

ORIGINAL ARTICLE

Three new species of the genus *Ommatius* Wiedemann from Hainan, China (Diptera: Asilidae)

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Abstract The genus *Ommatius* is firstly reported from Hainan Island. Three species, *O. corolla* **sp. nov.**, *O. huoae* **sp. nov.**, *O. jianfenglingensis* **sp. nov.**, are described as new to science. A key to the species, illustrations of the adults and male genitalia are provided.

Key words Diptera, Asilidae, *Ommatius*, new species, Hainan.

1 Introduction

The genus *Ommatius* Wiedemann, 1821, is the biggest group of subfamily Ommatiinae and distributed worldwide (Geller-Grimm, 2003/2004). The species of *Ommatius* are small to large sized, sharing the pectinate, bristly style of the third antennal segment with other genera of Ommatiinae, separated from each other by the combined characters of face bristles, antenna, legs and abdomen. The genus is divided into two subgenera, *Ommatius* Wiedemann, 1821 and *Metommatius* Hull, 1962. The nominated subgenus includes 307 species. The subgenus *Metommatius* Hull, 1962, is revised by Scarbrough and Marascia (2000) and includes four species described from Africa. The subgenus *Pygommatius* is erected by Scarbrough and Marascia (2003), and elevated as genus by Scarbrough and Hill (2005). Including the 3 species reported here, 23 species are known from China (Becker, 1925; Wulp, 1872, 1899; Wiedemann, 1824; de Meijere, 1914; Schiner, 1868; Hua, 1985), and also described from the Oriental part. In all the 82 Oriental species, only *dilatipennis* species-group (Scarbrough & Costantino, 2005) characterized by the bulged costa is proposed for 6 species. More work is expected in *Ommatius* species-group based on the thorough study of this genus in the future.

Hainan is the second largest island in China, lying among the area (3.30–20.07°N, 108.15–120.05°E) in Southern China. The island has mountainous area located in the central region, surrounding by hills, platform and plain and characterized by tropical ecosystems. It is one of the most biodiverse significant parts in China (Chen, 1993; Zhang & Ma, 2008) and is also located within the Indo-Burma global biodiversity hotspot (Myers *et al.*, 2000). In this paper, the genus *Ommatius* is firstly reported in the island, and three species are reported as new to science. A key to the genus, illustrations of the adults and male genitalia of the three species from Hainan are included.

2 Materials and methods

Morphological terminology follows McAlpine (1981) and Cumming and Wood (2009). The following abbreviations are used in the text: ad, anterodorsal bristle(s); av, anteroventral bristle(s); dc, dorsocentral bristle(s); pal, postalar bristle(s);

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npl, notopleural bristle(s); pd, posterodorsal bristle(s); pv, posteroventral bristle(s); spa, supraalar bristle(s); v, ventral bristle(s).

The terminalia was excised and cleared in boiling KOH for 20–40 minutes. They were sealed in genitalia vials containing 100% glycerol and attached to the specimen's pin eventually. The morphological imagines of terminalia are taken by Large depth-of-field 3D Digital Microscope (Keyence VHX-1000C) and redrawn with vellum paper. Habitus pictures of specimens are taken with Canon 50 D and macro lens MPE 65 mm.

The materials examined (types) are deposited in the Entomology Museum of China Agricultural University (CAU), Beijing.

3 Taxonomy

Key to species (males) of *Ommatius* from Hainan

1. Femora wholly black; epandrium wide apically, truncate in dorsal view (Fig. 7), hypandrium much longer than wide in ventral view, apical margin emarginate medially (Fig. 9), aedeagus short, simple short distiphallus exposed below erect inflated epiphallus, divided dorsally (Figs 11–13)..... *O. huoeae* sp. nov.
Femora partly or largely yellow; epandrium narrow, not truncate in dorsal view (Figs 1, 14), hypandrium triangular, apical margin pointed medially, not emarginated (Figs 3, 16); inflated epiphallus absent dorsally, distiphallus longer, without the above combination of characters 2
2. Scape and pedicel black, postpedicel brownish-yellow; fore and mid femora brown dorsally and apically, basal 1/3 of hind femur brown; epandrium entirely narrow (Fig. 2), aedeagus short, aedeagal sheath flat, wide apically, pedal-like, corolliform in dorsal view (Fig. 6); distiphallus sigmoid, apex simple, readily visible above corolliform sheath (Fig. 5); gonocoxite wide, 2.5–3.0 times longer than wide medially; hypandrium medially about as long as gonocoxite (Fig. 3) *O. corolla* sp. nov.
Scape and pedicel yellow, postpedicel brown; fore and mid femora yellow, hind femur yellow, brown dorsally and apically; epandrium much wider in lateral view, apex truncate (Fig. 15), aedeagus horizontal, distiphallus about 4 times longer than wide medially, apex complex; gonocoxite narrow, three times longer than wide; hypandrium medially less than half as long as gonocoxite (Figs 16, 18) *O. jianfenglingensis* sp. nov.

3.1 *Ommatius corolla* sp. nov. (Figs 1–6, 19)

Diagnosis. The new species is somewhat similar to *O. ramakrishnai* in the epandrium elongated apically, but may be separated by the femora are not wholly black. In *O. ramakrishnai*, the femora are wholly black (Joseph & Parui, 1999). *O. corolla* sp. nov. is also diagnosed by: postocular bristles black; antennal scape and pedicel black, postpedicel brownish yellow; fore coxa yellow, mid and hind coxae black; fore femur yellow, brown dorsally; mid femur yellow, brown dorsally and apically, hind femur black except less than basal 1/3 yellow.

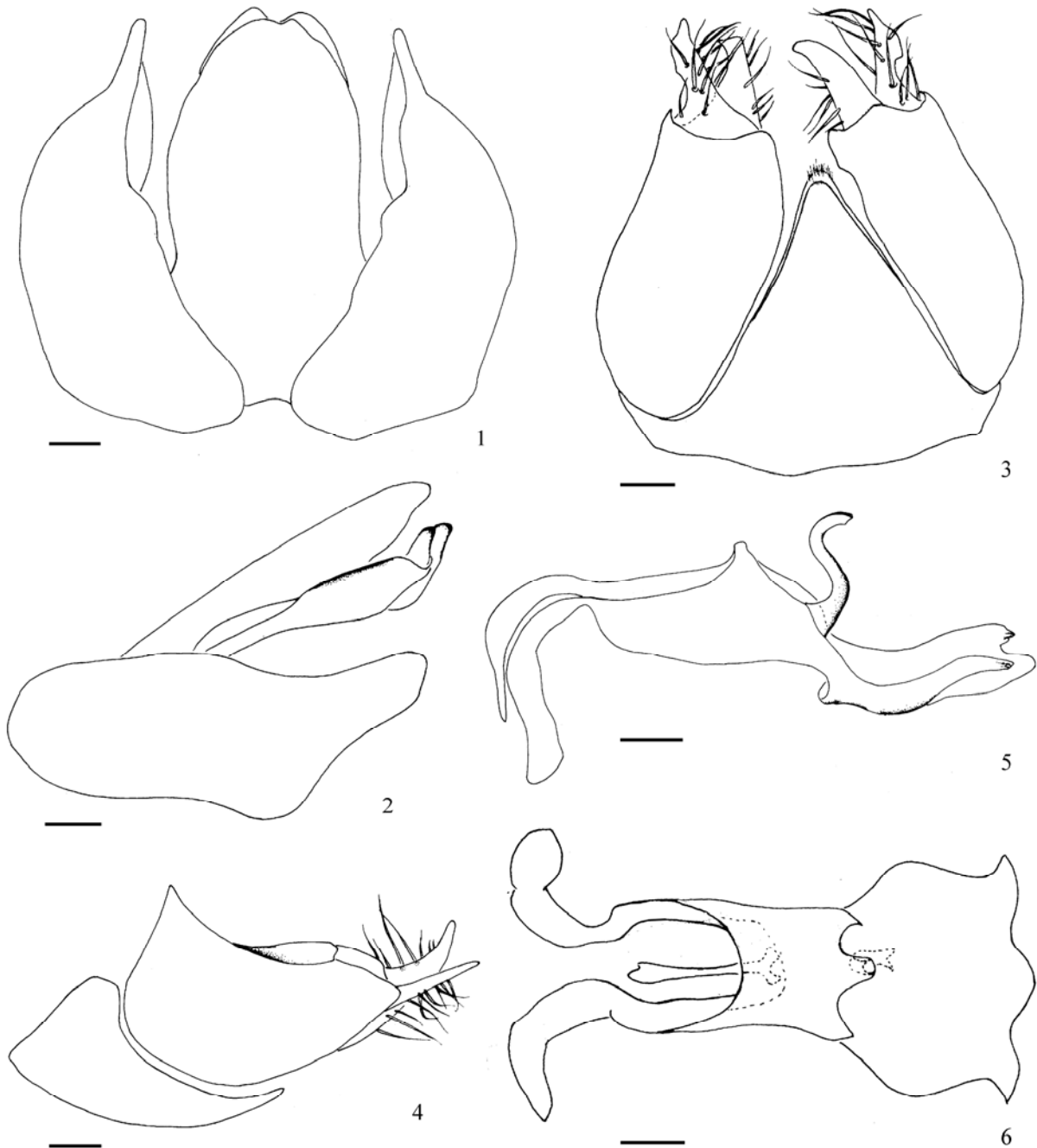
Description. Male. Body length 7 mm, wing length 6 mm.

Head. Face narrow, black, pale gray tomentose, with 4 long black bristles on upper 2/3 and pale bristles and hairs on lower 1/3; mystax with pale, dense bristles; frons black, pale gray tomentose, with several short black hairs laterally; occiput black, pale tomentose, with pale hairs longer on lower ventral area; postocular bristles black. Antennal scape and pedicel black, bearing black bristles; postpedicel brownish yellow, slightly shorter than combined length of scape and pedicel. Proboscis black, with pale hairs basally and apically; palpus blackish brown, with black hairs and bristles.

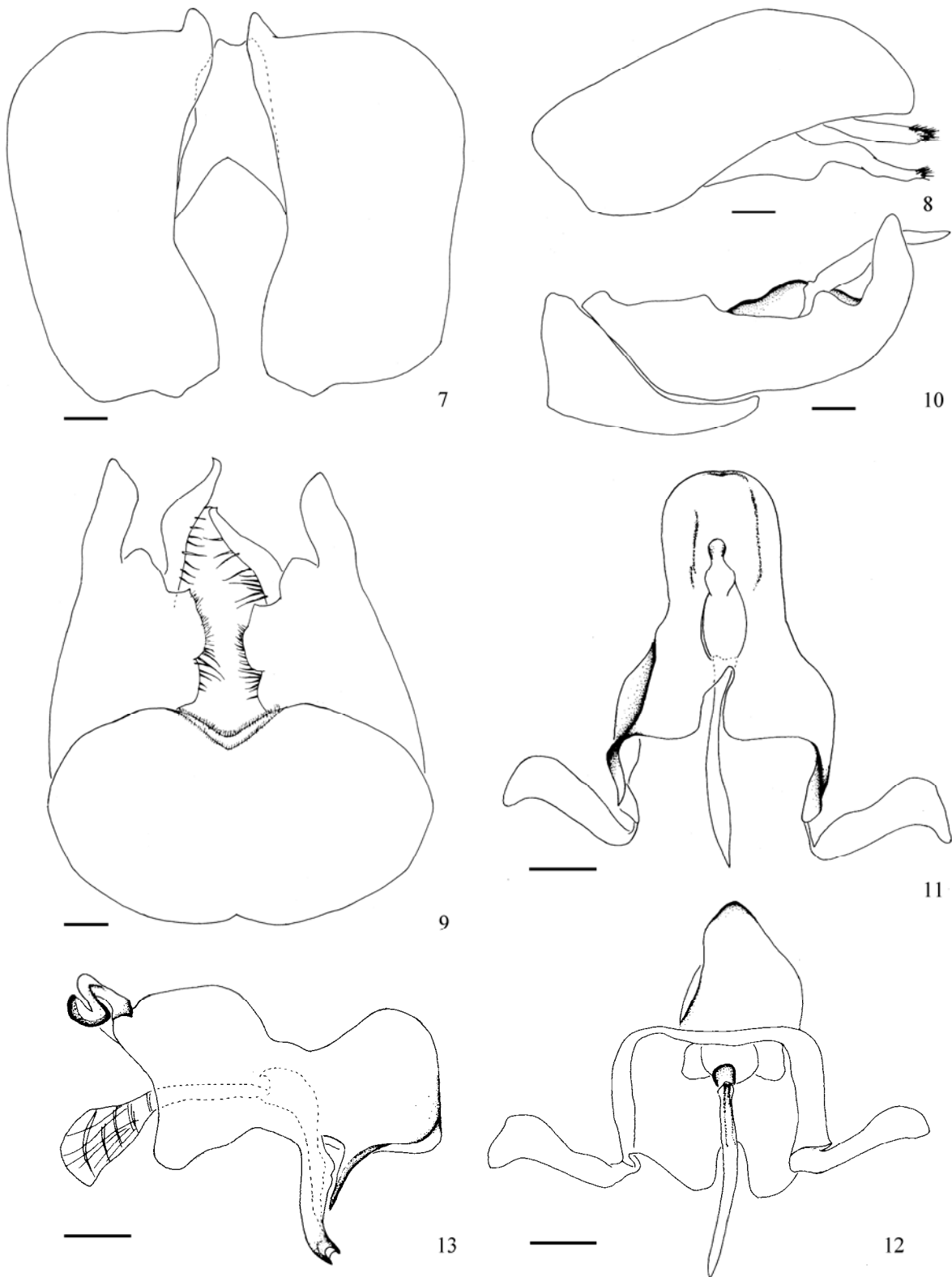
Thorax. Black with pale white tomentum. Pronotum pale haired. Hairs on proepisternum and upper anepisternum longer. Antepronotum pale haired, with 2 pale bristles. Mesonotum black, with short, black hairs anteriorly and laterally; 2 dc, 2 npl, 1 spa and 1 pal, all black. Scutellum black, with 6 pale hairs dorsally and 2 strong black marginal bristles. Anepimeral bristle pale; 3 black and 8 pale katatergal bristles; 3 pale metapleural bristles. Wing hyaline, tinged brownish; crossvein r-m just beyond middle of discal cell. Anal cell closed with short stalk. Halter yellow.

Legs. Fore coxa yellow, mid and hind coxae black. Fore coxa with pale hairs and bristles anteriorly, mid coxa with pale hairs and bristles apically, hind coxa with 1 pale bristle at middle and pale hairs apically. Fore femur yellow, brown dorsally, with pale ventral hairs longer than greatest vertical height of femur; mid femur yellow, brown dorsally and apically, with 1 thin black bristle at basal 1/4 anteriorly, 2 thin black bristles at apical 1/3 anteriorly, 1 black strong bristle at middle anteriorly, one row of long and pale ventral hairs (longer than greatest vertical height of femur); hind femur black, nearly basal 1/3 yellow, with 5 long pale ventral bristles longer than greatest vertical height of femur, and one row

of pale av (shorter than greatest vertical height of femur). Fore and mid tibiae yellow, apex brown; hind tibia yellow, apical half brown. Fore tibia posteriorly with 2 long pale bristles; mid tibia with 2 ad, 4 v, 2 pv (all the 8 bristles black) and 5 pd (1 black, 4 pale); hind tibia with 2 ad (1 black, 1 pale), 2 pd and 1 v, black. Apex of basal tarsomere and apical 4 tarsomeres of fore and mid tarsi black, hind tarsus wholly black, hairs, bristles, and claws black.



Figs 1–6. *Ommatius corolla* sp. nov., male genitalia. 1–2. Epandrium and cercus, dorsal and lateral views. 3–4. Hypandrium and gonocoxites, ventral and lateral views. 5–6. Aedeagus, lateral and dorsal views. Scale bars=0.1 mm.



Figs 7–13. *Ommatius huoeae* sp. nov., male genitalia. 7–8. Epandrium and cercus, dorsal and lateral views. 9–10. Hypandrium and gonocoxites, ventral and lateral views. 11–13. Aedeagus, ventral, dorsal and lateral views. Scale bars = 0.1 mm.

Abdomen. Blackish brown, posterior and lateral margin of segments 2–5 pale, with pale and black hairs and bristles. Pale hairs and bristles on tergite 1 laterally longer. Male genitalia (Figs 1–6). Epandrium narrow, long, slightly angular apically; hypandrium triangular, about as long as gonocoxite; apex of gonocoxite acute in lateral view. Distiphallus erect, sigmoid, arising from base of a wide, corolliform aedeagal sheath.

Female. Unknown.

Type material. Holotype male, Hainan, Jianfengling, 4–7 June 2007, Jie Zeng.

Etymology. The name refers to the corolliform shape of the apex of the aedeagal sheath.

Distribution. China (Hainan).

3.2 *Ommatius huoeae* sp. nov. (Figs 7–13, 20)

Diagnosis. *Ommatius huoeae* is distinguished from local congeners by femora wholly black and *O. fulvimanus* (Oldroyd, 1972) by the unusually long postocular bristles which extends to ocellar tubercle and the distinctive shape of the epandrium (Figs 7–8). *O. huoeae* sp. nov. is also diagnosed by: postocular bristles black; antenna black, all coxae black; all femora black and hind femur with 5 stout yellow bristles ventrally (1/2 as long as greatest vertical height of femur).

Description. Male. Body length 4.5 mm, wing length 6 mm.

Head. Black. Face pale gray tomentose, black hairs and 6 black bristles; mystax with largely thin, pale bristles; frons black, several short brown hairs laterally; occiput black, pale gray tomentose, pale and black haired, longer and denser ventrally; postocular bristles black, 6 strong bristles curved forward to ocellar tubercle. Antenna black, scape and pedicel bristles black; postpedicel half as long as combined length of scape and pedicel. Proboscis black, pale haired basally and apically; palpus black, hairs and bristles black.

Thorax. Black, pale gray tomentose. Pronotum pale haired; hairs of humeri, propleuron, anepisternum and katepisternum longer. Mesonotum black, short black haired; 5 dc, 2 npl, 2 spa, 1 pal, all black. Scutellum black, disc pale haired, 2 strong black marginal bristles. Anepisternal hairs short, black; 3 long pale metanepisternal bristles, 11 black and 2 pale katatergal bristles. Wing hyaline, brownish tinged; crossvein r-m beyond middle of discal cell. Anal cell closed, short stalk. Halter yellow.

Legs. Largely black. Coxae black. Fore coxa with pale hairs and bristles anteriorly and apically, mid coxa pale and black haired apically, hind coxa with 1 pale bristle medially and pale hairs apically. Femora black. Fore femur with 1 black bristle at basal 1/4 anteriorly, 1 black bristle at middle posteriorly, ventral hairs pale (longest ones as long as greatest vertical height of femur); mid femur with 2 black bristles anteriorly, 1 black bristle at basal 1/4 anteriorly, 1 black bristle posteriorly, row of ventral hairs black (shorter than greatest vertical height of femur) and pale; hind femur with 1 pale and 1 black bristles anteriorly, 5 stout yellow bristles ventrally (1/2 as long as greatest vertical height of femur). Tibiae brownish-yellow, dorsal surface anteriorly and apex blackish brown, hairs and bristles of tibiae black. Fore tibia with 3 pv, 2 long strong v; mid tibia with 2 ad, 2 av, row of 4 yellow pv and 1 strong v; hind tibia with 2 ad, 1 av and 5 pa. Tarsi black, hairs and bristles black.

Abdomen. Black, lateral and posterior margin of segments brownish-yellow, hairs pale and black. Pale bristles on lateral portion of tergite 1 strong and long. Male genitalia (Figs 7–13). Epandrium long and obtuse apically in lateral view, bulbous apically in dorsal view; hypandrium concaved medially in ventral view; gonocoxite obtuse apically in lateral view.

Female. Unknown.

Type material. Holotype male, Hainan, Jianfengling, Mingfenggu, 25 April 2007, Shan Huo.

Etymology. The species is named in honor of the collector Dr. Huo.

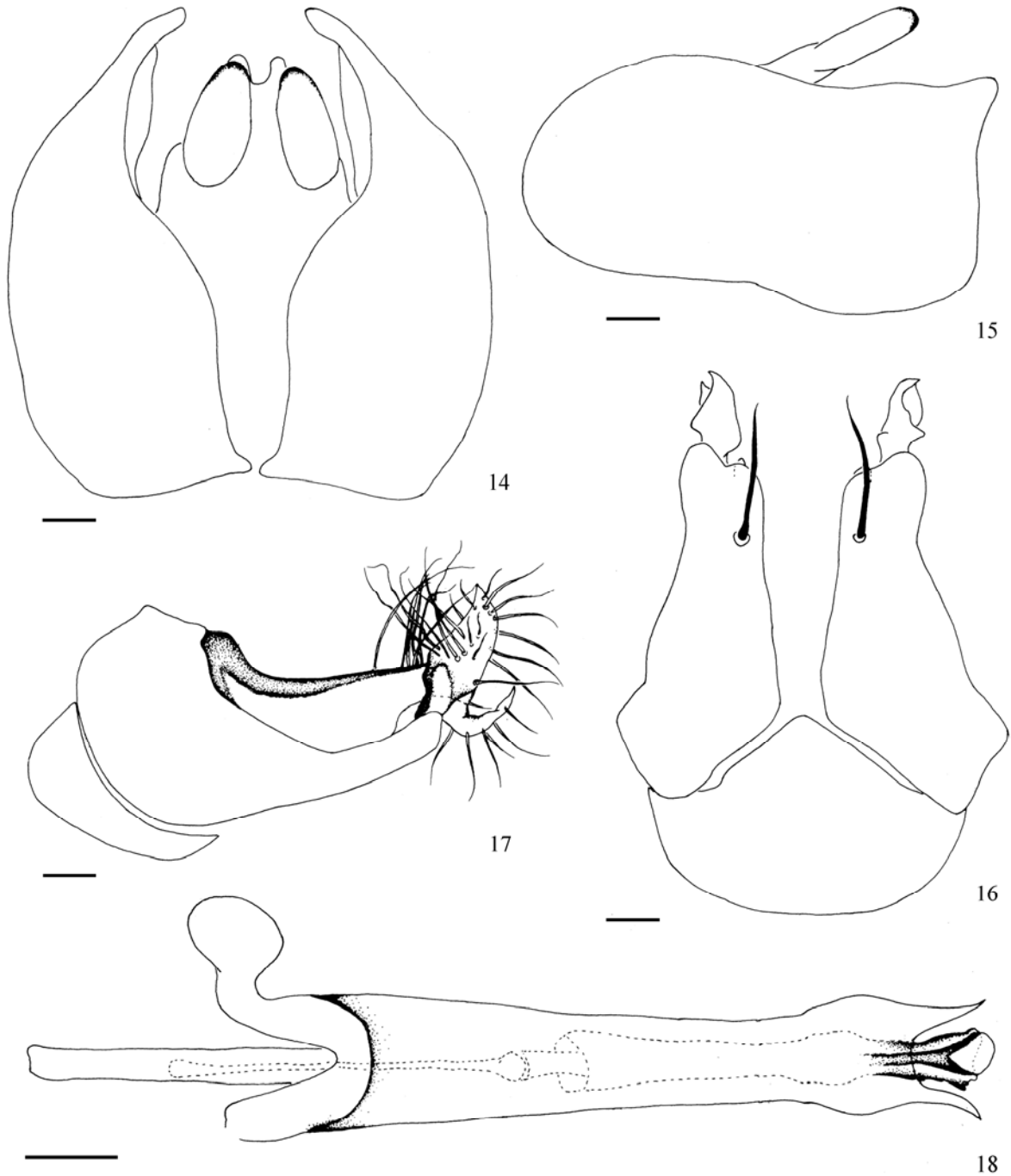
Distribution. China (Hainan).

3.3 *Ommatius jianfenglingensis* sp. nov. (Figs 14–18, 21)

Diagnosis. This species is similar to *O. corolla* in that the epandrium is narrow in dorsal view (Fig. 14) but is significantly different in the nearly truncate apex, and is separated by the following characters: scape and pedicel yellow, postpedicel brown; thorax mostly yellow; hind femur yellow, brown dorsally and apically. In *O. corolla* the scape and pedicel are black, postpedicel is brownish-yellow; the thorax is black; and the hind femur is mostly black, brown at basal 1/3. *O. jianfenglingensis* sp. nov. is also diagnosed by: facial bristles mixed pale and brown; mystax and postocular bristles pale; antennal scape and pedicel yellow, postpedicel brown; thorax mostly yellow; coxae and fore and mid femora yellow; epandrium slightly prolonged apically in dorsal view.

Description. Male. Body length 11 mm, wing length 7 mm.

Head. Black. Face pale yellow tomentose, 2 thin pale bristles medially, 4 thin brown bristles on ventral 1/3; mystax with sparse thin yellow bristles; frons black, pale yellow tomentose; vertex blackish-brown, several short brown hairs laterally; occipital hairs pale, longer and denser ventrally; postocular bristles pale, curved forward. Scape and pedicel



Figs 14-18. *Ommatius jianfenglingensis* sp. nov., male genitalia. 14-15. Epandrium and cercus, dorsal and lateral views. 16-17. Hypandrium and gonocoxites, ventral and lateral views. 18. Aedeagus, dorsal view. Scale bars = 0.1 mm.



19



20



21

Figs 19–21. *Ommatius* spp., holotype. 19. *O. corolla* **sp. nov.** 20. *O. huoeae* **sp. nov.** 21. *O. jianfenglingensis* **sp. nov.**

yellow, postpedicel brown, nearly twice as long as combined length of scape and pedicel. Proboscis black, pale hairs basally and apically; palpus black, hairs and bristles black.

Thorax. Mostly yellow, white tomentose. Dorsal half of antepnotum black, pale hairs and 2 pale bristles. Mesonotum largely black, posterior area near postalar callus yellow; 4 dc, 2 npl, 1 spa and 1 pal, all black except last one of dc yellow. Scutellum black, discal hairs and 2 marginal bristles pale. Thirteen katatergal bristle pale. Wing hyaline, brownish tinged, especially on apical 1/4; microtrichia dense on apical 1/3; crossvein r-m at apical 1/3 of discal cell. Anal cell closed with short stalk. Halter yellow.

Legs. Yellow. Coxae yellow, dense pale hairs and bristles, hind coxa with 1 pale bristle medially. Trochanters yellow. Fore femur yellow, ventral hairs pale (longest ones as long as greatest vertical height of femur); mid femur yellow, 1 black bristle at basal 1/3 anteriorly, 1 pale bristle at apical 1/3 anteriorly, and pale ventral hairs (shorter than greatest vertical height of femur); hind femur brownish-yellow except dorsally and apex dark brown, basal 1/3 pale haired ventrally, longest as long as greatest vertical height of femur. Fore tibia yellow, short hairs ventrally, 2 long pale bristles posteriorly; mid tibia yellow, with 2 ad, 2 v and 2 pv, both pale; hind tibia yellow except apical 1/3 dark brown, with 2 ad, 2 pad and 1 av. Fore and mid tarsi yellow, apex of tarsomeres 1–4 brown, tarsomere 5 brown to dark brown, narrow base paler, hind tarsus largely dark brown, narrow base pale, hairs and bristles black.

Abdomen. Tergites 1–6 black, with posterior and lateral margin yellow. Sternites 1–5 yellow, sternite 6 black at middle, sternites 7–8 entirely black. Hairs on tergites pale and black mixed, but posterior margin bristles and lateral bristles pale except those on tergites 7–8 black. Male genitalia (Figs 14–19). Epandrium slightly prolonged dorsally like a corner, hypandrium triangular in ventral view; gonocoxite with 1 strong black bristle at apical 1/3.

Female. Unknown.

Type material. Holotype male, Hainan, Jianfengling, Botany Garden, 25 April 2007, Shan Huo.

Etymology. The specific name refers to the type locality of Jianfengling, Hainan.

Distribution. China (Hainan).

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