

## TWO NEW SPECIES OF *RHOPALOPSOLE* (PLECOPTERA: LEUCTRIDAE) FROM CHINA<sup>1</sup>

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**ABSTRACT:** Two Chinese stonefly species of *Rhopalopsole*, *Rh. Xui* sp. n. and *Rh. shimentaiensis* sp. n., in the family Leuctridae are described. Their relationships with the related species are discussed. Their diagnostic characteristics are discussed with closely related congeners and their habitat and biological data are provided.

**KEY WORDS:** *Rhopalopsole shimentaiensis*, *R. xui*, new species, stoneflies, Plecoptera, Leuctridae, China

The genus *Rhopalopsole* is characterized by the short subgenital plate of sternite 9, sclerotized lateral process of tergite 10, and long cylindrical cerci in male adults (Zwick, 1977). It is distributed in Asia with about 30 known species. Seventeen species are known in China from the studies of Wu (1949, 1973), Yang D. and Yang J. (1991, 1993, 1995a-b), Yang J. and Yang D. (1991, 1994). In the present paper, two species of *Rhopalopsole* from China are described as new to science. The types are deposited in the Entomological Museum of China Agricultural University in Beijing. Morphological terminology generally follows that of Zwick (1977). The major references dealing with *Rhopalopsole* are as follows: Kawai, 1967; Jewett, 1975; Zhiltzova, 1975; Harper, 1977; Zwick, 1977.

### *Rhopalopsole shimentaiensis* NEW SPECIES

(Figs. 1-5)

**Male:** Body length 7.1-8.7 mm; forewing length 8.7-9.2 mm, hindwing length 7.2-7.5 mm.

Head dark brown, slightly wider than prothorax; antennae brown; mouthparts dark brown. Thorax brown, pronotum dark brown; wings more or less brown; legs brown. Abdomen brown; hypopygium including cerci dark brown.

Genitalia (Figs. 1-5). Tergite 9 weakly sclerotized, distinctly wider than long, its posterior margin weakly incised, with one small sclerotized mid-posterior spine. Sternite 9 basally with tongue-like vesicle bearing dense hairs and slightly longer than wide, apically with distinct subgenital plate wider than long and rounded apically. Tergite 10 with strongly sclerotized lateral process short and finger-like in lateral view, and somewhat acute apically in dorsal view; three separated and slightly sclerotized mid-anterior sclerites, of which two lateral ones are small and narrow and median one is large and broad; one pair of weakly sclerotized mid-posterior sclerites indistinctly separated from the hemitergites. Cercus long and cylindrical, apically with black tiny spine. Epiproct slightly curved forward, rather wide with subtruncate apical margin. Paraproct somewhat tapering apically.

**Female:** Unknown.

**Type Date:** Holotype male, paratype 1 male, Guangdong, Yingde, Shimentai National Forest Park, 2003. III. 28, D. Yang.

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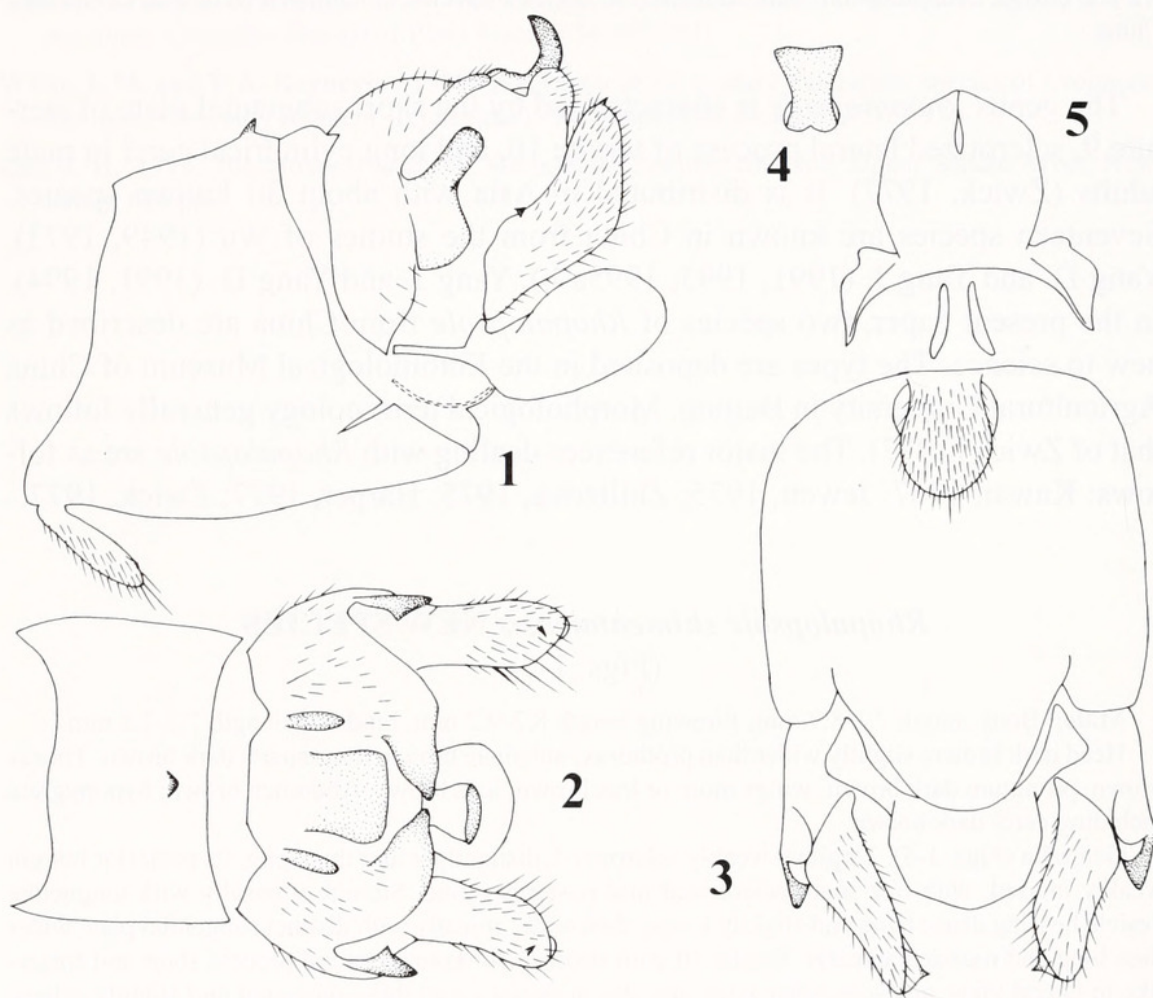
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**Etymology:** The species is named after the type locality Shimentai.

**Remarks:** The new species is somewhat similar to *R. apicispina* Yang and Yang from Hubei, but can be easily distinguished from the latter by the 9th tergite with a mid-posterior spine, lateral process of the 10th tergite longer, epiproct wide with truncate tip, and cercus with tiny apical spine. In *apicispina*, the 9th tergite has no mid-posterior spine, the lateral process of the 10th tergite is rather short, the epiproct is narrow with the pointed tip, and the cercus has no apical spine (Yang, D. and Yang, J., 1991). This species is collected in the mountainous area of the Shimentai National Forest Park. Adults appear in the early spring.



Figs. 1-5 *Rhopalopsole shimentaiensis* sp. n. (male) 1, Genitalia, lateral view; 2, genitalia, dorsal view; 3, genitalia, ventral view; 4, epiproct, posterior view; 5, paraproct, ventral view.

### *Rhopalopsole xui* NEW SPECIES

(Figs. 6-10)

**Male:** Body length 8.5-10.2 mm; forewing length 10.5-12.8 mm, hindwing length 9.1-11.6 mm.

Head dark brown, slightly wider than prothorax; antennae dark brown; mouthparts dark brown. Thorax brown, pronotum dark brown; wings more or less brown; legs brown. Abdomen brown; hypopygium including cerci dark brown.

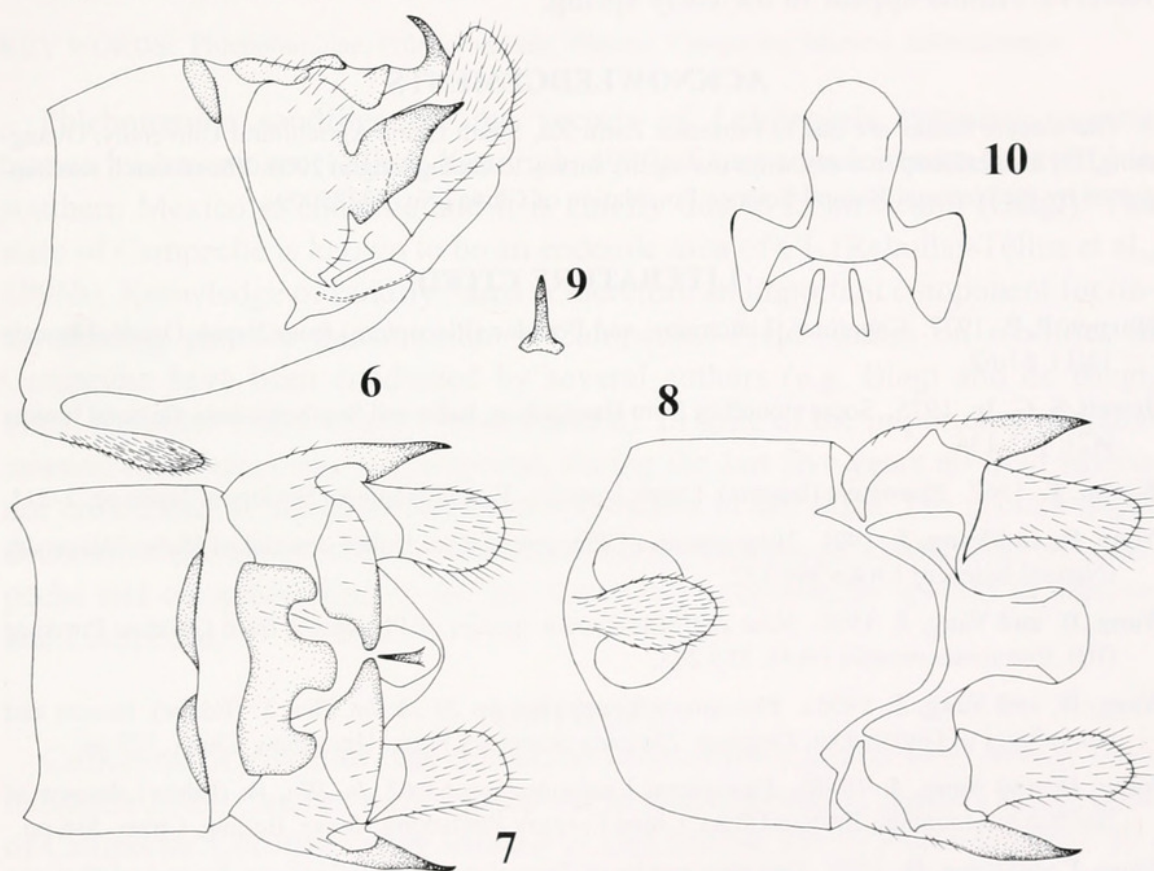


Genitalia (Figs. 6-10). Tergite 9 weakly sclerotized, distinctly wider than long, its posterior margin nearly straight, with two narrow mid-posterior transverse stripes distinctly sclerotized. Sternite 9 basally with tongue-like vesicle bearing dense hairs and much longer than wide, apically with distinct subgenital plate wider than long and rounded apically. Tergite 10 with strongly sclerotized lateral spine rather thick basally and curved backward apically in lateral view and nearly straight and slightly directed outward apically in dorsal view; weakly sclerotized mid-anterior sclerite distinctly wider than long, which has two short obtuse lateral processes and one slightly long obtuse median process posteriorly; one pair of weakly sclerotized mid-posterior sclerites. Cercus long and cylindrical, apically without tiny spine. Epiproct with thin spinelike apical portion curved forward. Paraproct wide and rounded apically.

**Female.** Unknown.

**Holotype** male, **paratype** 1 male, Guangdong, Ruyuan, Nanling National Natural Reserve, 2003. III. 25, D. Yang.

**Etymology:** The species is named after Professor Zaifu Xu.



Figs. 6-10 *Rhopalopsole xui* sp. n. (male) 6, Genitalia, lateral view; 7, genitalia, dorsal view; 8, genitalia, ventral view; 9, epiproct, posterior view; 10, paraproct, ventral view.

**Remarks:** The new species is similar to *R. longispina* Yang and Yang from Zhejiang and *R. aculeata* Harper from Nepal in having the 9th tergite with one pair of sclerotized mid-posterior stripes and thin spinelike epiproct, but can be easily distinguished from *longispina* by the lateral spine of the 10th tergite rather thick and curved backward apically, median process of mid-anterior sclerite of the 10th tergite obtuse posteriorly, and paraproct wide and rounded apically. In *longispina*, the lateral spine of the 10th tergite is narrower basally and curved



upward apically, the median process of mid-anterior sclerite of the 10th tergite is pointed posteriorly, and the subanal lobe has the acute tip (Yang, C. and Yang, D., 1991). It can be easily separated from *aculeata* by the lateral spine of the 10th tergite rather thick and curved backward apically in lateral view and nearly straight and directed outward in dorsal view, mid-anterior sclerite of the 10th tergite divided into three processes posteriorly, and paraproct rather wide and rounded apically. In *aculeata*, the lateral spine of the 10th tergite is narrower basally and curved upward apically in lateral view and distinctly curved and directed inward in dorsal view, the mid-anterior sclerite of the 10th tergite is complete posteriorly, and the paraproct is rather narrow apically (Harper, 1977). This species is collected in the mountainous area of the Nanling National Nature Reserve. Adults appear in the early spring.

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### LITERATURE CITED

- Harper, P. P. 1977. Capniidae, Leuctridae, and Perlidae (Plecoptera) from Nepal. *Oriental Insects* 11(1): 53-62.
- Jewett, S. G. Jr. 1975. Some stoneflies from Bangladesh, India and Southeast Asia. *Oriental Insects* 9(2): 127-134.
- Kawai, T. 1967. Plecoptera (Insecta). *Fauna Japonica*. Biogeographical Society of Japan pp. 1-211.
- Yang, D. and Yang, J. 1991. New species of Plecoptera from Hubei. *Journal of Hubei University (Natural Science)* 13(4): 369-372.
- Yang, D. and Yang, J. 1993. New and little-known species of Plecoptera from Guizhou Province (III). *Entomotaxonomia* 15(4): 235-238.
- Yang, D. and Yang, J. 1995a. Plecoptera: Leuctridae. pp 20-24. *In*, Zhu, T. (Editor). *Insects and macrofungi of Gutianshan, Zhejiang*. Zhejiang Sciencetech Press. Hangzhou, China. 327 pp.
- Yang, D. and Yang, J. 1995b. Plecoptera: Leuctridae. pp 61-62. *In*, Wu, H. (Editor). *Insects of Baishanzu Mountain, Eastern China*. China Forestry Publishing House. Beijing, China. 586 pp.
- Yang, J. and Yang, D. 1991. One new species of *Rhopalopsale* from Zhejiang. *Journal of Zhejiang Forestry College* 8(1): 78-19.
- Yang, J. and Yang, D. 1994. Two new species of *Rhopalopsale* (Plecoptera: Leuctridae) from Shaanxi. *Entomotaxonomia* 16(3): 189-191.
- Wu, C. F. 1949. Sixth supplement to the stoneflies of China (Order Plecoptera). *Peking Natural History Bulletin* 17(4): 251-256.
- Wu, C. F. 1973. New species of Chinese stoneflies (Order Plecoptera). *Acta Entomologica Sinica* 16(2): 97-118.
- Zhiltzova, L. A. 1975. *Rhopalopsale*, a genus of Plecoptera new for the USSR (Plec., Leuctridae). *Zoologicheskii Zhurnal* 54(2): 221-230.
- Zwick, P. 1977. Ergebnisse der Bhutan-Expedition 1972 der Naturhistorischen Museums in Basel. *Entomologica Basiliensia* 2: 85-134.



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