

One new species of *Austrophasiopsis* Townsend (Diptera: Tachinidae) from China

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Abstract: *Austrophasiopsis* Townsend (Diptera: Tachinidae) is assigned to the tribe Leskiini in subfamily Tachininae. A new species, *Austrophasiopsis xuewanqi* **sp. nov.** from NW Yunnan and SE Tibet, China, is described and illustrated. Diagnoses are given and a key to the four species in the genus is provided.

Key words: tachinid fly; taxonomy; Leskiini; key

中国奥突寄蝇属 *Austrophasiopsis* 一新种记述 (双翅目: 寄蝇科)

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摘要: 记述来自中国云南西北部梅里雪山和西藏东南部寄蝇亚科莱寄蝇族奥突寄蝇属1新种 (双翅目: 寄蝇科): 薛奥突寄蝇 *Austrophasiopsis xuewanqi* **sp. nov.**; 提供了新种的形态描述和特征图; 给出了奥突寄蝇属的鉴别特征, 并编制了该属4种类检索表。

关键词: 寄蝇; 分类; 莱寄蝇族; 检索表

Introduction

Shima and Tachi (2022) found that the phallus of members of the genus *Austrophasiopsis* Townsend (Diptera: Tachinidae) from the Oriental Region resembles that of some Tachininae. They described *A. caliginosa* Shima & Tachi from Nepal and redescribed *A. formosensis* Townsend from Taiwan, China and *A. luteipennis* Mesnil from the Philippines (Dear & Crosskey 1982). They provided a key to the three species, and addressed the systematic placement of *Austrophasiopsis* from the tribe Minthoini (Crosskey 1976) to Leskiini (Tachininae). Stireman *et al.* (2019) reconstructed phylogenetic relationships within the diverse parasitoid fly family Tachinidae using four nuclear loci (7800 bp), addressing more than 500 taxa from around the world, and found that Leskiini and Minthoinii form a sister clade and that Leskiini may be monophyletic.

Recently, an unknown species of *Austrophasiopsis* was photographed from Xizang (Tibet), China, by Wang Q (2016) and fifty male specimens were collected from Mingyong Village in the Meili Snow Mountains, Deqin, between the border of northwest Yunnan in 2013 and southeast Tibet in 2014. Here we describe the new species of *Austrophasiopsis* from

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Yunnan and Tibet, China residing between the borders of the Oriental and Palaearctic regions.

Material and methods

Materials examined during this study were collected from Mingyong Village, Meili Snow Mountains, Deqin County in northwestern Yunnan, China and are deposited in the Insect Collection of Shenyang Normal University, Shenyang, China (SYNU). The morphological terminology and measurements used in the descriptions follows Cumming and Wood (2017) and Tschorsnig and Richter (1998). The adult specimens were examined using Zeiss Stemi SV11 stereomicroscopes. Consecutive digital images of heads, abdomens and bodies of adult males were taken with a Leica 205A stereoscopic microscope, and images were blended with Leica Application Suiter Version 4.12.0. Male terminalia were extracted from the abdomen after having been treated with a 10% KOH solution and neutralized with 5% acetic acid. The terminalia, placed in a petri dish in 70% alcohol, were examined and illustrated using a Leica 205A stereoscopic microscope with attached micrometer. Dissected terminalia were placed in glycerine in a small plastic tube pinned together with the source specimen. And we also looked at 1♂, photographed by Chao WU, a route from Bomi to Motuo County (= Medog) (29°39'14.89"N 95°29'16.29"E) at 2000 m, Xizang (Tibet), China, 15-VI-2014, recorded by Qiang WANG (2016), and think that the species of the photo is the same species in this paper.

Taxonomy

Genus *Austrophasiopsis* Townsend

Austrophasiopsis Townsend, 1933: 448. Type species: *Austrophasiopsis formosensis* Townsend, 1933, by original designation. Verbeke 1962: 135 (relationships); Crosskey 1976: 195 (conspectus of Oriental tachinids); O'Hara *et al.* 2009: 156 (catalog of Chinese tachinids).

Kosempomyiella Baranov, 1934: 165. Type species: *Kosempomyiella rufiventris* Baranov, 1934, by original designation.

Austrophasiopsis: Crosskey, 1967: 7 (Oriento-Australasian tachinid genera). Shima & Tachi, 2022: 556 (*Austrophasiopsis* of Oriental).

Kosempomyiella: Crosskey, 1967: 16 (junior synonym of *Austrophasiopsis*, Oriento-Australasian tachinid genera).

Diagnosis. Most characters are the same as those of Shima & Tachi (2022), but male also has the following different characters: lower margin of face slightly extending beyond vibrissal base; occiput wholly with black hairs; palpus strongly reduced, at most 5 times as long as wide. Thorax in some cases with thoracic setae very fine and indistinguishable among normal hairs, if setae distinct, then as follows: 1–2 presutural and 2 postsutural acrostichal setae; 2–3 presutural and 3–4 postsutural dorsocentral setae; 1 presutural and 2 intra-alar setae; 2 supra-alar setae; scutellum at most with 3 pairs of marginal setae, apical setae strongly crossed. Katepisternum with 7–8 irregular setae, 2 of them longer. Upper and lower calypters brown, the latter not divergent from scutellum. Claws and pulvilli of fore leg shorter than 5th tarsomere. Mid tibia without ventral seta; hind tibia with 2 preapical dorsal setae, short preapical anteroventral seta as long as preapical posteroventral seta. Abdominal syntergite

1+2 medially excavated to posterior 3/4, syntergite 1+2 and tergite 3 with some lateral discal setae, 2 weak median marginal setae or absent, tergites 3 and 4 with some lateral discal setae, without median discal seta. Surstylus with short spines on apical portion.

Remarks. Townsend (1933) placed *Austrophasiopsis* in his tribe Phasiini. When describing *A. luteipennis*, Mesnil (1953) placed *Austrophasiopsis* between two new monotypic genera, *Polygasteropteryx* Mesnil and *Kambaitimyia* Mesnil between Dexiinae and Phasiinae. Crosskey (1976) instead tentatively placed *Austrophasiopsis* in the tribe Minthoini of Tachininae. This treatment was later followed by O'Hara *et al.* (2009, 2020). Stiremann *et al.* (2019) showed *Solieria* was sister to *Leskia* and with both forming a clade with *Bithia* in their molecular analysis. Shima & Tachi (2022) found that the species of *Austrophasiopsis* have certain common superficial characters: wing cell r_{4+5} petiolate, ocellar setae fine or absent, body setae short and fine, abdomen short and rather rounded. The male terminalia of these species also share several characters, including dorsal arms of the hypandrium fused and encircling the basiphallus, cerci entirely fused medially (central suture absent), postgonite very small, basiphallus elongate and tube-like, epiphallus absent, and distiphallus very short. The male terminalia of species of the Minthoini also differ from those of *Austrophasiopsis*: cerci with distinct longitudinal median suture, hypandrial arms separated from each other, and epiphallus present. Shima and Tachi (2022) considered that *Austrophasiopsis* may be most closely allied to *Solieria* in the tribe Leskiini.

Distribution. Oriental China (Taiwan, Tibet, Yunnan); Nepal; Philippines (Luzon).

***Austrophasiopsis xuewanqi* Zhang & Li sp. nov.** (Figs 1, 2)

Male. Body length 5.5–6.5 mm. Head. Eyes densely covered with pale long hairs. Frons, parafacial and occiput black, covered with grayish white pruinosity. Frons of male very narrow, about 1/10 of eye width or 1/20 head width. Fronto-orbital plate narrow, linear at narrowest point. Parafacial slightly narrower than postpedicel in anterior view. Gena height about 1/6 of eye height. Facial ridge with 2–3 decumbent setae on lower 1/5. Vibrissa slender, slightly above lower margin of face, with 2–3 subvibrissal setae. Lower facial margin slightly protruding forward and visible in lateral view. 3–4 slender lower frontal setae, lowest one at level with upper margin of scape, frontal seta nearly disappear at middle, 2–3 upper frontal setae short. Two ocellar setae proclinate, slender hair-like, longer than upper frontal setae. Inner vertical setae weak, indistinctly different from postocular setae. Occiput slightly inflated on lower surface, wholly with black hairs below postocular setal row. Antenna dark brown, falling short of lower margin of face about pedicel length, scape erect, contacting with pedicel and postpedicel in acute angle, postpedicel about 3 times as long as wide, about 1.3 times as long as pedicel, pedicel with 1 short seta on dorsal surface, which at most is as long as pedicel. Arista nearly bare, about as long as postpedicel and pedicel combined. Palpi reduced, dark brown, 3 to 5 times as long as wide. Prementum gleaming black, 3–4 times as long as wide. Proboscis about half as long as head height.

Thorax. Dark brown, covered with sparse gray pruinosity. Anterior spiracle brownish yellow, posterior spiracle yellowish. Dorsum with indistinct longitudinal dark vittae, pleura with gray pruinosity. Thoracic setae weak and sometimes indistinct among thoracic hairs, 0–3 prescutural and 0–1 postsutural acrostical setae, 3 prescutural and 3 postsutural dorsocentral setae, 2 short postsutural intra-alar setae. 1 short prealar seta, 1 supra-alar seta, 2–3

postpronotal setae arranged in a nearly straight line. Scutellum with 3 pairs of marginal setae (strong apical scutellar setae crossed, subapical and basal scutellar setae). Prosternum and proepisternum bare. Anepisternum with 1 antero-upper seta and a row of posterior setae. Anepimeron with 2 setae, one of them setula-like. Katepisternum with 7–8 irregular setae, 2 of them longer. Katepimeron bare. Meron with a row of setae. Anatergite bare. Postmetacoxal area membranous.

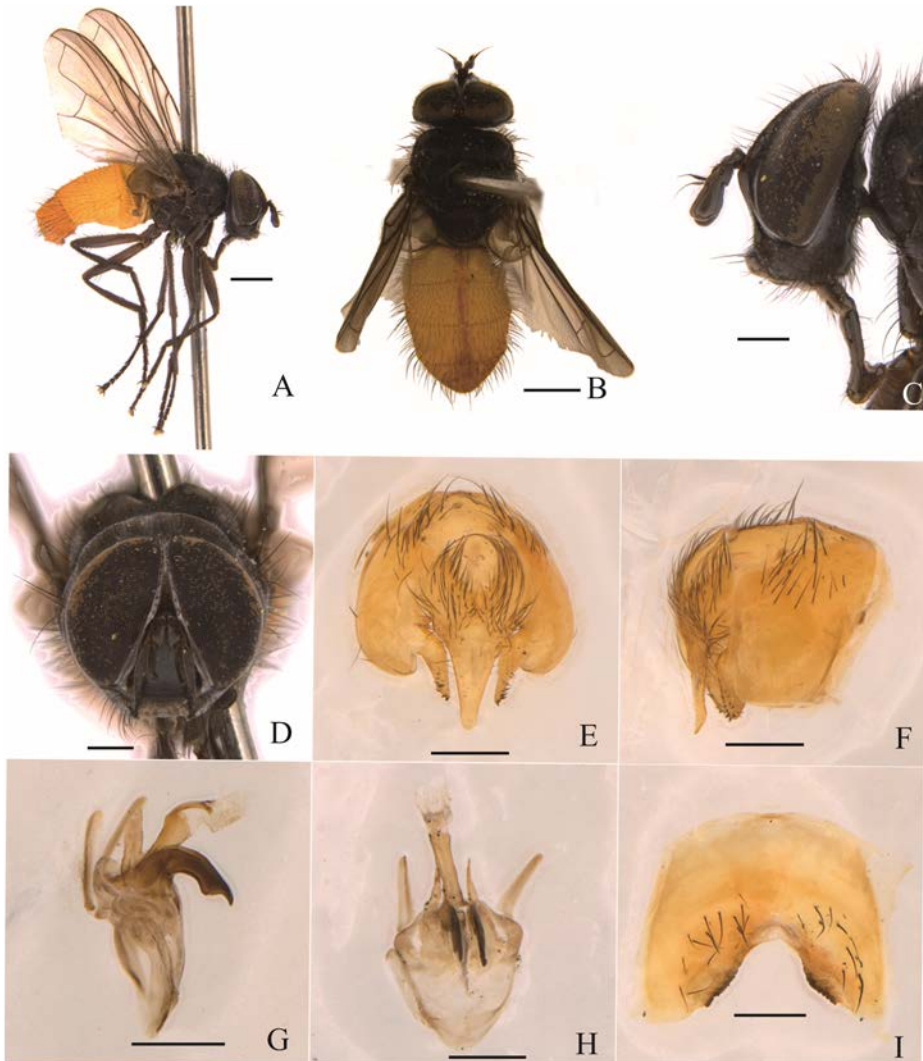


Figure 1. Morphology of *Austrophasiopsis xuewanqi* Zhang & Li **sp. nov.** A, B. ♂. Bodies, lateral and dorsal views; C, D. ♂. Heads, lateral and anterior views; E, F. Cerci, surstyli and epandrium of male, caudal and lateral view; G, H. Phallus (ejaculatory apodeme, aedeagal apodeme, hypandrium, pregonite, postgonite, basiphallus and distiphallus) of male, lateral and dorsal views; I. Sternite 5. Scale bars = 1 mm (A, B); 0.5 mm (C, D); 0.25 mm (E–I).

Wing. Pale brownish, tegula and basicosta dark brown. Upper and lower calypters brown, latter large, nearly round, close to same side of scutellum. Costal spine short, 2nd costal section bare dorsally and ventrally. Relative lengths of 2nd, 3rd and 4th costal sectors

approximately 4 : 10 : 5, vein r_{4+5} basally with 2–3 setulae dorsally and ventrally. Wing cell r_{4+5} with a petiole that is about as long as section of vein M beyond bend. Vein M from dM-Cu crossvein to its bend about 4 times distance between the bend and wing posterior margin, last sector of vein CuA_1 about 3/5 as long as dM-Cu crossvein. Halteres yellow.

Legs. Dark brown. Claws black and pulvilli yellow. Claws and pulvilli of fore leg shorter than fifth tarsomere. Fore tibiae slightly longer than eye height, shorter than head height, fore femur with a row of posteroventral setae, a row of dorsal setae, fore tibia without anterodorsal and posterior seta, with 1 short preapical dorsal seta, 1 preapical anteroventral and 1 preapical posteroventral seta, which are shorter than the tibia diameter. Mid femur without median anterior seta, with 2 short preapical posterodorsal setae, which are as long as the tibia diameter, a row of posteroventral setae, mid tibia without anterodorsal and posterodorsal setae, with 1 short ventral seta, with preapical anteroventral and preapical posteroventral seta. Hind femur with a row of anterodorsal setae, 3 preapical anteroventral setae, hind tibia with a row of short anterodorsal and 1–2 short ventral setae, without posterodorsal and posterior seta, with 2 preapical dorsal setae, short preapical anteroventral seta as long as preapical posteroventral seta.

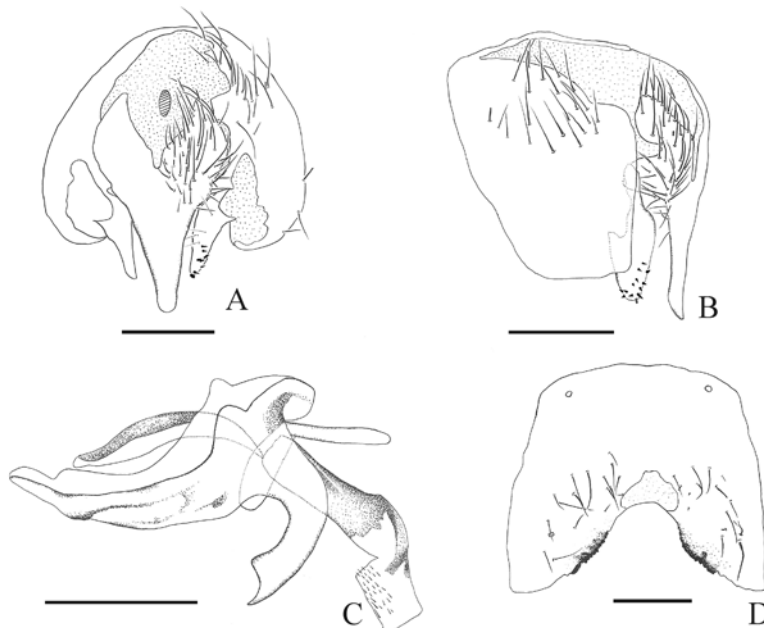


Figure 2. Illustration of *Austrophasiopsis xuewanqi* Zhang & Li **sp. nov.** A, B. Cerci, surstyli and epandrium of male, caudal and lateral views; C. Phallus of male, lateral view; D. Sternite 5. Scale bars = 0.25 mm.

Abdomen. Long ovate, yellow, with a pale yellowish longitudinal vitta, with sparsely black short suberect hairs on tergites, medially excavation of syntergite 1+2 not reaching to hind margin of that segment, confined to anterior 2/3–3/4 of that segment, syntergite 1+2 and tergite 3 each with 2–4 lateral marginal setae, and 2 weak median marginal setae or absent, tergites 3 and 4 without median discal seta, syntergite 1+2, tergites 3 and 4 each with some lateral discal setae, tergite 4 with a row of marginal setae, and tergite 5 with discal seta and a row of marginal setae. 2nd to 4th sternites each with a pair of rather short setae on posterior portion together with short hairs. Sternite 5 as shown in Fig. 1I, nearly square in ventral view,

V-shaped median cleft about 2/5 of the sternite length, lateral lobe bluntly rounded apically, its inner surface with some small spines.

Male terminalia. As shown in Fig. 2. In caudal view, cerci long triangular and its apex narrowed and slightly blunt, and surstylus slightly short and pointed apically with some small spines at apex. In lateral view, cerci slightly bent ventrally and pointed apically, surstylus bluntly rounded at apex, with some small spines, phallus with distal membranous part, pregonite long and pointed apically, postgonite short and straight.

Female. Unknown

Holotype. ♂, **China**, Mingyong Village to the Glacier, N28.4637° E98.7975°, 2400–2500 m, Meili Snow Mountains, Deqin County, northwest Yunnan, 30-V-2013, Teng YU & Xiang ZHANG (SYNU). **Paratypes.** 49♂, same data as holotype (SYNU).

Etymology. This species is named in honor of Chinese dipterist Prof. Wanqi XUE, for his great contributions to Chinese dipterology.

Diagnosis. Small species, with contrasting dark brownish thorax and reddish yellow abdomen. Head very narrow at vertex in male, 0.05 of head width in male; parafacial bare; postpedicel about 1.3 times as long as pedicel. Three presutural and 3 postsutural dorsocentral setae. Wing cell r_{4+5} with a petiole that is about as long as section of vein M beyond bend. Legs brown, basal 1/2–2/3 of hind femora brownish in male.

Remarks. This species is clearly similar to *Austrophasiopsis formosensis* Townsend belonging to the tribe Leskiini, and it is distinguished from it by the lower facial margin slightly protruding forward and visible in lateral view, occiput wholly with black hairs, postpedicel about 1.3 times as long as pedicel; 3 presutural and 3 postsutural dorsocentral setae, strong apical scutellar setae crossed; hind femora brownish on basal 1/2, different shape of 5th sternite, cerci wider at middle, surstylus with short spines at apex and shorter basiphallus.

Key to species of *Austrophasiopsis* [Couplet 1 as in Shima & Tachi (2022)]

1. Legs reddish yellow, fore femora and apical portions of tarsi more or less darkened; head setae mainly whitish; vibrissal area with many long whitish hairs, vibrissa indistinct; parafacial with whitish hairs; thoracic pleura and basal area of abdominal venter with whitish hairs; wing distinctly tinged with orange yellow..... *A. luteipennis* Mesnil
- Legs brown including fore femora and apical portions of tarsi, or mid and hind femora reddish yellow; head setae black, vibrissa developed; parafacial bare or with black hairs; all body hairs black; wing hyaline, at most weakly and evenly tinged with pale brown..... 2
2. Abdomen dark brown, with at most very thin grayish pruinosity, hairs rather sparse and fine; fronto-orbital plate and parafacial with shining-black stripe along inner margin of frontal vitta and along facial ridge; parafacial with hair; legs reddish brown black..... *A. caliginosa* Shima & Tachi
- Abdomen reddish yellow, without distinct pruinosity, with dense fine short hairs; fronto-orbital plate and parafacial with grayish pruinosity, without shining-black stripe; parafacial bare; legs brown-black..... 3
3. Occiput with black hairs on upper portion and pale-yellowish white hairs on median and lower portions. Postpedicel 1.8–2.0 times as long as pedicel; 2 presutural and 4 postsutural dorsocentral setae; apical scutellar setae not strong and not crossed, fore claw and pulvillus subequal in length to fifth tarsomere; hind femora yellowish on basal 1/2 *A. formosensis* Townsend
- Occiput wholly with black hairs. Postpedicel about 1.3 times as long as pedicel; 3 presutural and 3 postsutural dorsocentral setae; strong apical scutellar setae crossed; fore claw and pulvillus shorter than fifth tarsomeres; hind femora brownish on basal 1/2 *A. xuewanqi* sp. nov.

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