

# The ant-parasitizing genus *Pseudacteon* Coquillett (Diptera: Phoridae) from China with description of three new species

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The ant-parasitizing genus *Pseudacteon* Coquillett is reported for the first time in China. Three new species, *P. quadrisetalis* Liu & Cai, **sp. n.**, *P. obtusatus* Liu & Cai, **sp. n.** and *P. hexosetalis* Liu & Wang, **sp. n.**, are described and illustrated.

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## 1. Introduction

The genus *Pseudacteon* Coquillett is a group of phorid flies that attack and parasitize ants, causing decapitation of the host workers during pupation. These flies have recently received extensive attention because of their potential to control introduced fire ants (*Solenopsis* Westwood), which have caused serious problems in the southern United States, Australia and China (Zhang *et al.* 2007). Due to intensive studies, at present 65 *Pseudacteon* species have been described worldwide, of which 52 from the Neotropical and Nearctic Regions. In the Palaearctic Region, 12 species have been reported, which are covered by Disney (2000), Disney and Michailovskaya (2000) and Disney and Withers (2009). *Pseudacteon javensis* (Brues) is the only species reported from the Oriental Region (Brues 1915) and *P. crinifer* Beyer is distributed only in the Australian Region (Beyer 1966).

China belongs to the Palaearctic and Oriental Regions and the knowledge of *Pseudacteon* is

still limited. No species of the genus was known to occur in China prior to this study. During the survey of the parasitizing phorid flies in the mainland China, we found a series of specimens of *Pseudacteon* species. In the present paper, three new species are described and illustrated.

## 2. Material and methods

The specimens were collected with nets and preserved in 75% ethyl alcohol in vials. From each specimen, head, legs, wings and abdomen were detached. The abdomen was left in 10% KOH for several hours and then transferred in glycerin for further study. The other body parts were mounted on slide in Beale's Fluid (Disney 2001).

The illustrations were made in Leica DM 2000 compound microscope fitted with a drawing tube. The photos were taken in Olympus BX41 compound microscope and SZX10 stereo-zoom microscope with charge-coupled device

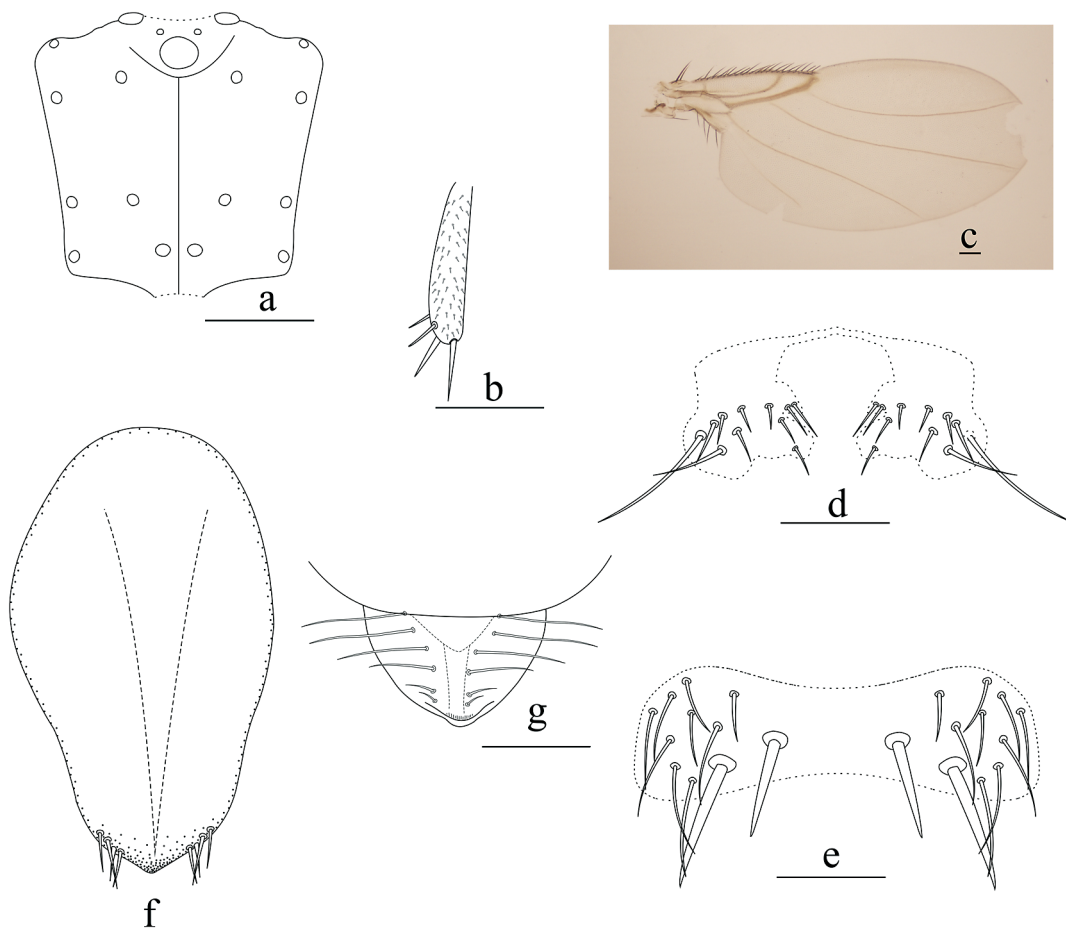


Fig. 1. *Pseudacteon quadrisetalis* Liu & Cai, **sp. n.** – a. frons. – b. palpus. – c. wing. – d. tergite VI. – e. sternite VI. – f. dorsal plates. – g. part of ventral plate. Scale: 0.1 mm.

(CCD) imaging system. The terminology mainly follows Disney (2000). Measurements are given in millimeters.

The type specimens are deposited in Liaoning Key Laboratory of Urban Integrated Pest Management and Ecological Security, Shenyang University, Shenyang, China.

### 3. Descriptions of new species

#### 3.1. *Pseudacteon quadrisetalis* Liu & Cai, **sp. n.** (Fig. 1)

*Type material.* Holotype ♀: China: Guan E Gou (33.92°N, 104.29°E; 2,478 m), Tanchang County, Gansu. 10.VIII.2011, Cai Yun-Long leg.

Paratypes: 1 ♀, same data as holotype; 2 ♀♀, Qiu Jia Ba (32.92°N, 104.32°E; 2,270 m), Wen County, Gansu, 7.VIII.2011, Cai Yun-Long leg.

*Description.* Female. Head. Frons blackish brown, with about 20 hairs plus 2 on ocellar triangle and very dense fine microsetae. Frons with 2 pairs of supra-antennal bristles, lower pair proclinate and the upper one reclinate. Upper pairs are as high as the anterolateral bristles (Fig. 1a). Flagellomere 1 pear-shaped and arista light brown. Palpus pale, very lightly tinged brown, and not enlarged, with 4 bristles at apical half (Fig. 1b).

Thorax. Brown with a bare mesopleuron. Each side of scutum with a small humeral bristle, two notopleurals, a pre-alar, a post-alar and a pre-scutellar dorsocentral bristle. Scutellum with

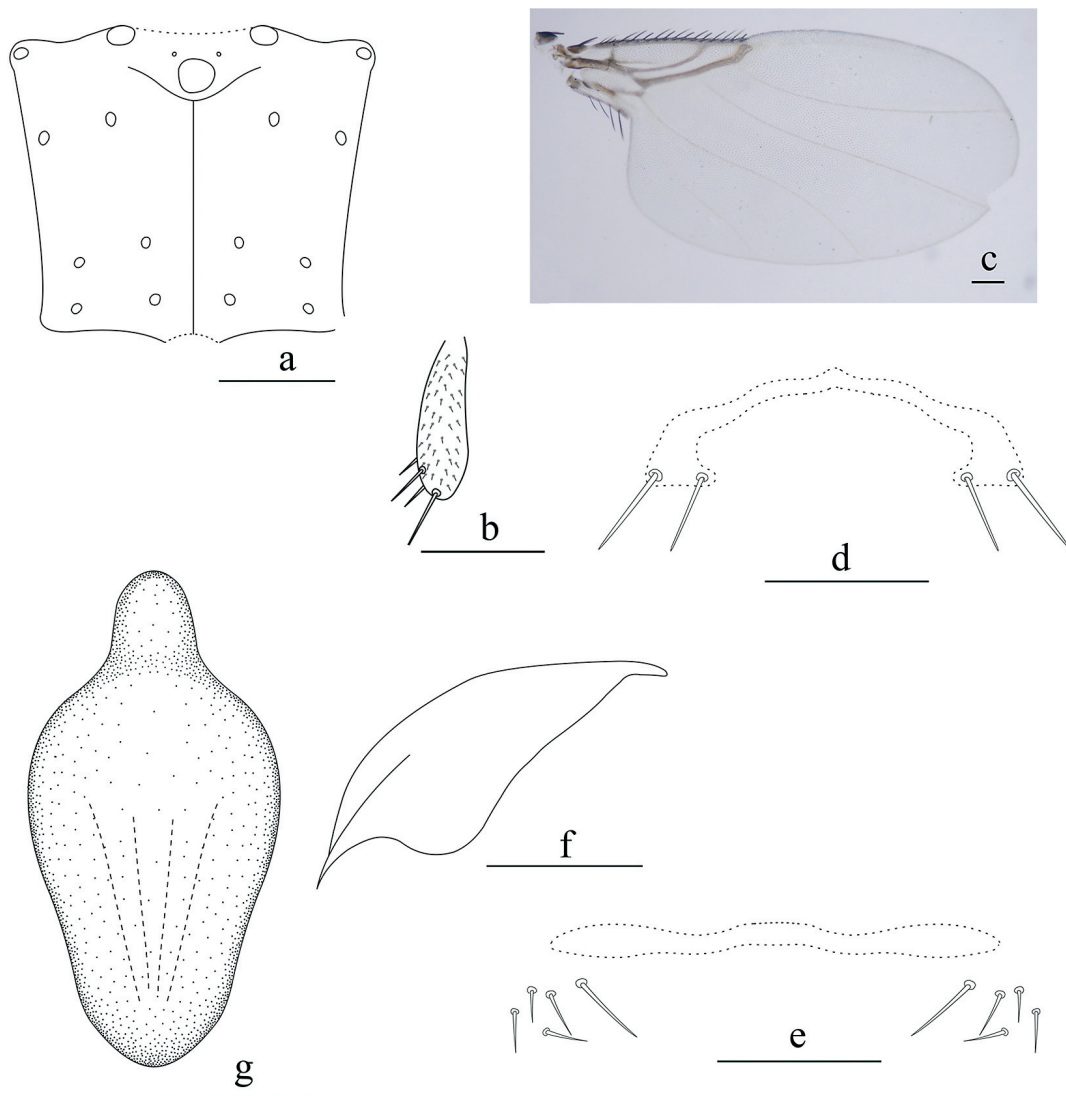


Fig. 2. *Pseudacteon obtusatus* Liu & Cai, **sp. n.** – a. frons. – b. palpus. – c. wing. – d. tergite VI. – e. sternite VI. – f. ovipositor sheath in lateral view. – g. dorsal plate. Scale: 0.1 mm.

an anterior pair of shorter bristles and a longer posterior pair. Legs yellowish brown. Front tibia without palisade. Mid tibia with near-dorsal longitudinal hair palisade extending about two thirds of length and comprising 35–40 modified hairs. Hind femur with 6–8 long hairs below basal half and 6–8 long anteroventral hairs in outer half. Hind tibia with 8–10 differentiated postero-dorsals before the stronger pre-apical bristles. The palisade of hind tibia completed, sinuous. Wing length 1.68 mm. Costal index 0.39. Costal

ratio 1.96:1. Costal cilia 0.08 mm (Fig. 1c). Haltere brown.

Abdomen. Tergites brown with minute sparse hairs only. Tergites II–V all very much broader than long, but progressively narrowing from tergite II backwards. Tergite VI variable with some bristles (Fig. 1d). Venter greyish brown and segments 1–5 bare. Sternite VI blackish brown, clearly defined, with 4 very strong, pin-shaped bristles and some long, bristle-like hairs (Fig. 1e). Ovipositor sheath brown, downward. Dorsal

plate arched, with 3–4 short hairs on sub-apex of each side (Fig. 1f). Ventral plate with 12–16 fine, long and transverse-inclined hairs arranged in two longitudinal rows (Fig. 1g).

Male. Unknown.

*Etymology.* The name refers to the characters of abdominal sternite VI.

*Remarks.* The new species is easily recognized in having 4 very strong pin-shaped bristles on abdominal sternite VI and transverse-inclined long hairs on ventral plate of ovipositor sheath. In the key to European *Pseudacteon* (Disney & Withers 2009), the species runs to couplet 6, to *P. fennicus* Schmitz. It differs from the latter by 4 very strong, pin-shaped bristles on sternite VI and 12–16 fine, long and transverse-inclined hairs on ventral plate of ovipositor sheath. In the key to *Pseudacteon* of the Russian Far East (Disney & Michailovskaya 2000), the species runs to couplet 4, to the putative female of *P. pullum* Michailovskaya, but it is different in having 35–40 modified hairs of mid tibial hair palisade.

### 3.2. *Pseudacteon obtusatus* Liu & Cai, sp. n. (Fig. 2)

*Type material.* Holotype ♀: China: Qiu Jia Ba (32.92°N, 104.32°E; 2,270 m), Wen County, Gansu, 7.VIII.2011, Cai Yun-Long leg. Paratypes: 3 ♀♀, same data as holotype.

*Description.* Female. Head. Frons yellowish brown, with 20 hairs plus 2 on ocellar triangle and very dense fine microsetae. Frons with 2 pairs of supra-bristles, lower pair proclinate and upper one reclinate; upper pair higher than anterolateral bristles (Fig. 2a). Flagellomere 1 pear-shaped and arista light brown, with 4 bristles at apical half. Palpus pale, very lightly tinged brown, and not enlarged (Fig. 2b).

Thorax. Brown with a bare mesopleuron. Each side of scutum with a small humeral bristle, two notopleurals, a pre-alar, a post-alar and a pre-scutellar dorsocentral bristle. Scutellum with an anterior pair of shorter bristles and a longer posterior pair. Legs yellow. Front tibia without palisade. Mid tibia with near-dorsal longitudinal hair palisade extending about two thirds of length and comprising 18–20 modified hairs. Hind femur with 6 long hairs below basal half and 4 long

anteroventral hairs in outer half. Hind tibia with 8 differentiated posterodorsals before stronger pre-apical bristles. Wing length 1.36 mm. Costal index 0.38. Costal ratio 1.87:1. Costal cilia 0.06 mm (Fig. 2c). Haltere brown.

Abdomen. Tergites brown with minute sparse hairs only. Tergites II–V all very much broader than long, but progressively narrowing from tergite II backwards. Tergite VI reduced to a narrow anterior strip in middle but each lateral side bearing 2 bristle-like hairs at rear margin (Fig. 2d). Venter greyish brown and segments 1–5 bare. Sternite VI brown, reduced to a narrow strip in middle, bearing 2 short bristles and 2–3 hairs on each ill-defined side (Fig. 2e). Ovipositor sheath brown, downward (Fig. 2f). Dorsal plate with obtuse process on base and with about 10 hairs on sub apex (Fig. 2g). Ventral plate bare.

Male. Unknown.

*Etymology.* The species name refers to the characters of the ovipositor sheath.

*Remarks.* In the key to European *Pseudacteon* (Disney 2009), the species runs to couplet 6, to *P. fennicus* Schmitz. It differs from the latter in having an obtuse process on dorsal plate of ovipositor sheath. In the key to *Pseudacteon* of the Russian Far East (Disney & Michailovskaya 2000), the species runs to couplet 4, to the putative female of *P. pullum* Michailovskaya, but it is different in having 18–20 modified hairs of mid tibial hair palisade.

### 3.3. *Pseudacteon hexasetalis* Liu & Wang, sp. n. (Fig. 3)

*Type material.* Holotype ♀: China: Mt. Daming (23.28°N, 108.26°E; 800 m), Guangxi, 10.VIII.2011, Feng Dian-Xing and Wang Jian-Feng leg.

*Description.* Female. Head. Frons yellowish brown, with 20 hairs plus 2 on ocellar triangle and very dense fine microsetae. Frons with 3 pairs of supra-antennal bristles, lower pair is preclinate, middle and upper ones reclinate; upper pair higher than anterolateral bristles (Fig. 3a). Flagellomere 1 pear-shaped and arista light brown. Palpus pale, very lightly tinged brown, and not enlarged (Fig. 3b).

Thorax. Brown, with a bare mesopleuron. Each side of scutum with a small humeral bristle, two notopleurals, a pre-alar, a post-alar and a

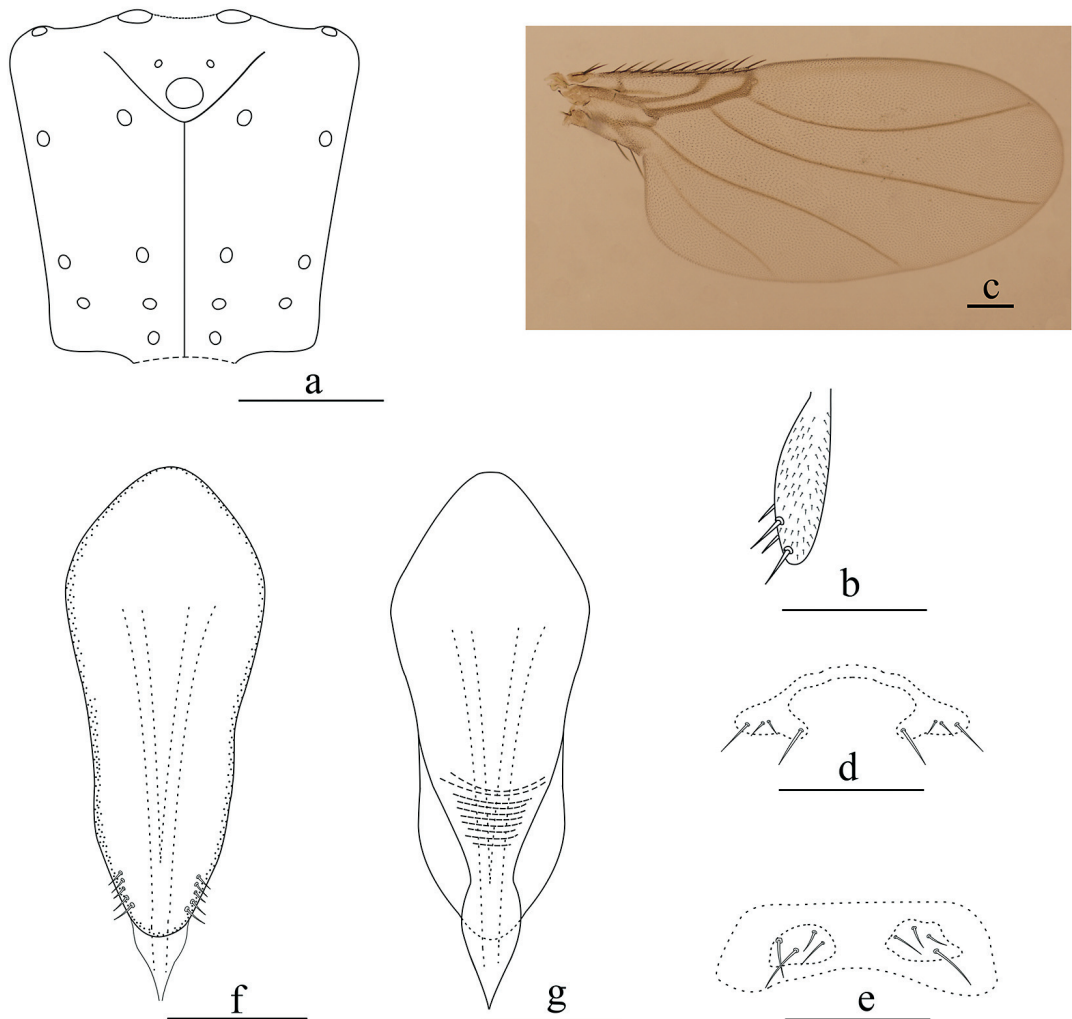


Fig. 3. *Pseudacteon hexasetalis* Liu & Wang, **sp. n.** – a. frons. – b. palpus. – c. wing. – d. tergite VI. – e. sternite VI. – f. dorsal plate. – g. ventral plate. Scale: 0.1 mm.

pre-scutellar dorsocentral bristle. Scutellum with an anterior pair of shorter bristles and a longer posterior pair. Legs yellow. Front tibia without palisade. Mid tibia with near-dorsal longitudinal hair palisade extending about two thirds of length and comprising 19 modified hairs. Hind femur with 6 long hairs below basal half and 4 long anteroventral hairs in outer half. Hind tibia with 8 differentiated posterodorsals before the stronger pre-apical bristles. Wing length 1.02 mm. Costal index 0.36. Costal ratio 1.44:1. Costal cilia 0.05 mm (Fig. 3c). Haltere brown.

Abdomen. Tergites brown with minute sparse hairs only. Tergites II–V all very much broader

than long, but progressively narrowing from tergite II backwards. Tergite VI with 3–4 short bristles on each side (Fig. 3d). Venter greyish brown and segments 1–5 bare. Sternite VI blackish brown, with some weak bristles and hairs (Fig. 3e). Ovipositor sheath fine, yellowish brown. Dorsal plate with 5 short hairs on sub-apex (Fig. 3f). Ventral plate pointed, arrow-shaped, middle part dark (Fig. 3g).

Male. Unknown.

*Etymology.* The species name refers to the chaetotaxy of frons.

*Remarks.* The new species is easily distinguished from other species by three pairs of su-

pra-antennal bristles and the characters of ovipositor sheath.

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