

## A new species of the flat-footed fly genus *Callomyia* (Diptera: Platypezidae) from South China

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**Abstract.** *Callomyia triangulata* sp. nov. is described from South China (Yunnan Province) based on two females. The species is compared with the only other species of *Callomyia* Meigen, 1804 known from the Oriental Region, *C. coei* Kessel, 1966 from Nepal, from which it differs mainly by the thoracic and abdominal colouration. All relevant characters are illustrated and photographed. A probable Palaearctic origin of these two species is discussed.

**Key words.** Diptera, Platypezoidea, Platypezidae, Callomyiinae, new species, China

### Introduction

The world fauna of the genus *Callomyia* Meigen, 1804 is represented by 20 species. This genus is distributed mainly in the Palaearctic and Nearctic Regions and it is apparently missing in the Neotropical, Afrotropical and Australasian Regions; in the Oriental Region it is represented by a single species, *Callomyia coei* Kessel, 1966 described from Nepal (KESSEL 1966). This species is known from the female only and was redescribed and figured by CHANDLER (1994) within his revision of the Oriental and Australasian Platypezidae. Although *C. coei* was included in the catalogue of the Oriental Diptera (KESSEL 1975), it rather represents a Palaearctic element on the border of its distribution as stated by CHANDLER (1974).

CHANDLER (1974) recognized four species of *Callomyia* in Europe in his original revision and later described one additional species from Bulgaria (CHANDLER 1976). Thus, genus *Callomyia* has currently five species in Europe (CHANDLER 2001) and another four were described from Siberia and the Far East of Russia (SHATALKIN 1980, 1982, 1992). All nine Palaearctic species are known from both sexes. KESSEL & BUEGLER (1972) revised the genus *Callomyia* of the Nearctic Region, recognizing a total of 10 species. Only two of these species are known from both sexes, among the remaining eight species, five were described from males and three from females only.

The genus *Callomyia* is characterized by the following adult diagnostic characters: presence of spines on  $R_1$  wing vein; shape of the head, thorax and abdomen; similar thoracic chaetotaxy; long wings with typical venation. Males are mostly black-coloured with silver-grey patterns on thorax and abdomen. Colouration of females is composed of black, yellow, brown and grey silver dusted areas. The adult characters are supplemented also by typical morphology of larvae which live on surfaces of fungal mycelia: larvae dorsoventrally flattened, their metathoracic and first abdominal segment fused, and marginal processes duplicated on each segment. For a complete generic diagnosis see CHANDLER (2001).

### Material and methods

The specimens were examined with an Olympus SZX10 binocular microscope. The photographs were taken by a Canon 550D camera with MPE-65 macro lens and combined from multiple layers using Helicon Focus Pro 5.2. The drawings and photographs were edited in CorelDRAW 12 and Corel PHOTO-PAINT 12 graphic software. Morphological terminology follows CUMMING & WOOD (2009) and CHANDLER (2001). The material examined is deposited in the National Museum, Praha, Czech Republic (NMPC).

### Taxonomy

#### *Callomyia triangulata* sp. nov.

(Figs. 1–8)

**Type locality.** China, northern Yunnan, mountain valley 12 km west of Zhongdian (Shangri-La) (D. Král, pers. comm.). **Note:** The geographic coordinates and altitude given in the locality labels of the type specimens were obtained from an out-dated map and are incorrect (D. Král, pers. comm.).

**Type material.** HOLOTYPE: ♀, 'China N Yunnan, Xue / Shan nr. Zhongdian / 4200 m, 24.vi.1996 / 27,49N/99,34E // collected by / J. Farkač, P. Kabátek / and A. Smetana // HOLOTYPE / *Callomyia / triangulata* sp. nov. / M. Tkoč det. 2012' (NMPC). PARATYPE: ♀, same label data as the holotype, only third label has 'PARATYPE' instead of 'HOLOTYPE' (NMPC).

**Description. Female.** Body length 4.6 mm (holotype), 4.2 mm (paratype). Wing length 5.2 mm (holotype), 4.8 mm (paratype).

**Head** (Figs. 1–3, 6) silvery grey dusted. Antenna (Fig. 3) dark brown, scapus with dorsal seta reaching beyond tip of pedicel, pedicel with one strong dorsal seta reaching tip of second flagellomere, second minor dorsal seta reaching one third of first flagellomere. Three small setae on pedicel in lateral position and one small seta in ventral position. First flagellomere short ovate, twice as long as pedicel. Arista slightly less than two thirds of antennal length. One pair of vertical and orbital setae (Fig. 2) (two pairs of alveoli are present, but the corresponding setae are missing in the type material), 5–8 pairs of short erect frontal setae. Ocellar tubercle dull brown, with one pair of long ocellar setae and one pair of small postocellar setae on posterior margin of the tubercle. Postocular setae moderately long, innermost pair thicker, longer and more curved. Parafacial and gena bare, occiput and postgena with black setae. Occiput silvery grey dusted. Palpus yellow with short setae, proboscis pale yellow with pale pubescence.

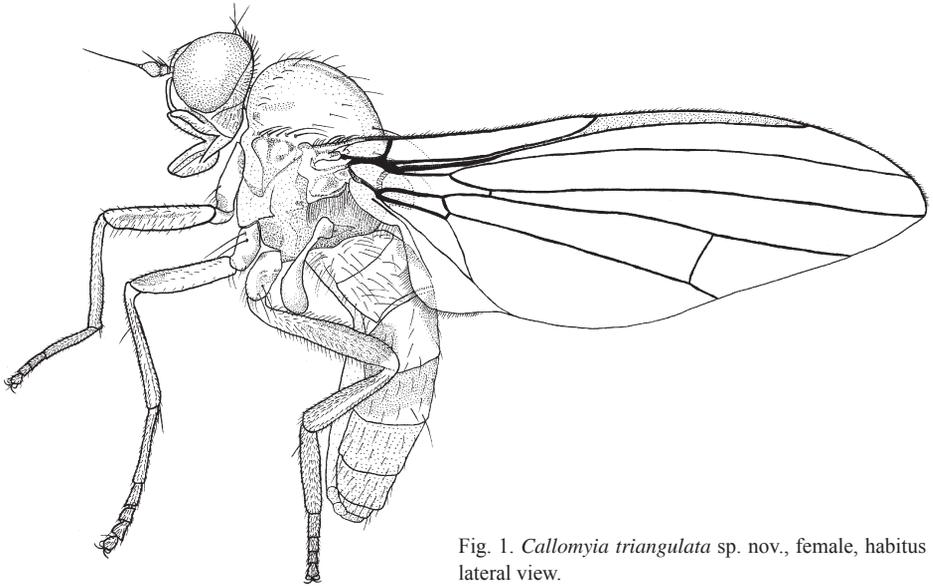


Fig. 1. *Callomyia triangulata* sp. nov., female, habitus in lateral view.

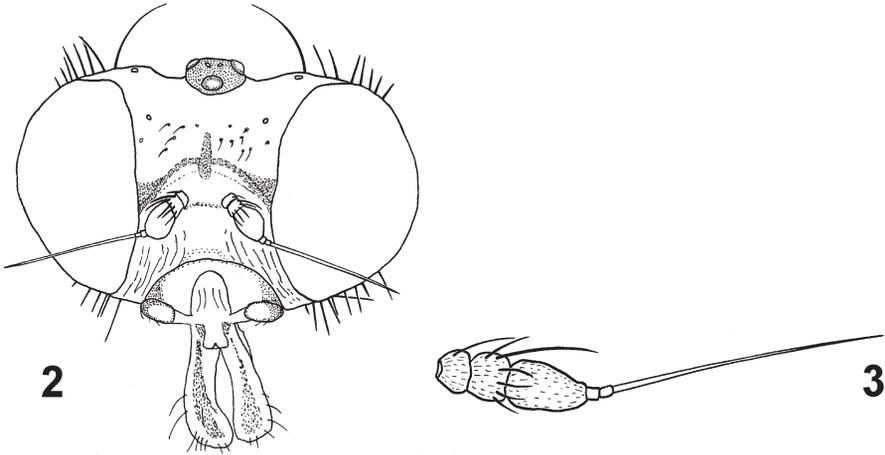
*Thorax* (Figs. 1, 4, 7) silvery grey dusted with black markings. Median dorsal stripe velvet black, as wide as one third of thorax width, narrowing in posterior direction. Anterior part of black colouration weaker, especially in anterior view. Black median stripe posteriorly connected with black slightly wider stripe on scutellum. Pleural sides of thorax without bristling, silvery grey coloured, only meron and anepimeron somewhat yellow. All thoracic setae black. Uniserial row of 11 acrostichal setae, but inconspicuous on the black marking. Two rows of 10 dorsocentral setae, the 2 posterior ones stronger and longer. Humerus somewhat yellow, with 2 small humeral setae; small 5–6 posthumeral setae on each side of thorax. One large supraalar and one large postalar seta on each side. Notopleural group composed of 6 setae: 1<sup>st</sup>–4<sup>th</sup> of medium length, 5<sup>th</sup> + 6<sup>th</sup> very long. Two presutural and several postsutural alveoli of setae (the corresponding setae missing in the type material). Scutellum with 2 prominent scutellar setae on each side. Halteres large and bright yellow.

*Wing* (Figs. 1, 6) slender and elongate, yellow-tinted with brownish veins, wing base pale yellow. Subcostal cell (sc) less transparent and tinted by white-yellow colour. Wing surface uniformly covered with microtrichia, only basal cells with microtrichia sparse. First longitudinal vein ( $R_1$ ) bearing 19 spines. Anterior (r-m) and posterior (dm-cu) crossveins present. Costal cell (c) equal to sc in length. Posterior crossvein (dm-cu) longer than its distance from the wing margin on the fifth longitudinal vein ( $CuA_1$ ). Anal cell (cup) elongated, more than twice as long as rest of anal vein ( $A_1 + CuA_2$ ) beyond it.

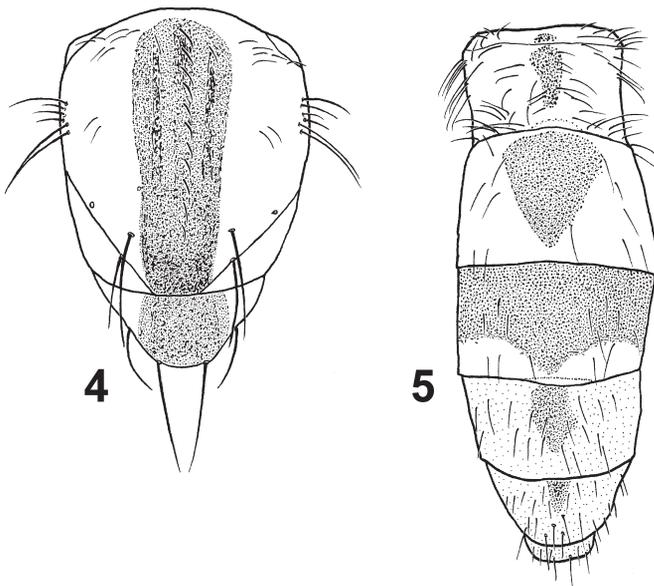
*Legs* (Figs. 1, 6) slender, yellowish brown with tarsi darker. Coxae yellow with several long black setae. Fore femur with longer thin setae on distal part. Fore tibia with 2 short anteroventral spurs. Mid tibia bearing long dorsal seta above middle and two ventral apical spurs – one long, one short. Hind femur slightly narrower than tibia. Distal parts of femur and

tibia of hindleg darker. First tarsomere of hindleg not flattened, narrower than tibia, bearing ventral seta in basal fourth of its length (Fig. 1).

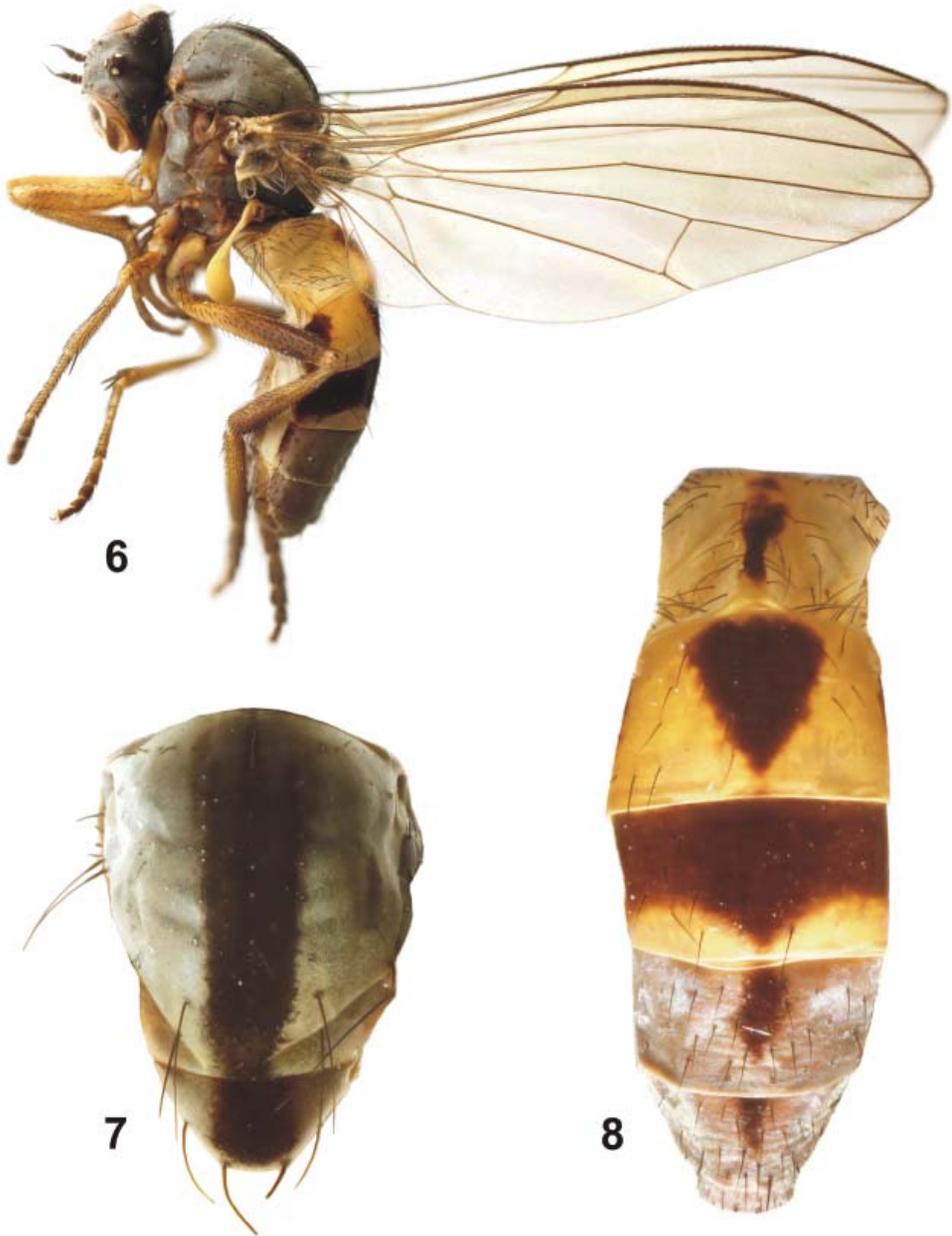
*Abdomen* (Figs. 5, 8) yellow and grey silver coloured with brown markings. Pleura whitish, visible from lateral view. Setae on abdomen thin and black. Tergite 1 and 2 (T1+2) more setulose than the others. T1 yellow with small brown area dorsomedially. T2 yellow



Figs. 2–3. *Callomyia triangulata* sp. nov., female: 2 – head, anterior view; 3 – antenna, lateral view.



Figs. 4–5. *Callomyia triangulata* sp. nov., female: 4 – thorax (chaetotaxy partly reconstructed), dorsal view; 5 – abdomen, dorsal view.



Figs. 6–8. *Callomyia triangulata* sp. nov., female colouration: 6 – habitus, lateral view; 7 – thorax, dorsal view; 8 – abdomen, dorsal view.

with elongate dorsomedial brown marking more or less connected with the previous, thicker but narrowing posteriorly, ending at three fourths of its length. T3 yellow, marked with big brown triangle-shaped marking ending close to posterior margin and in lateral view marked with brown spot on each side. T4 mostly brown, two thirds of anterior part brown extending in the middle to posterior margin forming a tip. T5 grey silver shiny dusted with small brown dorsal area in two thirds of anterior part. T6 similar in colouration to T5, but brown marking smaller. T7 small, grey silver dusted. Sternites 1–4 (S1–4) whitish to pale yellow, S5–7 darker yellow brownish with grey shining. S5 and S6 with stronger setae than other sternites.

**Male.** Unknown.

**Differential diagnosis.** *Callomyia triangulata* sp. nov. differs from *C. coei* mainly by its thoracic and abdominal colouration. The thorax of *C. triangulata* sp. nov. lacks the two black postsutural areas above wing bases and the median black stripe is less pronounced in its anterior part. The scutellar black stripe is thinner. Tergites 1 and 2 (T1–2) are yellow with brown markings, not silvery orange as in *C. coei*. T3 is yellow with a brown triangular marking, unlike *C. coei* which has T3 black. T4 is mostly brown with small yellow posterior spots, T5–6 are silver with small medial brown spots in contrast to T4 orange with thin medial stripe, T5 black and T6 silver dusted as in *C. coei*.

Other characters in which *C. triangulata* sp. nov. differs from *C. coei* are also important to recognize it from other *Callomyia* species: femur of hindleg is wider than tibia (other *Callomyia* species have usually tibia wider than femur); wing vein  $R_1$  with 19 short spines (other *Callomyia* species have usually lower number of these spines).

The European, Russian and Far Eastern *Callomyia* species may be easily recognized from the new species by the abdominal markings, which are composed of bands and dorsally disconnected bands, but never with a triangular marking (CHANDLER 2001; SHATALKIN 1982, 1985, 1992). Moreover, the new species differs from *C. admirabilis* Shatalkin, 1980 by the presence of spines on  $R_1$ , and from *C. dorsimaculata* Shatalkin, 1982 by presence of a dorsal seta on the middle tibia. *Callomyia krivosheinae* Shatalkin, 1982 has T1–T4 orange with no brown markings and its T6 is black.

*Callomyia triangulata* sp. nov. could be recognized from the North American species by its generally bright grey and yellow colour of the body (American species are mostly dull or black coloured) and different abdominal colouration. The only American species which has triangular marking on the abdomen is *C. clara* Kessel, 1949, but it has the triangle on T4 instead of T3 as in *C. triangulata* sp. nov. Also, the American species of *Callomyia* have 9–16 spines on  $R_1$ , not 19 as in *C. triangulata* sp. nov.

**Etymology.** The Latin adjective *triangulata* (= three angled) refers to the brown triangular shaped marking on the third abdominal tergite of the female, the most conspicuous diagnostic character of the species.

**Biology.** Unknown. The type specimens were collected in a montane forested habitat, ca. 4000 m a.s.l.

**Distribution.** China: Yunnan Province.

## Discussion

*Callomyia triangulata* sp. nov. possesses all diagnostic characters of the genus *Callomyia* and therefore undoubtedly belongs to the genus. It seems that there are generally two colour types of female in the genus *Callomyia*: partly yellow coloured species and dull or black coloured species. This division has no phylogenetic value, but could be useful when recognizing species of this genus. *Callomyia triangulata* sp. nov. could be considered as the member of the 'yellow group'.

*Callomyia triangulata* sp. nov. is treated as an Oriental faunistic element here, following the geographical delimitation of the Oriental Region as used in the BioSystematic Database of World Diptera (PAPE & THOMPSON 2010). On the other hand, zoogeographically this species could belong to the Palaearctic fauna as was stated by CHANDLER (1974) in case of the highland species *C. coei* from Nepal (1900 m a.s.l.). So, this means that it is possible that the genus *Callomyia* has no true Oriental fauna members, and these two species are Palaearctic by origin, distributed at high altitudes on the border of the region where the faunas of these two zoogeographical regions are mixed. This phenomenon was discussed by many authors and for Diptera more recently summarized by GROOTAERT (2009), who considered the whole Nepal and Yunnan Province as belonging to the Oriental Region, but he also noted the presence of Palaearctic elements on mountains in the Oriental Region.

While the Palaearctic species have males and females correctly associated (SHATALKIN 1985, CHANDLER 2001), both Oriental and the majority of the Nearctic species are described from one sex only. Therefore, there are a lot of possibilities of field, taxonomical and revisionary work, especially in the Nearctic Region, where some male-based species may be in fact conspecific with some of the female-based ones.

## Acknowledgements

Here I would like to express my thanks to Jaromír Vaňhara (Masaryk University, Brno, Czech Republic), who let me examine the material from his collection and encouraged me to study Platypezidae. I also thank the collectors Jan Farkač, Petr Kabátek and Aleš Smetana for providing the material. Peter J. Chandler (Melksham, United Kingdom) and Jindřich Roháček (Silesian Museum, Opava, Czech Republic) are acknowledged for the review of the manuscript and English corrections. I am obliged to my colleagues Martin Fikáček and Petr Kment (both NMPC) for many consultations and their comments on the manuscript. This work was supported by the Ministry of Culture of the Czech Republic grant DF12P01OVV021 (NAKI) and by Charles University student research grant SVV-2012-265 206.

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