



Four new species of Nemobiinae from China (Orthoptera, Gryllidae, Nemobiinae)

KAI LI^{1,3}, ZHUQING HE¹ & XIANWEI LIU²

¹School of Life Science, East China Normal University, Shanghai, 200062, China. co-first author

²Shanghai Entomological Museum, Chinese Academy of Science, Shanghai, 200032, China. E-mail: liuxianwei2008@163.com

³Corresponding author. E-mail: kaili@admin.ecnu.edu.cn

Abstract

Four new species of the cricket subfamily Nemobiinae from China are described. They are *Homonemobius nigrus* sp. nov., *Speonemobius sinensis* sp. nov., *Polionemobius annulicornis* sp. nov. and *Pteronemobius yunnanicus* sp. nov. All type specimens are deposited in East China Normal University, Biology of History Museum (HSNU); Shanghai Entomological Museum (IEAS) and Shanghai Normal University (SHNUC).

Key words: Orthoptera, Gryllidae, Nemobiinae, *Speonemobius*, *Homonemobius*, *Polionemobius*, *Pteronemobius*, taxonomy, new species

Introduction

The subfamily Nemobiinae includes 51 genera and about 291 known species. The largest genus, *Pteronemobius*, includes 100 species. This subfamily differs from the Trigonidiinae in the characters of hind tibiae being distinctly shorter than those of the hind femora and the second tarsal segment compressed. Thus far, four genera (*Marinemobius*, *Dianemobius*, *Polionemobius* and *Pteronemobius*) and 17 species have been reported from China. In this paper, four new species are described (*Homonemobius nigrus* sp. nov., *Speonemobius sinensis* sp. nov., *Polionemobius annulicornis* sp. nov., *Pteronemobius yunnanicus* sp. nov.) and the two genera *Speonemobius* and *Homonemobius* are first recorded from China.

1. *Homonemobius nigrus* sp. nov.

(Figs. 1–4)

Material. Holotype ♂, CHINA: Yunnan prov. Jinghong county, Nabanhe Benggangxinzhai, 2009.V.3, Alt. 1750m, leg. Hu Jia-Yao & Yin Zi-Wei (IEAS); Paratypes 1 ♀, CHINA: Yunnan prov. Jinghong county, Nabanhe Benggangxinzhai, 2009.V.4, Alt. 1850m, leg. Hu Jia-Yao & Yin Zi-Wei; 2 ♂♂, 3 ♀♀, CHINA: Yunnan prov. Jinghong county, NabanheGuomenshan, 2009.V.8, Alt. 1200m, leg. Hu Jia-Yao & Yin Zi-Wei; 1 ♂, CHINA: Yunnan prov. Nabanhe N. R. Bengganghani 2009.IV.29, Alt. 2000m, leg. Hu Jia-Yao & Yin Zi-Wei (SHNUC).

Description. Male. Body small and pubescent. Head as wide as pronotum, frontal rostrum as wide as 1st antennal joint. 5th joint of maxillary palpi longest. Pronotum feebly transverse, anterior margin as wide as posterior margin. No tympanum on fore tibiae. Hind tibia with three external dorsal spurs and four internal dorsal spurs; the proximal internal spurs short and stout (Fig. 2), apex with six apical spurs. Tegmen short and glossy, with five veins on dorsal field and four veins on lateral field (Fig. 1). No mirror and wings absent. Genitalia of male as in Figs. 3–4.

Female. Tegmen shorter than in male. Hind tibia with three internal dorsal spurs, none shortened. Ovipositor short and straight with un conspicuous teeth on the upper side of apex.

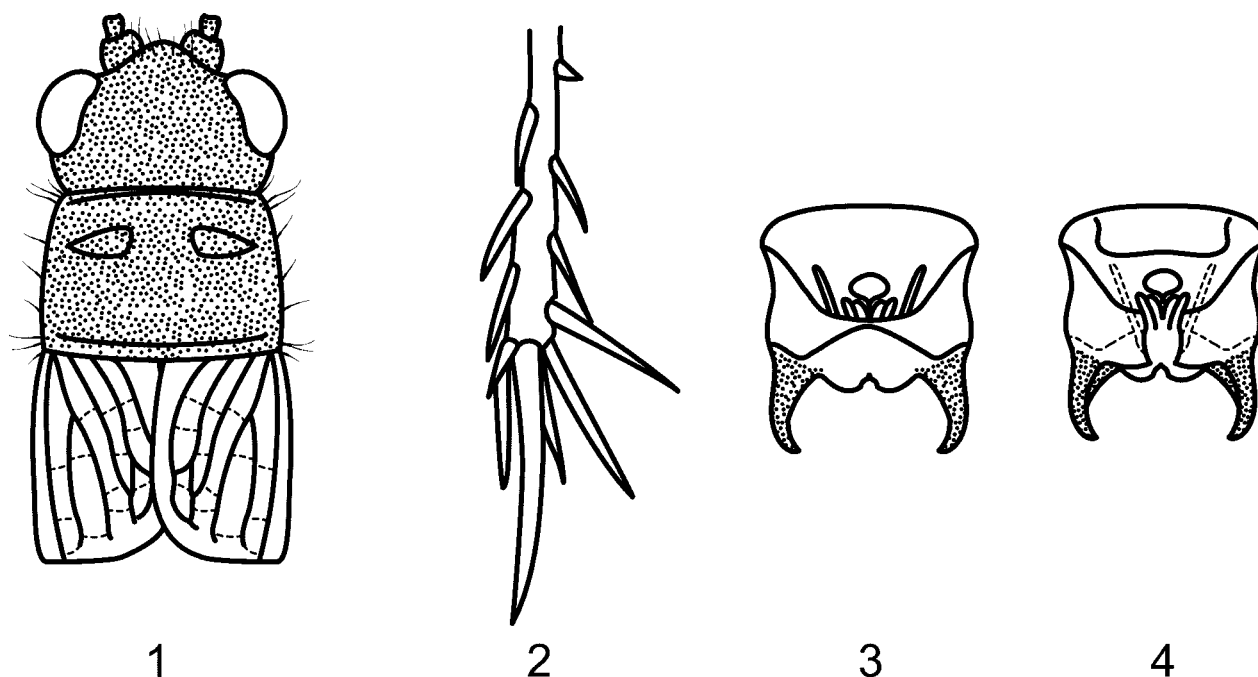
Coloration. Entire body nearly black. Antennae, cerci and ovipositor brown, 4th and 5th joints of maxillary palpi white and others black.

Measurements. (in mm) Body ♂4.8–5.5, ♀6.0; pronotum ♂1.1–1.2, ♀1.2; tegmen ♂1.5, ♀1.3; posterior tibiae ♂3.7–4.0, ♀3.9; ovipositor 3.0.

Distribution. China (Yunnan).

Etymology. The new specific name refers to the color of the body.

Discussion. This species can easily be distinguished by the genitalia of male with other species.



FIGURES 1–4. *Homonemobius nigrus* sp. nov. 1. body of male, dorsal view; 2. left hind tibia of male; 3. genitalia of male, dorsal view; 4. genitalia of male, ventral view.

2. *Speonemobius sinensis* sp. nov.

(Figs. 5–8)

Material. Holotype ♂, CHINA: Zhejiang prov. Lin`an county, qingliangfeng, 2008.V.13–14, Alt. 900m, leg. Liu Xian-Wei & Bi Wen-Xuan (IEAS).

Description. Male. Body small and pubescent. Head as wide as pronotum, frontal rostrum as wide as 1st antennal joint. 5th joint of maxillary palpi longest. Pronotum transverse, anterior margin as wide as posterior margin. Fore tibiae lacking tympanum. Hind tibia with three external dorsal spurs and three internal dorsal spurs. Two internal apical spurs long and three external apical spurs short (Fig. 6). Tegmen short and veins vague and irregular (Fig. 5). Mirror and wings absent. Genitalia of male as in Figs. 7–8.

Female. Unknown.

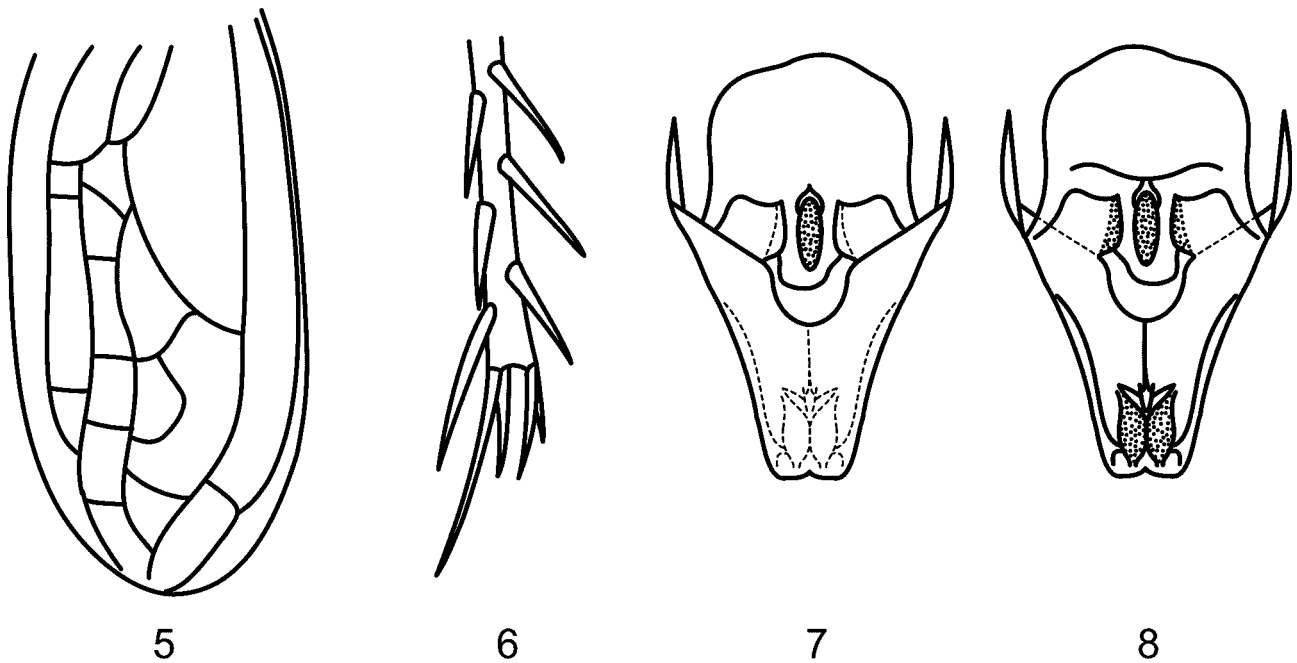
Coloration. Body brown. Six yellow bands on the head vertex. Antennae, cerci and ovipositor yellow. Lower half of the head black. Eyes yellow upper half and black lower half. 5th joint and base half of 3rd joint of maxillary palpi black, other joints white. Lateral lobes of pronotum black. Tegmen yellow (tegmen white with a big black spot in the middle when alive).

Measurements. (in mm) Body ♂6.0; pronotum ♂1.2; tegmen ♂1.4; posterior tibiae ♂3.7.

Distribution. China (Zhejiang).

Etymology. The new specific is named after the locality from China.

Discussion. This species can easily be distinguished by the genitalia of male with other species.



FIGURES 5–8. *Speonemobius sinensis* sp. nov. 5. tegmen of male, dorsal view; 6. right hind tibia of male; 7. genitalia of male, dorsal view; 8. genitalia of male, ventral view.

3. *Polionemobius annulicornis* sp. nov.

(Figs. 9–15)

Material. Holotype ♂, CHINA: Yunnan prov., Lijiang county, Hutiaoxia, 2009.IX.22, leg. He Zhu-Qing (HSNU); Paratypes 3♂♂, 7♀♀, same data as holotype (HSNU).

Description. Male. Body small and pubescent. Head little wider than pronotum (Fig. 9); frontal rostrum as wide as 1st antennal joint. Pronotum transverse, anterior margin as wide as posterior margin. Fore tibiae with tympanum on outer surface. Hind tibiae with three external dorsal spurs and four internal dorsal spurs (Fig. 13); apex with six spurs with superior-internal apical spurs long. Tegmen extending to apex of abdomen with one oblique vein and mirror small (Fig. 11). Wings absent. Genitalia (Figs. 14–15).

Female. Tegmen straight and nearly extending to apex of abdomen with four or five veins on dorsal field and three or four on lateral field. Hind tibiae with three internal dorsal spurs. Ovipositor short and straight.

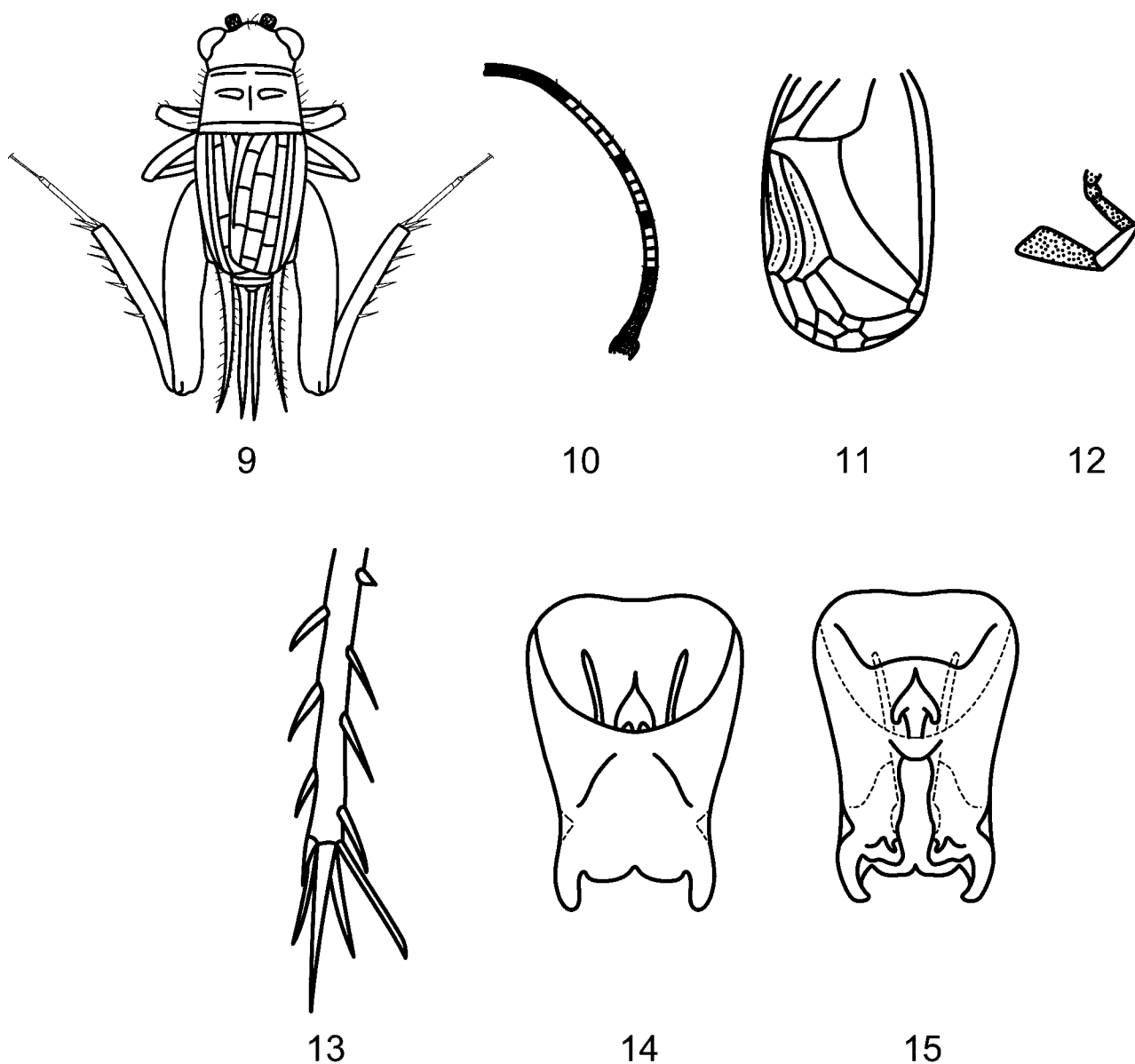
Coloration. Body black and legs brown. 4th joint of maxillary palpi white and others black as in Fig. 12. Antenna black at first several joints and base half of antenna white with two joints black, end half black as in Fig. 10. Two short yellow band behind eyes. Tegmina black.

Measurements. (in mm) Body ♂5.5–5.8, ♀5.2–5.5; pronotum ♂1.0, ♀1.0; tegmen ♂3.6–3.8, ♀2.0–2.2; posterior tibiae ♂4.0, ♀4.0–4.5; ovipositor 2.5–2.7.

Distribution. China (Yunnan).

Etymology. The new specific name refers to antennae with dark rings in the white section.

Discussion. This species is similar to *Polionemobius flavoantennalis* (Shiraki, 1911), but can be distinguished by its antennae color.



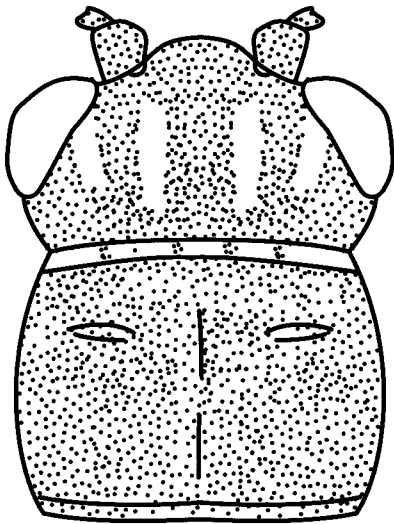
FIGURES 9–15. *Polionemobius annulicornis* **sp. nov.** 9. body of female, dorsal view; 10. antenna; 11. tegmen of male, dorsal view; 12. maxillary palpus; 13. hind tibia of male; 14. genitalia of male, dorsal view; 15. genitalia of male, ventral view.

4. *Pteronemobius yunnanicus* **sp. nov.**

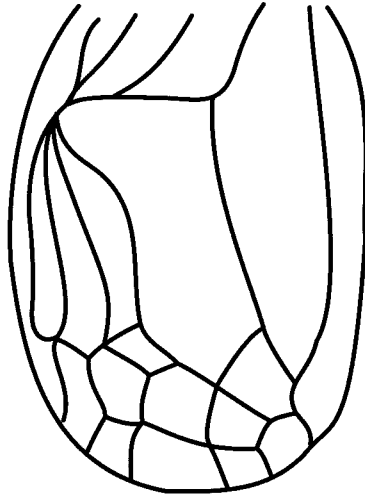
(Figs. 16–21)

Material. Holotype ♂, CHINA: Yunnan prov. Jinping county, Malutang reservoir, 2009.V.28, Alt. 1850m, leg. Liu Xian-Wei, Wu Jie, Zhu Wei-Bing, Bi Wen-Xuan (IEAS); Paratypes 3♂♂, 3♀♀, same data as Holotype (IEAS).

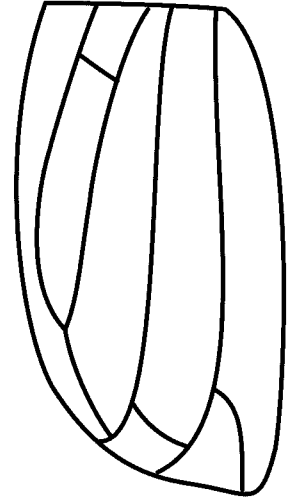
Description. Male. Body small and pubescent. Head round. Frontal rostrum as wide as 1st antennal joint. Pronotum transverse. Tympanum on the out side of the fore tibiae. Hind tibia with four pairs of dorsal spurs, first internal dorsal spur short and widely separated from the others (Fig. 19). The proximal internal spurs obviously short and last internal spur stout and curved. One oblique vein and mirror divided into several cells (Fig. 17). Wings absent. Genitalia of male as in Figs. 20–21.



16



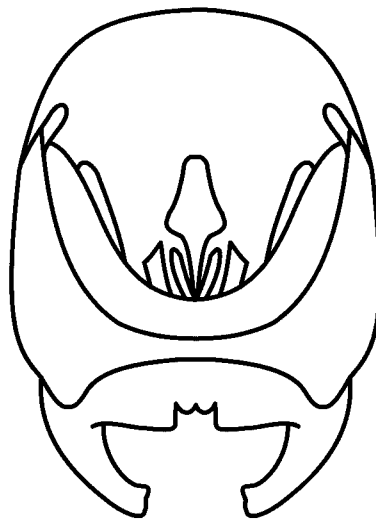
17



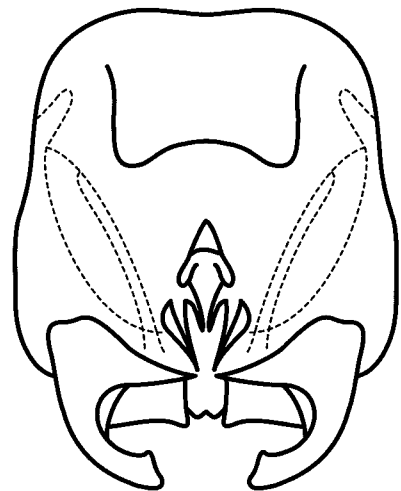
18



19



20



21

FIGURES 16–21. *Pteronemobius yunnanicus* sp. nov. 16. head and pronotum of male, dorsal view; 17. tegmen of male, dorsal view; 18. tegmen of female, dorsal view; 19. left hind tibia of male; 20. genitalia of male, dorsal view; 21. genitalia of male, ventral view.

Female. Tegmen short with 4 veins on dorsal field and 3 veins on lateral field (Fig. 18). Hind tibiae with three internal dorsal spurs, the proximal spur normal. Ovipositor straight with teeth on the upper side at apex.

Coloration. Body black. Tibia, cerci and tegmina yellow. Maxillary palpi with 4th and 5th joints white, others brown. Head with four yellow lines (Fig. 16). Anterior margin of pronotum yellow.

Measurements. (in mm) Body ♂5.5–5.8, ♀5.8–6.3; pronotum ♂1.1, ♀1.2; tegmen ♂4.5, ♀3.8–4.0; posterior tibiae ♂3.8–4.0, ♀4.0–4.5; ovipositor 3.0.

Distribution. China (Yunnan).

Etymology. The new specific name is derived from the type locality Yunnan.

Discussion. This species can easily be distinguished from other *Pteronemobius* species by the genitalia of male with one curve lateral branch on each side.

Acknowledgment

We thank Hu Jia-Yao, Yin Zi-Wei, Wu Jie, Zhu Wei-Bing, Bi Wen-Xuan for their collections. We also thank Mr. Cao Guang-Hong and Mr. Tian Mao-Xing of Nabanhe Nature Reserve for their help during field work for collecting the *Homonemobius nigrus* **sp. nov.** The collection of the *Polionemobius annulicornis* **sp. nov.** in Yunnan province was supported by the China-Japan cooperation project (Kobe University and Shaanxi Normal University). This work was supported by the Scientific Research Innovation Foundation of East China Normal University.

References

- Otte, D. (1994) *Orthoptera Species File 1 Crickets (Grylloidea)*. The Academy of Natural Sciences of Philadelphia, Philadelphia, 120 pp.
- Yin, H.S. & Liu, X.W. (1995) *Synopsis on the Classification of Grylloidea and Gryllotalpoidea from China*. Shanghai Scientific and Technological Literature Publishing House, Shanghai, 237 pp.
- Chopard, L. (1969) Orthoptera Volume 2 Grylloidea. In: Sewell, R.B.S. (Ed.), *The Fauna of India and the Adjacent Countries*. Baptist Mission Press, Calcutta, pp. 1–421.
- Ingrisch, S. (1987) Neue Grillen von Borneo und aus Thailand (Insecta: Saltatoria: Grylloidea). *Senckenbergiana biologica*, 68, 163–185.