia. Three new species are added to this region: *Platypalpus apicicurvus* sp. nov., *Platypalpus dorsiniger* sp. nov., *Platypalpus obliquus* sp. nov. A key to the species of *Platypalpus* from Shennongjia is presented.

Key words: Tachydromiinae; taxonomy; key

神农架平须舞虻属 *Platypalpus* 三新种 (双翅目: 舞虻科)

徐兴农^{1,2}, 林晨^{3①}, 刘晓艳^{4①}, 杨定²

1. 中国热带农业科学院香料饮料研究所, 海南 万宁 571533; 2. 中国农业大学植物保护学院, 北京 100193; 3. 内蒙古师范大学生命科学与技术学院, 内蒙古 呼和浩特 010022; 4. 华中农业大学植物科学技术学院, 湖北 武汉 430070

摘要: 平须舞虻属 *Platypalpus* Macquart 是舞虻科中最大的属之一, 已知560余种, 分布于世界各地, 我国已知75种, 神农架报道过4种。本文记述神农架平须舞虻属3新种: 端弯平须舞虻 *Platypalpus apicicurvus* sp. nov., 黑背平须舞虻 *Platypalpus dorsiniger* sp. nov., 斜突平须舞虻 *Platypalpus obliquus* sp. nov.; 并编制神农架平须舞虻属分种检索表。

关键词: 合室舞虻亚科; 分类; 检索表

Introduction

Platypalpus Macquart belongs to the subfamily Tachydromiinae of Empididae. About 600 known species occur worldwide, of which 75 known species were recorded from China (Yang *et al.* 2007, 2018; Li *et al.* 2021). It is characterized by the raptorial mid leg and wing with an anal cell (Chvála 1975; Grootaert & Chvála 1992). The major references dealing with

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① Corresponding authors, E-mails: linchen310@126.com; liuxiaoyan@mail.hzau.edu.cn

the Oriental and Palearctic *Platypalpus* are as follows: Brunetti (1920), Frey (1943), Smith (1965), Chvála (1975, 1989), Grootaert & Chvála (1992), Grootaert & Shamshev (2006), and Yang *et al.* (2010).

Four species were known to occur in Shennongjia (Yang *et al.* 2018): *Platypalpus breviprocerus* Yang, Wang & Zhang, 2018, *Platypalpus dalongtanus* Yang & Li, 2011, *Platypalpus didymus* Huo, Zhang & Yang, 2010, and *Platypalpus pingqianus* Yang & Li, 2011. Here three new species are added to the Shennongjia fauna in Hubei. A key to the species of *Platypalpus* from Shennongjia is presented.

Material and methods

The specimens were examined and illustrated using a ZEISS Stemi 508. 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); vt — vertical bristle(s).

Taxonomy

Key to species of *Platypalpus* from Shennongjia

1. Thorax mostly or wholly yellow; first flagellomere distinctly or much shorter than arista 2
- Thorax black; first flagellomere very long, nearly as long as arista *P. obliquus* **sp. nov.**
2. Thorax wholly yellow 3
- Mesonotum mostly black or yellow with black spot 4
3. First flagellomere 1.2–1.3 times longer than wide *P. pingqianus*
- First flagellomere 1.7 times longer than wide *P. didymus*
4. Mesonotum yellow with a very long mid-longitudinal black spot or with two small subtriangular spots before wing base 5
- Mesonotum black with two yellow lateral spots *P. dorsiniger* **sp. nov.**
5. Mesonotum yellow with a very long mid-longitudinal black spot 6
- Mesonotum yellow with two small subtriangular spots before wing base *P. apicicurvus* **sp. nov.**
6. Mesonotum with a black mid-longitudinal stripe posteriorly narrowed and not reaching scutellum; scutellum and mediotergite black; hind femur with a row of tiny, black ventral spines on apical half *P. dalongtanus*
- Mesonotum with a black mid-longitudinal spot gradually widened backward and reaching scutellum; scutellum and mediotergite (including inner portion of laterotergite) black; hind femur without black ventral spines on apical half *P. breviprocerus*

1. *Platypalpus apicicurvus* **sp. nov.** (Fig. 1)

Description. Male. Body length 3.2–4.2 mm, wing length 4.8–4.9 mm.

Head black with distinct gray pollen; clypeus shiny. Eyes dark brown, separated; face narrower than frons. Hairs on head brownish to brown, bristles black. Ocellar tubercle with 2

rather long oc nearly as long as vt; 1 rather long and curved inward vt. Antenna dark brown except two basal segments dark brownish yellow; pedicel with circle of blackish apical bristles; first flagellomere very long, subconical, basally distinctly swollen, 3.2 times longer than wide, long dark brown pubescence; arista somewhat short, 1.2 times longer than first flagellomere, dark brown, very short dark brown pubescence. Proboscis 0.8 times as long as height of head, dark brownish yellow, with few short dark brown hairs; palpus long oval, about 2 times longer than wide, brownish yellow with brown hairs and 1 long dark brown apical bristle.

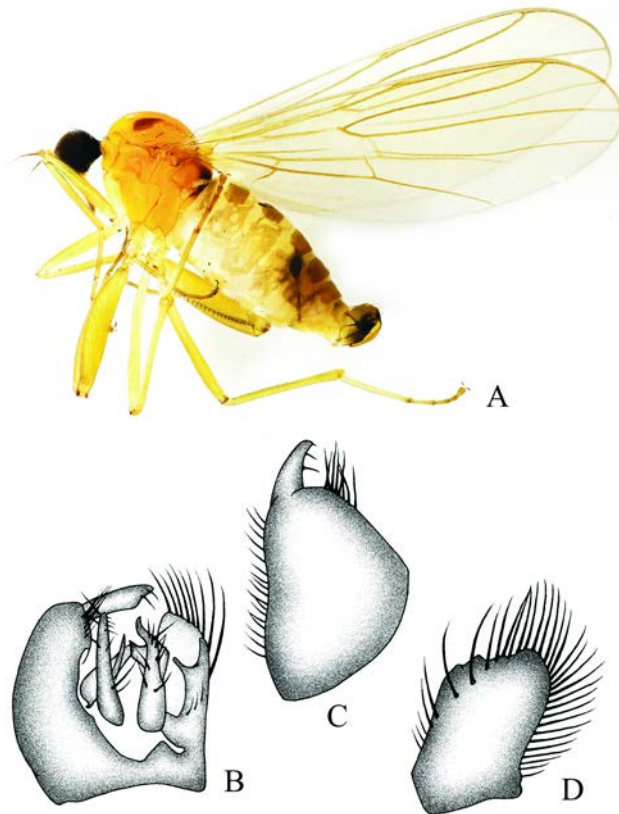


Figure 1. *Platypalpus apicicurvus* sp. nov. A. Male habitus, lateral view; B. Male genitalia, dorsal view; C. Right epandrial lamella; D. Left epandrial lamella.

Thorax somewhat shiny yellow with thin pale gray pollen, but mesoscutum with two small black subtriangular spots before wing base; postnotum black with large yellow trapezoid anterior spot. Hairs on thorax dark brown, bristles black; hairs on mesoscutum short and dense, acr and dc not separated; h absent, 2 npl (anterior npl short), 1 long psa, 1 long prsc; scutellum with 2 pairs of sc (basal pair rather short, apical pair very long). Legs yellow except tarsomeres 3–5 brown. Hairs on legs dark brown, bristles black. Mid femur distinctly thickened; fore femur nearly as thick as hind femur, mid femur 1.7 times as wide as hind femur. Mid femur with two rows of spine-like blackish ventral bristles (av very short, pv 2–3

times longer than av; basal pv rather long). Mid tibia with row of very short blackish ventral bristles; apical spur somewhat acute, nearly as long as tibia thickness. Wing nearly hyaline; veins brownish yellow; R₄₊₅ and M nearly parallel apically; crossveins r-m and m-m contiguous. Squama dark yellow with brown hairs. Halter dark yellow.

Abdomen nearly straight, weakly or distinctly swollen, dark brownish yellow with thin pale gray pollen except tergites 1–6 dark brown; hypopygium partly blackish, narrower than pregenital segments. Hairs and bristles on abdomen brown.

Male genitalia. Left and right epandrial lamellae narrowly connected at base. Right epandrial lamella nearly trapezoid, distinctly longer than wide; right surstylus nearly finger-like. Left epandrial lamella nearly quadrate, with short finger-like process at inner margin. Right cercus long straight, finger-like; left cercus long, basally thick, apically bent.

Female. Body length 3.2–4.3 mm, wing length 4.4–4.7 mm.

Holotype. ♂, **China**, Hubei, Shennongjia, Shennongding, 2,885 m, 26-VIII-2022, Malaise trap, Siqi WANG & Bintao DU (CAU). **Paratypes.** 8♂22♀, same data as holotype (CAU).

Etymology. The specific epithet is from the Latin “apices” and “curvus” (“apically curved”), referring to the left cercus being apically curved.

Diagnosis. Thorax yellow, but mesoscutum with two small black subtriangular spots before wing base; postnotum black with large yellow trapezoid anterior spot. Antenna dark brown except two basal segments dark brownish yellow; first flagellomere very long, basally distinctly swollen, 3.2 times longer than wide, long dark brown pubescence.

Remarks. It is somewhat similar to *P. didymus* Huo, Zhang & Yang, 2010 from Hubei, but can be easily separated from the latter by the following features: mesoscutum with two small black subtriangular spots before wing base, postnotum black with large yellow trapezoid anterior spot; first flagellomere 3.2 times longer than wide; left epandrial lamella with only one finger-like process. In *P. didymus*, the mesoscutum and postnotum are entirely yellow; the first flagellomere is 1.7 times longer than wide; and the left epandrial lamella has two short finger-like processes (Huo *et al.* 2010).

2. *Platypalpus dorsiniger* sp. nov. (Fig. 2)

Description. Male. Body length 3.1–3.7 mm, wing length 3.8–4.2 mm.

Head black with distinct gray pollen; clypeus shiny. Eyes dark brown, separated; face narrower than frons. Hairs on head brownish yellow to brown, bristles brownish yellow. Ocellar tubercle with 2 very long oc nearly as long as vt; 2 very long and divergent vt subequal in length. Antenna dark brown except two basal segments dark brownish yellow; pedicel with circle of blackish apical hairs; first flagellomere very short, somewhat oval, 1.25 times longer than wide, very short dark brown pubescence; arista very long, about 5 times longer than first flagellomere, dark brown, very short dark brown pubescence. Proboscis 0.7–0.8 times as long as height of head, brownish yellow, with few short brown hairs; palpus very short, oval, about 1.2 times longer than wide, brownish yellow with brownish hairs and 1 long dark brown apical bristle.

Thorax somewhat shiny yellow with thin pale gray pollen, but dorsum black except humeri and postalar calli yellow and mesonotum with yellow lateral stripe; laterotergite black;

sternopleuron with a black stripe at posterior margin. Hairs on thorax dark yellow, bristles brownish yellow; hairs on mesoscutum short and somewhat sparse, acr and dc uniformly short; h indistinct, 2 npl (anterior npl short), 1 long psa, 1 slightly long prsc; scutellum with 2 pairs of sc (basal pair rather short, apical pair very long). Legs wholly yellow. Hairs and bristles on legs mostly brownish yellow and partly brownish to brown except those on coxae wholly brownish yellow. Mid femur weakly thickened; fore femur 1.15 times and mid femur 1.7 times as wide as hind femur. Mid femur with two rows of spine-like blackish ventral bristles (av very short, pv 2 times longer than av; basal av and pv rather long, dark brownish yellow). Mid tibia with row of very short blackish ventral bristles; apical spur long finger-like, distinctly longer than tibia thickness. Wing hyaline; veins brownish yellow; R_{4+5} and M nearly parallel apically; crossveins r-m and m-m nearly contiguous. Squama dark yellow with dark yellow hairs. Halter dark yellow.

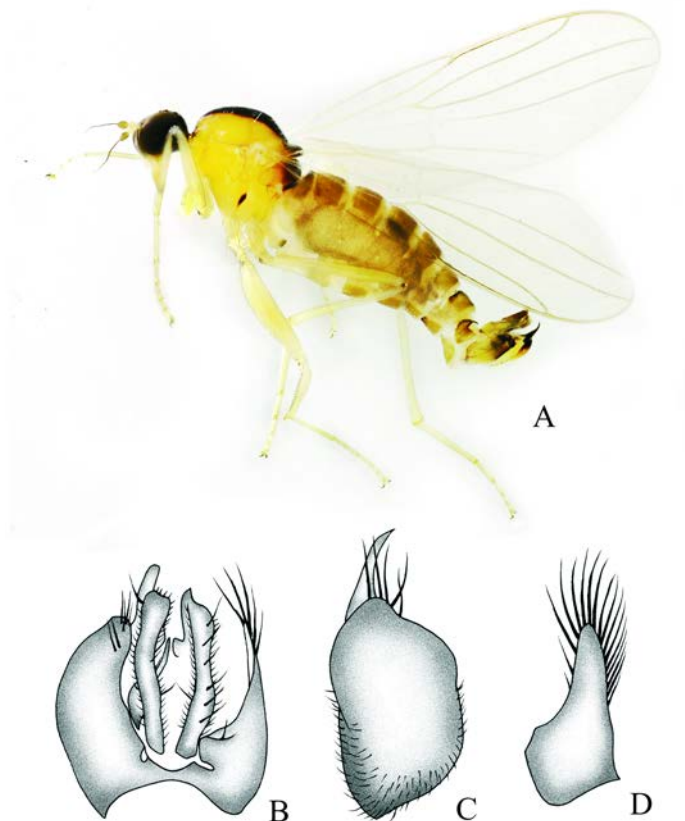


Figure 2. *Platypalpus dorsiniger* sp. nov. A. Male habitus, lateral view; B. Male genitalia, dorsal view; C. Right epandrial lamella; D. Left epandrial lamella.

Abdomen nearly straight, dark brown with thin pale gray pollen; hypopygium blackish, nearly as thick as pregenital segments. Hairs and bristles on abdomen brownish yellow.

Male genitalia. Left and right epandrial lamellae narrowly connected at base. Right epandrial lamella somewhat trapezoidal, distinctly longer than wide; right surstylus weakly

curved, spine-like. Left epandrial lamella subtriangular, apically finger-like with very long bristles. Right cercus long and narrow, weakly curved, apically obtuse; left cercus long and narrow, weakly curved, apically somewhat acute.

Female. Unknown.

Holotype. ♂, **China**, Hubei, Shennongjia, Shennongding, 2,885 m, 26-VIII-2022, Malaise trap, Siqi WANG & Bintao DU (CAU). **Paratypes.** 8♂, same data as holotype (CAU).

Etymology. The specific epithet is from the Latin “dorsum” and “niger”, referring to the black thoracic dorsum.

Diagnosis. Thorax somewhat shiny yellow, but dorsum black except mesonotum with yellow lateral stripe. Antenna dark brown except two basal segments dark brownish yellow; first flagellomere very short, somewhat oval. Legs wholly yellow. Mid tibia with apical spur long finger-like.

Remarks. It is similar to *P. baotianmanensis* Yang, An & Gao, 2002 from Henan, but can be easily separated from the latter by the following features: mesonotum black with yellow lateral stripe; antenna dark brown except two basal segments dark brownish yellow. In *P. baotianmanensis*, the mesonotum is yellow with one wide black mid-longitudinal band; and the antenna is yellow (Yang *et al.* 2010).

3. *Platypalpus obliquus* sp. nov. (Fig. 3)

Description. Male. Body length 2.8–2.9 mm, wing length 3.3–3.6 mm.

Head black with distinct gray pollen; clypeus shiny. Eyes dark brown, separated; face narrower than frons. Hairs on head brownish to dark brown, bristles blackish. Ocellar tubercle with 2 rather long oc slightly shorter than inner vt; 2 curved inward vt rather long, inner vt slightly longer than outer vt. Antenna dark brown; pedicel with circle of blackish apical bristles; first flagellomere very long, subconical, 3.4–3.5 times longer than wide, short dark brown pubescent; arista rather short, nearly as long as first flagellomere, dark brown, very short dark brown pubescence. Proboscis 0.6 times as long as height of head, blackish, with few short brown hairs; palpus short strip-like, about 2.5 times longer than wide, dark brownish yellow with brownish hairs and 1 short dark brown apical bristle.

Thorax somewhat shiny black with pale gray pollen. Hairs on thorax brownish to brown, bristles blackish; hairs on mesoscutum short dense, acr not separated from dc; 1 long weak h, 1 long npl, 1 long psa, 1 long prsc; scutellum with 2 pairs of sc (basal pair rather short, apical pair very long). Legs brownish yellow, but all coxae blackish, all femora black except extreme tips and hind tibia brown; fore and mid tarsomeres 4–5 brown, hind tarsus brownish to brown. Hairs and bristles on legs mostly brownish yellow and partly brown except those on coxae wholly brownish yellow. Mid femur weakly thickened; fore femur 1.25 times and mid femur 1.5 times as wide as hind femur. Mid femur with two rows of spine-like black ventral bristles (av very short, pv 2–3 times longer than av). Mid tibia with row of dark brown short ventral bristles; apical spur very short, somewhat acute, distinctly shorter than tibia thickness. Wing nearly hyaline; veins brown; R₄₊₅ and M nearly parallel apically; crossveins r-m and m-m very narrowly separated. Squama dark brownish yellow with brownish hairs. Halter dark yellow.

Abdomen nearly straight, subshiny black with thin gray pollen; hypopygium nearly as thick as pregenital segments. Hairs and bristles on abdomen brown to dark brown.

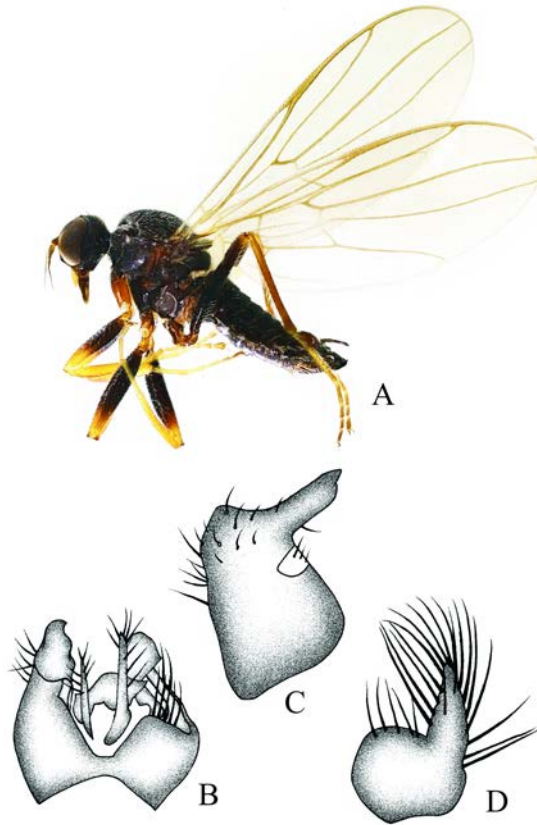


Figure 3. *Platypalpus obliquus* sp. nov. A. Male habitus, lateral view; B. Male genitalia, dorsal view; C. Right epandrial lamella; D. Left epandrial lamella.

Male genitalia. Left and right epandrial lamellae widely connected at base. Right epandrial lamella nearly trapezoid, distinctly longer than wide; right surstylus oblique, somewhat acute at extreme tip. Left epandrial lamella somewhat quadrate; left surstylus long subconical with very long bristles. Right cercus long thin, strip-like; left cercus very long, finger-like, basally thick.

Female. Body length 3.2–3.7 mm, wing length 3.2–3.5 mm.

Holotype. ♂, China, Hubei, Shennongjia, Shennongding, 2,885 m, 26-VIII-2022, Malaise trap, Siqi WANG & Bintao DU (CAU). **Paratypes.** 19♂2♀, same data as holotype (CAU).

Etymology. The specific epithet is from the Latin “obliquus” (“oblique”), referring to the oblique right surstylus.

Diagnosis. Thorax black. Antenna dark brown. First flagellomere very long, distinctly pubescent; arista rather short, nearly as long as first flagellomere. All coxae blackish, all femora mostly black. Hairs and bristles on head and thorax brown to dark brown. Mid spur very short, somewhat acute.

Remarks. It is similar to *P. zhangae* Yang, Merz & Grootaert, 2006 from Guangdong in having the very long first flagellomere, but can be easily separated from the latter by the following features: head and thorax with brown to dark brown hairs and blackish bristles; coxae blackish, femora mostly black; right cercus rather narrow basally without finger-like process. In *P. zhangae*, the head and thorax have the pale hairs and brownish yellow bristles; the coxae are yellow, but the femora are dark brownish yellow; and the right cercus is very thick basally with a short finger-like process (Yang *et al.* 2006).

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