

# Review of the genus *Eulimosina* Roháček (Diptera: Sphaeroceridae) from China

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**Abstract.** The species in the genus *Eulimosina* Roháček, 1983 (Diptera: Sphaeroceridae) from China are reviewed. One species, *Eulimosina squamospina* **sp. nov.**, is described as new to science. A new combination, *Minilimosina* (*Minilimosina*) *prominulata* (Su, 2013) **comb. nov.**, is redescribed. A key to the *Eulimosina* species is provided. And the specimens in this study are kept in the Insect Collection, Shenyang University, China.

**Key words.** Limosininae; taxonomy; key

## 中国尤小粪蝇属修订（双翅目：小粪蝇科）

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**摘要:** 修订了中国尤小粪蝇属 *Eulimosina* 的种类, 记述 1 新种: 刺尤小粪蝇 *Eulimosina squamospina* **sp. nov.**, 并提出 1 新组合: 瘤微小粪蝇 *Minilimosina* (*Minilimosina*) *prominulata* (Su, 2013) **comb. nov.**, 还提供了该属分种检索表。

**关键词:** 沼小粪蝇亚科; 分类; 检索表

## Introduction

The genus *Eulimosina* (Diptera: Sphaeroceridae) was originally described by Roháček (1983a) as a subgenus of *Spelobia* Spuler, 1924 with the type species *Borborus ochripes* Meigen, 1830. Papp (2008) raised it to the generic level and revised three Old World species. The genus is now known to occur worldwide with three known species (Roháček *et al.* 2001; Marshall *et al.* 2011; Papp 2008), of which one species is Oriental, one Oriental and Palearctic, and one Oriental and Holarctic. The genus *Eulimosina* from China was still unknown. In this paper, the genus *Eulimosina* from China is reviewed, a new species is described and a new combination is given. A key to the species of the *Eulimosina* is provided. And the specimens in this study are kept in the Natural History Museum of Shenyang University, China.

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## Material and methods

Specimens were collected by sweep nets in mountains. In the laboratory, the whole abdomen was prepared in 10% KOH until semi-transparent, then rinsed in water and transferred to a cavity slide with glycerin for further examination and dissection. The illustrations were drawn from observations using a Leica DM 2000 compound microscope fitted with a drawing tube. After examination and illustration, the abdomen was moved to a microvial with fresh glycerin and preserved in an ethanol tube together with the wet specimen. The type specimens reside in the Natural History Museum of Shenyang University (NHMSU), China.

The terminology used here follows Marshall & Richards (1987) and Roháček (1998).

## Taxonomy

### Genus *Eulimosina* Roháček, 1983

*Eulimosina* Roháček, 1983a: 64 (feminine) [as subgenus of *Spelobia Spuler*, 1924]. Type species: *Borborus ochripes* Meigen, 1830, original designation. - Papp, 2008: 129 (as genus).

**Diagnosis.** Usually body colour yellow. Interfrontal bristles in 3–5 pairs, short, subequal in length; postvertical bristles present. 0+2 dorsocentral bristles; acrostichal setulae in 8 rows; scutellum with 4 marginal bristles. Mid tibia without proximal posterodorsal bristle and midventral bristle; mid femur of male with a long row of ventral short bristles, mid tibia of male also with similar row of ventral short bristles terminated by relatively short ventroapical bristle; bristles of mid tibia of female relatively longer, especially ventroapical bristle; mid basitarsus with two rows of short stout anteroventral and posteroventral bristles. Costa not overpassing  $R_{4+5}$ ;  $R_{4+5}$  straight. Sternite 5 of male posteriorly with a medial cuticular tuberculate lobe. Epanthrium with a long dorsolateral bristle; male cerci reduced and fused with epanthrium; surstylus pale, with a cluster of 4–6 long bristles on upper margin; distiphallus large, with tuberculate membranous apex. Female tergite 8 divided into 2 lateral plates; epiproct with a pair of dorsal bristles; hypoproct band-shaped; spermathecae short cylindrical form, with thick bases of ducts; cercus short, with some setulae.

### Key to the world's species of *Eulimosina* Roháček

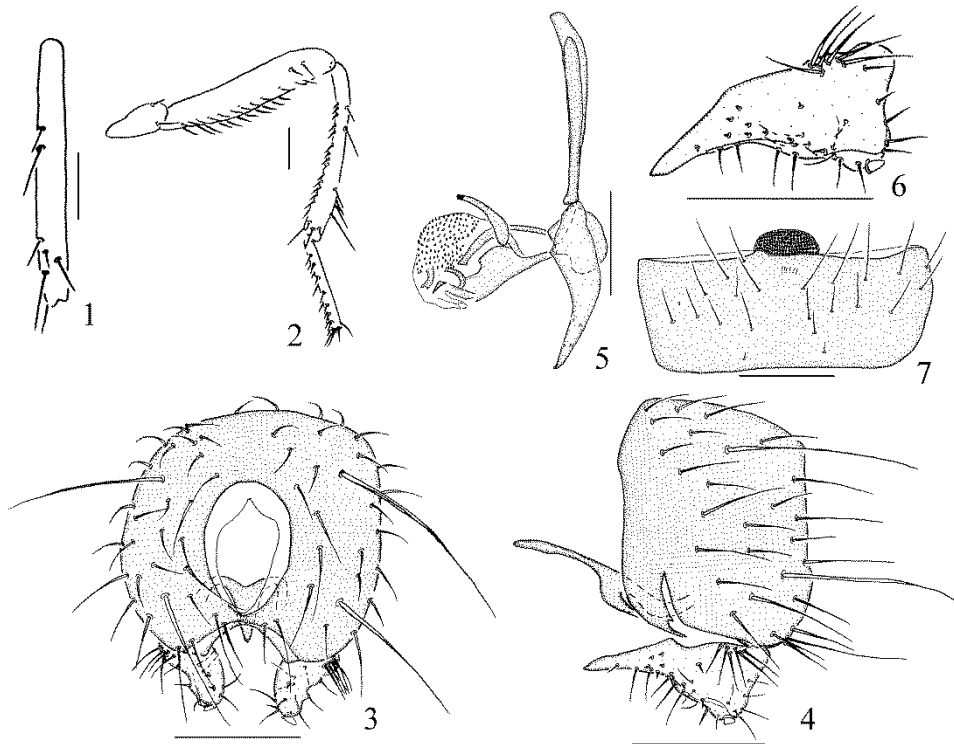
1. Abdominal tergites well-developed. Mesonotum and scutellum pale brown..... 2
- Abdominal tergites reduced. Mesonotum and scutellum yellow..... 3
2. Sternite 5 of male (Fig. 7) posteriorly with a medial semicircular cuticular tuberculate process. Surstylus (Fig. 6) posteroventrally with a scale-like spine. Postgonite (Fig. 5) apically hooked. Hypoproct (Fig. 10) with 4–5 pairs short setulae. Spectacles-shaped sclerite (Figs 11, 12) as in that of the genus *Spelobia*.....  
..... *E. squamospina* **sp. nov.**
- Sternite 5 of male (Roháček 1983b, fig. 426) posteriorly with 3 rows of medial cuticular tubercles. Surstylus (Roháček 1983b, fig. 425) posteroventrally only with some short bristles. Postgonite (Roháček 1983b, fig. 424) apically straight. Hypoproct (Roháček 1983b, fig. 431) with a pair of short setulae. Spectacles-shaped sclerite (Roháček 1983b, fig. 433) with a long ventral tongue-shaped projection.....  
..... *E. ochripes* (Meigen)
3. Sternite 5 of male (Papp 2008, fig. 193) posteriorly with a medial triangular cuticular tuberculate process. Surstylus (Papp 2008, fig. 196) anteroapically single-lobed, pentagonal in widest view.....

- ..... *E. dudai* (Papp)  
 -. Sternite 5 of male (Papp 2008, fig. 198) posteriorly with 2 rows of medial blunt black bristles and behind them there are several short blunt black unarranged cuticular tubercles. Surstylus (Papp 2008, fig. 197) anteroapically bilobed, triangular in widest view ..... *E. oroszi* Papp

1. *Eulimosina squamospina* sp. nov. (Figs 1–13)

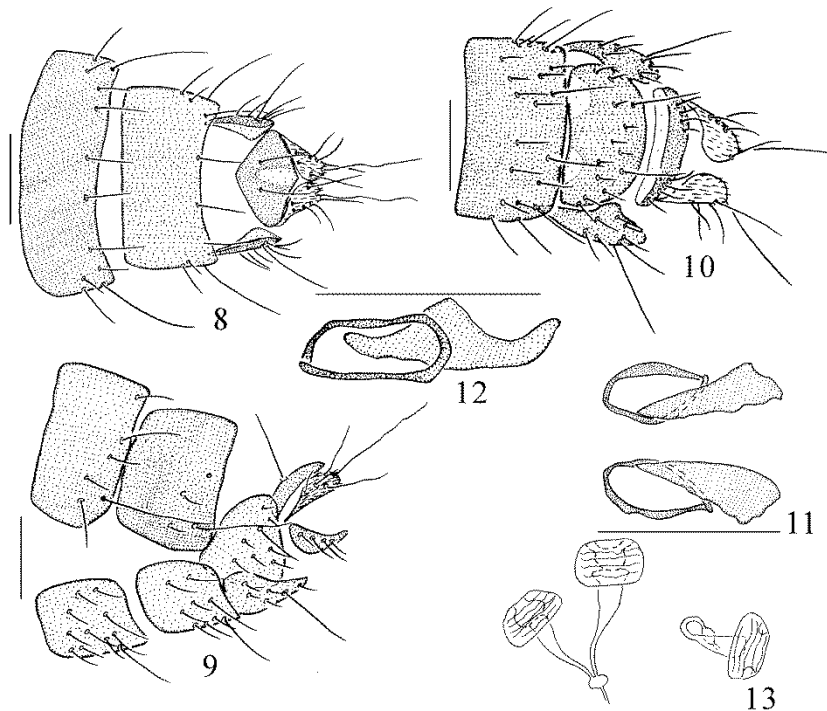
Description. Male. Body length ca. 1.8 mm, general colour pale brown to pale brownish yellow.

Head bright yellow, only ocellar triangle and occiput pale brown, and first flagellomere and arista brown. Frontal triangle narrow. Postocellar bristles small, cruciate. Postvertical bristles cruciate, slightly longer than postocellar bristles. Interfrontal bristles in 3–4 pairs, short, subequal in length, outside anterior interfrontal bristle an additional minute setula. Lower orbital bristle slightly shorter and thinner than upper orbital bristle, inside orbital bristles a row of exclinate minute setulae reaching lower margin of orbit, of which upper 2 setulae slightly enlarged. Inner occipital bristle and outer occipital bristle short, subequal in length. Carina not protruding between antennae. Arista 4 times as long as antennae; arista hairs short, as long as arista basal width. Gena yellow, with a short bristle and 1–2 small setulae; eye height twice as long as genal height.



Figures 1–7. *Eulimosina squamospina* sp. nov., ♂. 1. Mid tibia, dorsal view; 2. Mid leg excluding coxa and tarsomeres 2–5, anterior view; 3. Genitalia, caudal view; 4. Genitalia, lateral view; 5. Aedeagal complex, lateral view; 6. Surstylus, lateral view; 7. Sternite 5, ventral view. Scale bars = 0.1 mm.

Thorax brownish black to yellowish brown, mesonotum brown to brownish black, sometimes with a middle longitudinal yellow strip, pleurae pale brown to yellowish brown. Internal postpronotal bristle very small,  $1/4\times$  as long as external postpronotal bristle, below the external an additional minute setula. Dorsocentral bristles 0+2, sometimes 1–2 presutural or 1 postsutural subequal in length and very short dorsocentral bristles present; acrostichal setulae in 8 rows in front of suture, prescutellar pair of acrostichal setulae slightly enlarged, twice as long as others. Two katepisternal bristles, the anterior small, the posterior strong, reaching the middle level between its base and wing base. Scutellum triangular, with 4 long marginal bristles.



Figures 8–13. *Eulimosina squamospina* **sp. nov.**, ♀. 8. Postabdomen, dorsal view; 9. Postabdomen, lateral view; 10. Postabdomen, ventral view; 11. Spectacles-shaped sclerite, ventral view; 12. Spectacles-shaped sclerite, lateral view; 13. Spermathecae. Scale bars = 0.1 mm.

Legs yellow, fore tarsi and tibia at least partly darkened. Fore femur robust as in hind femur. Mid femur (Fig. 2) with row of posteroventral short bristles on basal three fourths; mid tibia (Figs 1, 2) slightly curved, with row of anteroventral short bristles on distal three fourths terminated by short ventroapical bristle, small proximal anterodorsal bristle and large proximal anterodorsal bristle, small distal anterodorsal bristle, small distal dorsal bristle and large distal dorsal bristle, relatively large distal posterodorsal bristle, small preapical anterior bristle. Mid basitarsus (Fig. 2) with rows of anteroventral and posteroventral short stout bristles. Hind tibia with very small ventroapical bristle.  $t_2 : mt_2 = 1.8$ .

Wing membrane pale yellowish brown, veins pale brown. Costa not overpassing  $R_{4+5}$ .  $CS_2 : CS_3 = 0.9$ .  $R_{2+3}$  slightly sinuate, apically curved to costa;  $R_{4+5}$  straight. r-m and dm-cu :

dm-cu = 2.0. Discal cell without distinct coloured processes of M and CuA<sub>1</sub> beyond dm-cu; M reaching as a colourless fold almost to wing margin. Anal vein distinctly sinuate, its apex near wing margin. Alula small, narrow, apically slightly rounded. Haltere pale yellow to pale brown. Wing length ca. 1.7 mm, wing width ca. 0.7 mm.

Abdomen pale brown. Tergites well-developed, with sparse, relatively long setulae; sternites with dense, even, short setulae. Sternite 5 (Fig. 7) relatively simple, posteromedially with a semicircular lobe covered by short, blunt, black cuticular tubercles.

Genitalia (Figs 3–6). Epandrium large, almost globular, with a small anal fissure, besides a longer dorsolateral bristle and a longer ventrolateral bristle, only with short and sparse bristles. Hypandrium thin. Cerci reduced and fused with epandrium. Surstylus very pale, besides some longer bristles on upper margin and lower margin, especially with a scale-like posteroventral spine. Basiphallus short. Distiphallus very large, with tuberculate membranous apex. Postgonite relatively wide, long, slightly curved, apically hooked, with minute setulae on apical third. Ejaculatory apodeme not observed.

Female. Head, thorax, legs, wing and preabdomen as in the male unless mentioned otherwise. Body length 1.6–2.2 mm, wing length 1.7–2.0 mm, wing width 0.7–0.9 mm. Mid tibia not curved, its bristles relatively longer, especially ventroapical bristle, mid femur and mid tibia only with ventral minute setulae.  $t_2 : mt_2 = 1.9$ . r-m and dm-cu : dm-cu = 2.0–2.6.

Postabdomen (Figs 8–13). Tergite 8 divided into 2 lateral plates, no incision on posterior margin. Epiproct short, quadrangular, with a pair of long dorsal bristles, on posterior three fourths a middle pale pigmented area, sometimes more uniformly coloured. Sternite 8 large, semicircular. Hypoproct short, band-shaped, with 4 pairs of short setulae. The spectacles-shaped sclerite as in the genus *Spelobia*, no tongue-shaped part. Spermathecae of short cylindrical form, with impressed tips and conical bases of spermathecal ducts. Cerci short, with a longer sinuate apical setula and some shorter preapical setulae.

**Holotype.** ♂, **China**, Qinghai, Qilian, Babao, Huangzangsi, 2580 m, 100°10'34"E, 38°15'49"N, 18-VIII-2019, Lixin SU (NHMSU). **Paratypes.** 7♂10♀, same data as holotype (NHMSU).

Etymology. The specific epithet is derived from the Latin “*squama*” plus “*spinus*” meaning this new species is easily distinguished from other *Eulimosina* members by a scale-like spine in surstylus.

Diagnosis. Sternite 5 of male posteriorly with a medial semicircular lobe consisting of small, black, blunt cuticular tubercles; surstylus with a posteroventral scale-like spine; postgonite apically hooked. Tergite 8 of female without posterior incision; hypoproct band-shaped, with 4 pairs of short setulae.

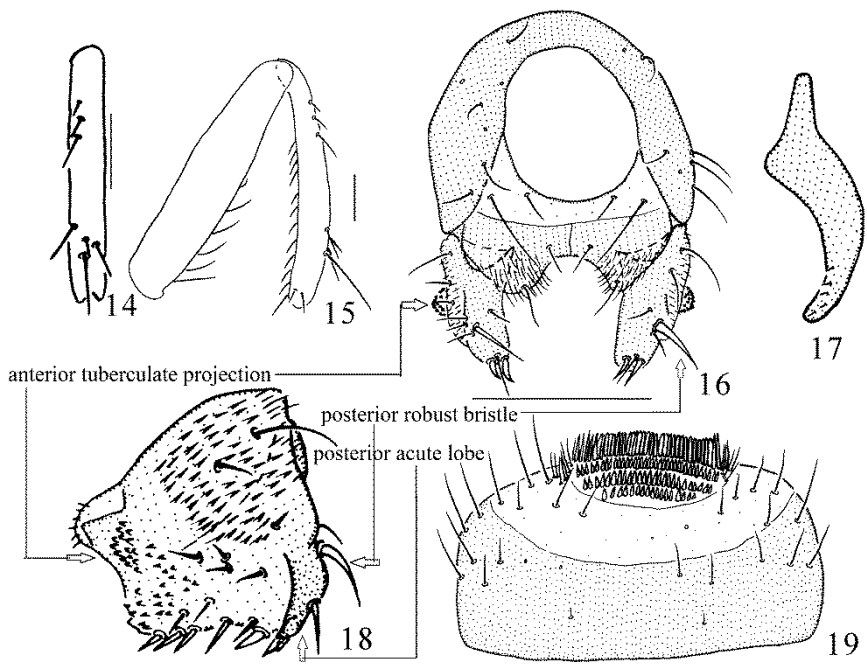
Remarks. This new species can be most easily distinguished from other *Eulimosina* members by sternite 5 of male having a large semicircular posteromedial cuticular tuberculate lobe, surstylus with a scale-like spine, and postgonite apically hooked. Its phylogenetic relationship is not clear.

## 2. *Minilimosina (Minilimosina) prominulata* (Su, 2013) comb. nov. (Figs 14–19)

*Eulimosina prominulata* Su, 2013: 199 (male). Type locality: China, Guangxi, Shangsi, Shiwandashan [1,015.65 m]. HT male (NHMSU).

Redescription. Male. Body length ca. 1.3 mm, colour yellow to brown to brownish black.

Head yellow to brown to brownish black. Interfrontal bristles in 3 pairs, short, subequal in length, outside anterior interfrontal bristle an additional minute setula. Postvertical bristles small, cruciate. Inner occipital bristle and outer occipital bristle subequal in length, not particularly long. Carina not protruding between antennae. Gena yellow to brown to brownish black, genal bristle medium long. Eye height 2.0–2.7× as high as gena. Aristal hairs 1.5–2.0× as long as aristal basal width.



Figures 14–19. *Minilimosina (Minilimosina) prominulata* (Su), ♂. 14. Mid tibia, dorsal view; 15. Mid femur and tibia, anterior view; 16. Genitalia, caudal view; 17. Postgonite, lateral view; 18. Surstylus, lateral view; 19. Sternite 5, ventral view. Scale bars = 0.1 mm.

Thorax yellow to brown to brownish black. Two postpronotal bristles, the internal very minute. One dorsocentral bristle on prescutellar position, sometimes a very short postsutural dorsocentral bristle present; acrostichal setulae in 8 rows in front of suture, prescutellar pair of acrostichal setulae slightly enlarged. Two katepisternal bristles, the anterior minute. Scutellum rounded triangular, 4 marginal bristles, apical marginal bristles 1.6× length of scutellum. Mesopleuron with a small shining spot on anteroventral corner.

Legs yellow to brown to brownish black. Mid femur (Fig. 15) with a short row of basal posteroventral bristles. Mid tibia (Figs 14, 15) with a long row of distal anterodorsal bristles terminated by short ventroapical bristle (different from the subgenus *Minilimosina*), the bristles on dorsal side: short proximal anterodorsal bristle and 2 small proximal anterodorsal bristles, short distal anterodorsal bristle, medium long distal dorsal bristle and small distal dorsal bristle, short distal posterodorsal bristle. Mid basitarsus with two rows of short stout anteroventral and posteroventral bristles.

Wing membrane pale yellow to pale brown, veins yellow to pale brown to brown. Costa

not overpassing  $R_{4+5}$  (different from the genus *Minilimosina*),  $Cs_2 : Cs_3 = 0.7$ .  $R_{2+3}$  slightly bent up to costa,  $R_{4+5}$  straight (different from the subgenus *Minilimosina*). Discal cell short (as in the subgenus *Allolimosina*), with anterior outer corner rectangular and posterior outer corner obtuse-angled (as in the subgenus *Minilimosina*); r-m and dm-cu : dm-cu = 1.4. Alula small, narrow, acute. Haltere pale yellow to pale brown. Wing length ca. 1.1 mm, wing width ca. 0.5 mm.

Abdomen yellow to brown to brownish black. Syntergite 1+2 with a large, pale anteromedial area, shorter than tergite 3 and tergite 4 together. Sternite 5 (Fig. 19) with 4 rows of comb-like spines on posteromedial margin, the outer row strongly long and blunt.

Genitalia (Figs 16–18). Epandrium with sparse and short bristles. Cerci large, ventrally setulose. Surstylus subquadrate, with internal flat projection; posteroventrally with 3 short, robust and pointed spines; externally with tubercles and small setulae, anterior triangular tuberculate projection and posterior acute lobe; posteriorly with medium long and robust bristle. Postgonite relatively thick, apically rounded, with some minute setulae on apical fourth.

Female. Unknown.

**Specimens examined.** 1♂, **China**, Guangxi, Shangsi, Shiwandashan, 990.03 m, 107°54'37.8"E, 21°52'43.73"N, 16-VIII-2011, Jianfeng WANG (holotype); 1♂, **China**, Guangxi, Damingshan, 1015.65 m, 108°28'37.93"E, 23°24'28.95"N, 13-VIII-2011, Jianfeng WANG (paratype); 2♂, **China**, Guangxi, Shangsi, Shiwandashan, 17-VIII-2011, Jianfeng WANG; 1♂, **China**, Jiangxi, Anfu, Dahechong, Shizikou, 05-IV-2011, Tao LI; 1♂, **China**, Zhejiang, Tianmushan, Daxiagu, Qianmutian, 1336 m, 119°26'49.66"E, 30°23'48.2"N, 02-VII-2013, Lixin SU (NHMSU).

Diagnosis. Mid tibia distal anterodorsal and posterodorsal bristles small, subequal, much smaller than distal dorsal bristle. Posteromedial comb of male sternite 5 made up of 4 rows of flat bristles, the outer row long and blunt. Cerci setulose. Surstylus with anterior tuberculate projection and posterior acute lobe, posterior medium long and robust bristle, and 3 posteroventral short, robust and pointed spines.

Remarks. This species is slightly different from the subgenus *Minilimosina* (*Minilimosina*) in mid tibia of male with a long ventral row of short bristles, costa not extended beyond  $R_{4+5}$ ,  $R_{4+5}$  straight. However, it surely belongs to the subgenus *Minilimosina* (*Minilimosina*) based on 1 prescutellar dorsocentral bristle, mid femur of male ventrally with a short row of basal bristles, discal cell with anterior outer corner rectangular and posterior outer corner obtuse-angled, sternite 5 and genitalia of male. Externally like *M. (M.) parva* (Malloch, 1913) but genitalia completely dissimilar.

Distribution. China (Guangxi, Jiangxi, Zhejiang).

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