

One new species, two newly recorded genera and four newly recorded species of Tachinidae (Diptera) from Liaoning, China

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Abstract: Tachinid specimens (Diptera: Tachinidae) from Mt. Huangyi of Kuandian, Eastern Liaoning, China were examined. One species is described as new to science, *Linnaemya* (*s.str.*) *flavifemur* Zhang sp. nov., with photos of adults and male terminalia. Two genera and four species are newly recorded from China: *Microsoma* Macquart, 1855, *Rhacodinella* Mesnil, 1968; *Melastrongygaster atrata* Shima, 2015, *Microsoma exigua* (Meigen, 1824), *Rhacodinella aurata* Mesnil, 1970 and *Smidtia fukushii* Shima, 1996; and their diagnosis and photos are provided.

Key words: Calyptratae; tachinid fly; taxonomy; Kuandian

辽宁寄蝇科一新种、二中国新记录属及四中国新记录种（双翅目）

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摘要: 检查辽宁东部宽甸县黄椅山采集的寄蝇标本, 发现并记述1新种: 黄股短须寄蝇 *Linnaemya* (*s.str.*) *flavifemur* Zhang sp. nov., 提供了模式标本雄性外形和外生殖器照片; 2中国新记录属: 米寄蝇属 *Microsoma* Macquart, 1855 和多寄蝇属 *Rhacodinella* Mesnil, 1968; 4中国新记录种: 暗黑寄蝇 *Melastrongygaster atrata* Shima, 2015, 小米寄蝇 *Microsoma exigua* (Meigen, 1824), 金多寄蝇 *Rhacodinella aurata* Mesnil, 1970, 福氏锥腹寄蝇 *Smidtia fukushii* Shimai, 1996, 提供其主要鉴别特征和外形照片。

关键词: 有瓣蝇类; 寄蝇; 分类; 宽甸

Introduction

During our study of tachinid flies (Diptera: Tachinidae) from Mt. Huangyi of Kuandian, Eastern Liaoning, NE China belonging to the eastern Palaearctic Region, we have examined 1852 specimens and 160 species, 84 genera, 22 tribes, 4 subfamilies were recognized there (Zhao *et al.* 2019). And in this paper, some additional specimens from there as new *Linnaemya* species are found and described, two genera of *Microsoma* Macquart, 1855 (Dexiinae) and *Rhacodinella* Mesnil, 1968 (Exoristinae) and four species of *Melastrongygaster atrata* Shima, 2015 (Phasiinae), *Microsoma exigua* (Meigen, 1824), *Rhacodinella aurata* Mesnil, 1970 and *Smidtia fukushii* Shima, 1996 (Exoristinae) are newly recorded to China by Mesnil (1968, 1970), Chao *et al.* (1998), Shima (1986, 1996, 2015), Tschorasnig & Herting (1994) and Tschorasnig & Richter (1998).

Accepted 25 March 2020. Published 25 June 2020. Published online 26 May 2020.

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Material and methods

Terminology for morphology and measurements follow Tschorsnig & Richter (1998). Terminology of the male terminalia follows Sinclair (2000) and that of other structures follows McAlpine (1981). The dissection and drawings of male terminalia was carried out the following method described in detail by O'Hara (2002). The types and other specimens examined are deposited in the Insect Collection of Shenyang Normal University, Liaoning, China (SYNU).

Taxonomy

Linnaemya (s. str.) flavifemur Zhang sp. nov. (Figs. 1–8)

Description. Body length: 7.0 mm.

Male. Head (Figs. 1–4) yellowish, densely covered with grayish-white pruinosity. Frontal vitta brownish-yellow; fronto-orbital plate covered with golden yellow pruinosity and sparse black hairs; parafacial bare, covered with grayish-white pruinosity; gena yellowish brown in ground color, covered with yellow pruinosity; lunule yellowish brown; occiput covered with yellowish gray pruinosity. Antenna black except for 1st flagellomere reddish-brown on inner and dark brown on outer side; arista black; palpus short, 3–6 times as long as wide, reddish yellow, with black hairs; prementum gleaming black; labella large. Eye with dense, yellow long hairs. Frons about 0.22 of head width, frontal vitta slightly widened anteriorly, about as wide as fronto-orbital plate in front of ocellar triangle; parafacial subequal in width to 1st flagellomere in frontal view, at most 1/2 of 1st flagellomere width in lateral view; lower margin protruding forward; genal height 0.38 of eye height. Seven pairs of frontal setae, lower 6 inclinate, strong and crossed, the foremost one descending to level of basal pedicel; upper one reclinate and strong, longer than frontal setae, outer orbital setae hair-like, ocellar setae proclinate, slender, hair-like, distinctly shorter than frontal setae, about 1/2 times as long as frontal setae; outer vertical seta twice as long as frontal setae, upper occiput bulged, with 3–4 small black hairs and yellow hairs; vibrissae inserted slightly below lower margin of face, crossed, about as long as arista, 4–6 subvibrissal setae below vibrissa, 1/3–1/2 as long as vibrissa. Antenna with scape erect, pedicel with 1 seta dorsally and without wart-like excrescence on inner surface, which slightly longer than pedicel, 1st flagellomere 2–2.5 times as long as wide, 4 times as long as pedicel, arista longer than pedicel and 1st flagellomere combined; 1st aristomere about as long as wide, 2nd aristomere 3.5 times as long as wide. Palpus 4–5 times as long as wide; prementum 3.5 times as long as wide.

Thorax black, postpronotal lobe, postalar callus, and scutellum reddish yellow, covered with thin yellowish-gray pruinosity, dorsum with 4 black longitudinal vittae and black hairs, inner vittae about 1/5–1/4 width of pruinose area between inner and outer vittae; katepisternum with yellow hairs; anterior spiracle yellow, posterior spiracle dark brown; prosternum and proepisternum bare; 4–5 postpronotal setae, the strongest three arranged in a triangle, posterior middle one more or less anteriorly, posterior three setae not arranged in a straight line; 3 presutural and 3 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 3 katepisternal setae, 3 postsutural intra-alar setae; 5 supra-alar setae, 2nd and 4th strong; a row of anepisternal setae; 1 anepimeral seta; 4 pairs of marginal scutellar

setae, 1 pair of lateral scutellar setae, fine apical scutellar setae crossed, shorter than 1/2 of length of subapical scutellar seta, 2 discal scutellar setae. Wing hyaline, brownish, yellow at base, tegula black, basicosta yellow; halters yellow; calypter yellowish, inner margin of calypter adjoined lateral margin of scutellum. Relative lengths of 2nd, 3rd and 4th costal sectors approximately 3.5 : 6 : 3; cell r_{4+5} narrowly opened; vein R_{4+5} setulose from its base to $r-m$ crossvein dorsally, setulae only at base ventrally; bend of vein M acute, more than right-angled, with an appendix distinctly longer than crossvein $r-m$, slightly shorter than section between crossvein dM-Cu and bend of vein M. Section of vein M between crossveins $r-m$ and dM-Cu 2.5 times as long as distance between bend and wing margin, distance between bend and wing margin longer than distance between dM-Cu to bend. Leg with femora and tibiae mostly reddish-yellow, only basal portion of tibiae brown, tarsi and claws dark brown, pulvilli yellowish; fore coxae, and trochanters and inner surface of hind coxae with yellowish-white hairs. Fore claws slightly longer than 5th tarsomere, fore tibia with a row of anterodorsal setae, 4–5 posterodorsal setae on basal 1/2, 2 posterior setae; mid femur with 2 short anterior setae, middle tibia with 2 strong anterodorsal setae, 3–4 short posterodorsal setae on apical 1/2, 2 posterior setae and 1 ventral seta; hind tibia with a row of irregular anterodorsal setae, 3 of them strong, 2 short posterodorsal setae, 2 ventral setae, 3 preapical dorsal setae, inner one short, preapical anteroventral seta subequal to preapical posteroventral seta.

Abdomen long-ovate, reddish-yellow, syntergite 1 + 2, middle part of tergite 3, posterior 1/3–1/2 of tergite 4 and tergite 5 black, epandrium reddish brown; syntergite 1 + 2 medially excavated to posterior margin, with 2–3 lateral discal setae, without median marginal seta, 1 pair of lateral marginal setae; tergite 3 with 2 short median marginal setae, which are about 1/3 times as long as tergite 3, 2 pairs of lateral marginal setae, 1–2 lateral discal setae, without median discal seta; tergite 4 with 2 short median discal setae, a row of marginal setae; tergite 5 separately with a row of discal setae and marginal setae; all tergites with reclinate recumbent black hairs. Ventral surface of syntergite 1 + 2, sternite 1 and 2 with yellowish hairs, other sternites with black hairs. Male terminalia (Figs. 5–8). V-shaped cleft of sternite 5 shallow and small, apex strongly sclerotized and bluntly pointed and outer apex of the sternite bluntly round, and indent between inner and outer apex of the sternite; apex of cerci and surstyli slender and pointed apically; epiphallus small, pregonite cylindrical, postgonite slender and pointed apically.

Holotype. ♂, China, Liaoning, Kuandian, Mt. Huangyi, 395–533 m, 23–24-VI-2018, Ying ZHAO. **Paratype.** 1♂, same locality as holotype, 04–06-IX-2018, Chuntian ZHANG (SYNU).

Etymology. The specific epithet refers to a character of this species, i.e., femora reddish-yellow. It is derived from the Latin adjective *flavus* and the Latin noun *femur*.

Diagnosis. First flagellomere 4 times as long as pedicel, 2.5 times as long as width in lateral view, palpus 3 times as long as width; femora and tibiae mostly reddish-yellow, hind tibia with short inner preapical dorsal seta; abdominal tergite 3 with 2 short median marginal setae, tergite 4 with 2 medical discal setae and a complete row of marginal setae, tergite 5 entirely black in male, at most reddish on medial posterior margin.

Remarks. This species (Tachininae, Ernestiini) appears more resembling *Linnaemya paralongipaipis* Chao, 1962, although legs in this species are all reddish yellow, narrow frons,

vein R_{4+5} setulose from its base to r-m crossvein dorsally, tergite 3 without medial setae, and different shape of cerci. *Linnaemya amicula* Mesnil, 1957 also resembles this species, but the abdomen black and male cerci and surstyli are different in *amicula*. And this species is also similar with *L. (s.str.) scutellaris* (Malloch, 1927) in appearance, but is distinguished from the latter by the palpus longer, tergite 3 with 2 short median marginal setae, tergite 4 with 2 median discal setae and different shapes of phallus, surstyli slender and pointed apically.

Newly recorded genera and species from China

Genus *Microsoma* Macquart, 1855, new record to China

Annales de la Société Entomologique de France, 3(3): 37. Type species: *Microsoma nigra* Macquart, 1855.

Synonyms see Herting & Dely-Draskovits, 1993: 397.

Generic diagnosis. This genus belongs to the tribe Dufouriini of subfamily Dexiinae. Eye bare; male frons narrow, at most 1/3 of eye width; occiput with black hairs behind postocular setae. Arista at most thickened on basal 1/3, pubescent, almost bare. Prosternum bare; postpronotal setae arranged in a straight line; 1–2 katepisternal setae or less; scutellum and legs black, at least with 3 pairs of marginal scutellar setae; two apical scutellar setae strong, crossed, subapical scutellar setae not extending back to level of apices of strong crossed apical setae. Anepimeral seta hair-like or absent. Inner margin of lower calypter not strongly divergent from lateral margin of scutellum; base of vein R_{4+5} with one setula dorsally and bare ventrally; postmetacoxal area membranous. Hind tibia with 3 strong preapical dorsal setae. Middorsal excavation of syntergite 1 + 2 not extending to posterior margin; tergites 3 to 5 each with a row of marginal setae and median discal setae, not obviously different from the vertical hairs of the tergite; tergite 5 is slightly shorter than tergite 4. Female ovipositor shaped beak-like.

Distribution: Palaearctic: China (Liaoning); Japan; Russia (Far East, North European part); Israel; Europe (Spain, England, Transcaucasus).

***Microsoma exigua* (Meigen, 1824) (Figs. 9, 10), new record to China**

Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten, 4: 367. Type locality: not given.

Synonyms see Herting & Dely-Draskovits, 1993: 397.

Diagnosis. Body length less than 6 mm. Antennae dark brown except ventral surface of 1st flagellomere; palpi reddish-yellow. Male frons and parafacial about as wide as 1st flagellomere, latter about twice as long as pedicel; face wide. One katepisternal seta; lower calypter brown to dark; scutellum and femora black; hind tibia with 3 strong preapical dorsal setae. Abdomen dark, tergite 3 to 5 covered with gray pruinosity band on anterior 1/2 to 4/5, with a dark median marking on tergite 3 and a narrow median dark brown vitta on tergite 4, and syntergite 1 + 2 to tergite 5 each with a row of marginal and discal setae, not obviously different from erect long seta-like hairs of the tergite.

Specimen examined. 1♂, **China**, Liaoning, Kuandian, Mt. Huangyi, 395–533 m, 09–10-VI-2018, Bo HAO (SYNU).

Distribution: China (Liaoning); Russia (Far East, northern Europe part); Japan; Israel; Transcaucasia; Sweden; Britain.

Genus *Rhacodinella* Mesnil, 1968, new record to China

Mushi, 41: 173. Type species: *Tachina apicata* Pandellé, 1896.

Generic diagnosis. This genus belongs to the tribe Goniini of subfamily Exoristinae. Eye bare; parafacial bare, facial ridge at most with fine setae on lower half, 2–3 reclinate upper orbital setae; ocellar developed and proclinate; male with outer vertical seta; antenna long, pedicel yellow. Prosternum with hairs; foremost supra-alar seta long; 3 presutural and 4 postsutural dorsocentral setae; apical scutellar setae paralleled, hair-like and parallel; vein M from dm-cu crossvein to bend more than or subequal to distance between bend and wing margin. Wing yellow at base, cell r_{4+5} without petiole, base of vein R_{4+5} with 2–4 setulae and wing cell r_{4+5} open at wing margin, vein M at bend bluntly. Mid tibia with 1 strong and 1 short anterodorsal, 2–3 posterodorsal and 1 ventral setae, hind tibia with 3 preapical dorsal setae, inner one short. Abdominal syntergite 1 + 2 excavated to posterior margin; each tergite with a strip of broad pruinose belt without median discal seta.

Distribution: Palaearctic: China (Liaoning); Japan; Switzerland; France; Poland; Russia (W and E Siberia).

***Rhacodinella aurata* Mesnil, 1970 (Figs. 11, 12), new record to China**

Mushi, 44: 108. Type locality: Omogokei, Shikoku (Japan).

Diagnosis. Fronto-orbital plate, upper occiput, dorsal surfaces of thorax and abdomen covered with golden-yellow pruinosity. Vertex about 0.36 of head width, parafacial 0.5–1.0 as wide as antenna in male and 1.0 in female; occiput with a row of black setulae behind row of postocular setae; antenna nearly reaching lower margin of face, 1st flagellomere about 8 times as long as pedicel. 4 postpronotal setae, posterior three arranged nearly in a straight line; wing yellow at anterior margin and base along with veins, section of M between dM-Cu and bend of M as long as or shorter than section between bend and apex of M, 2nd costal sector with setulae ventrally; fore claws and pulvilli equal to 5th tarsomere in male and shorter in female. Syntergite 1 + 2 and tergite 3 each with 2 short medical marginal setae which shorter than 1/2 length of the tergite.

Specimen examined. China, Liaoning, Kuandian, Mt. Huangyi, 395–533 m, 1♀, 04–06-IX-2018, Chuntian ZHANG; 2♀, 26-VII-2019, Chuntian ZHANG & Xinyi LI; 1♀, 16-IX-2019, Chuntian ZHANG (SYNU).

Distribution: China (Liaoning); Japan.

***Smidtia fukushii* Shima, 1996 (Figs. 13, 14), new record to China**

Beiträge zur Entomologie, 46(1): 194. Type locality: Honshu, Akita, Fukushi (Japan).

Diagnosis. This species belongs to the tribe Winthemini of subfamily Exoristinae. Eyes with dense long hairs; upper half or most of parafacial hairy in male; inner vertical seta slender; ocellar seta and reclinate frontal seta slightly longer than hairs around vertex; occiput with black several setulae behind upper row of postocular setae. Inner surface of 1st flagellomere and pedicel reddish brown, 1st flagellomere 2–2.2 times as long as pedicel, arista about as long as antenna, at most thickened on basal 3/5. Two presutural and 3 postsutural acrostichal setae, 3 presutural and 4 postsutural dorsocentral setae, 3 postsutural intra-alar setae, the foremost supra-alar seta longer than notopleural seta and 1st intra-alar seta; 5 postpronotal setae, strongest three arranged in a triangle; katepimeron hairy. Basicosta dark brown; tibiae reddish-brown, mid tibia with 2 strong anterodorsal setae (one broken), hind tibia of male with

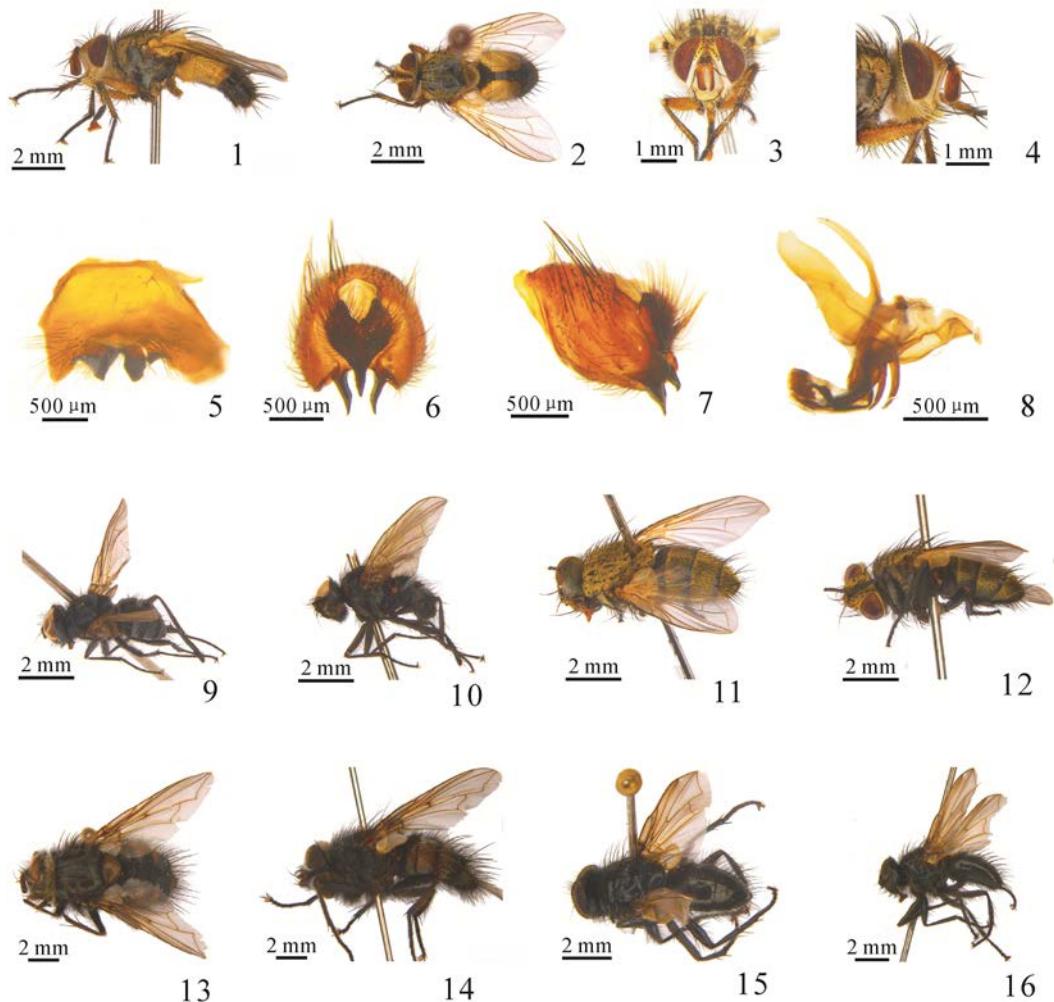
a row of fine hair-like anterodorsal setae and 2 preapical dorsal setae. Syntergite 1 + 2 medially excavated to posterior margin. Tergites 3 with 1–2 indistinct long hair-like discal setae, and tergite 4 with a row of long hair-like discal setae.

Specimen examined. 1♂, China, Liaoning, Kuandian, Mt. Huangyi, 395–533 m, 23–24-V-2018, Yizhuo ZHANG (SYNU).

Distribution: China (Liaoning); Japan.

***Melastrongygaster atrata* Shima, 2015** (Figs. 15, 16), new record to China

Zootaxa, 3904(3): 429. Type locality: Moiwayama, Sapporo, Hokkaido, Kocha (Japan).



Figures 1–16. 1–8. *Linnaemya (s.str.) flavifemur* Zhang sp. nov. ♂. 1, 2. Body, dorsal and lateral views; 3, 4. Head, anterior and lateral views; 5. Sternite 5, ventral view; 6, 7. Epandrium, cerci and surstyli, caudal and lateral views; 8. Aedeagal apodeme, hypandrium, pregonite, postgonite, epiphallus, basiphallus, distiphallus, lateral view. 9, 10. *Microsoma exigua* (Meigen, 1824). ♂. Body, dorsal and lateral views. 11, 12. *Rhacodinella aurata* Mesnil, 1970. ♀. Body, dorsal and lateral views. 13, 14. *Smidtia fukushii* Shima, 1996. ♂. Body, dorsal and lateral views. 15, 16. *Melastrongygaster atrata* Shima, 2015. ♂. Body, dorsal and lateral views.

Specimens examined. 4♂, China, Liaoning, Kuandian, Mt. Huangyi, 395–533 m, 28-VI-2017, Chuntian ZHANG & Xinyi LI (SYNU).

Distribution: China (Liaoning); Korea; Japan.

Diagnosis. This species belongs to the tribe Strongygastrini of subfamily Phasiinae. Body black, small to medium in size. Eyes bare; head nearly triangular; frons of male narrow and slightly arched; face less than 1/2 length of frons; inner side of fronto-orbital plate with narrow gleaming black marking, at most to level of basal arista; parafacial slightly wider than middle part of 1st flagellomere; occiput with black setulae below postocular setae, lower occiput and gena swollen with long black hairs; antenna short, inserted at level of lower 1/3 of eye, arista bare and thickened on basal 1/4. Prosternum bare; 3 postpronotal setae arranged in a triangle; 2 presutural acrostichal setae, the distance between postsutural intra-alar setae quite apart; 3 pairs of marginal scutellar setae, apical scutellar setae crossed and strong; cell r_{4+5} nearly closed at apex. Abdominal syntergite 1 + 2 only excavated at 1/2 base, each tergite with marginal setae and median discal setae; sternite exposed visible.

Acknowledgements

We are thankful to Prof. H. Shima, Kyushu University, Japan and the two anonymous referees for their critical reviews. And our thanks are also due to Xinyi LI, Ying ZHAO for collecting the specimens. This study was supported by the National Natural Science Foundation of China to Chuntian ZHANG (31750002, 31970443).

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