ABSTRACT. The species of the stonefly genus Sweltsa known from China are reviewed. A new species, Sweltsa baiyunshana, sp. n. is described, and its relationship to similar species is discussed. Redescriptions of Sweltsa longistyla Wu and diagnostic notes on the other Sweltsa species are also presented.

Key Words: Sweltsa baiyunshana, Sweltsa longistyla, new species, redescription, China

There are 46 species of the cosmopolitan chloroperlinae genus Sweltsa (DeWalt et al. 2012). Of these, five species have been recorded from China. Wu (1938) described two species originally in Alloperla, Alloperla longistyla and Alloperla recurvata, which were transferred to Sweltsa by DeWalt et al. (2012).
Sweltsa by Illies (1966) and Zwick (1973). Recently, Tierno de Figueroa and Fochetti (2002) described Sweltsa yunnan from Yunnan, and Stark and Sivec (2009) added Sweltsa wui from Sichuan.

In this article, a new species of Sweltsa is described, and the description of A. longistyla is supplemented. The ultrastructure of the epiproct is examined using a FEI Quanta 200 Field Emission Environmental Scanning Electron Microscope. All specimens are deposited in the Insect Collection of Henan Institute of Science and Technology (HIST) and the Entomological Museum of China Agricultural University, Beijing (CAU).

**Taxonomy**

*S. baiyunshana* sp. nov. (Figs. 1–13)

**Adult Habitus** (Figs. 1–5). General color greenish in life, pale in ethanol. Head with a large quadrate median patch and pronotum with median and lateral maculae. Compound eyes and ocelli black.
Antennae pale. Meso- and metathoracic nota with dark-brown U-marks. Wing membrane transparent, legs pale. Abdominal tergum 1 with anterior stigma, terga 2-7 with brown median stripe, anteriorly wider, and the continuous areas between terga darker.

Male (Figs. 6–15). Forewing length 7.2–7.8 mm. Tergum 9 with transverse ridge. Epiproct, erect, slender, and almost parallel-sided, length ~450 μm, in large, cup-like basal anchor and membranous groove between hemiterga (Figs. 2 and 8). Epiproct apex with a smooth, upturned, tongue-like cap, apex slightly expanded in lateral view (Figs. 6–11); most of epiproct surface covered with rugose striations.

Female (Figs. 12 and 13). Forewing length 8.5–9.2 mm. Subgenital plate on sternum eight posteriorly produced in a triangular flap, expanded in lateral view.

**Type Material.** Holotype: male (HIST), China: Henan Province, Song County, Mt. Baiyunshan, 33.6790' N, 111.8410' E, 1,500 m,
2008.V.20, Weihai Li. Paratypes: nine males and four females (HIST), five males (CAU), same data as holotype.

**Etymology.** The specific name refers to the type locality, Mt. Baiyunshan.

**Distribution.** China (Henan).

**Diagnosis.** This species is characterized by the head with large quadrate median patch and pronotum with median and lateral markings (Fig. 1). The epiproct is slender and almost parallel-sided, and the apex has a smooth, upraised, tongue-like cap, whereas most of epiproct surface covered with rugose striations (Figs. 6–11).

**Remarks.** The new species is most similar to *Sweltsa longistyla* redescribed below but is distinguished from the latter by the pronotum with lateral pigmentation (Fig. 1) and an almost parallel-sided epiproct with a smooth, upraised, tongue-like cap apically. In *S. longistyla* Wu, the pronotum has pale lateral margins, and the male epiproct has an acute tip, which does not form an upraised cap (Figs. 18–21).

*S. longistyla* (Wu, 1938). (Figs. 14–29)

*A. longistyla* Wu, 1938. *Plecopterorum sinensium*: 152. Type locality: Kansu (Gansu) Province, Cheumen.

*S. longistyla*: Illies, 1966. Das Tierreich 82: 433; Zwick, P. 1973. Das Tierreich 94: 465.

**Adult Habit.** (Fig. 14). Antennae pale, in both fresh and older specimens in alcohol, with basal one-fourth pale but distal flagella...
Figs. 18–25. *S. longistyloa* (Wu, 1938) (male). (18) Terminalia, dorsal view. (19) Terminalia, lateral view. (20) Epiproct, dorsal view. (21) Epiproct, lateral view. (22) Male ninth tergal process, dorsal view. (23) Male ninth tergal process, dorsal view. (24) Epiproct base, lateral view. (25) Epiproct apex, lateral view. Specimens from Ningxia.
brown. Head and pronotum with large quadrate median markings. Meso- and metathoracic nota with dark-brown U-shaped patterns.

**Male.** Forewing length 9.2-9.4 mm. Tergum 9 with an erect transverse ridge, in large, cup-like basal anchor and membranous groove between hemiterga (Figs. 22 and 23). Epiproct tapering and slender and apical one-fourth acute, length ~510 µm, apex smooth, lacking upturned cap, most of the surface of the epiproct with striations (Figs. 18–27).

**Female** (Fig. 17; fig 186 of Wu 1938). Forewing length 11.8–12.2 mm. Subgenital plate typically with apex rounded medial notch.

**Variations.** Little variation of the structure of the epiproct tip, and the subgenital plate in females was apparent in specimens examined from Ningxia and Henan (Figs. 26 and 27). However, one female specimen from Baotianman, Henan Province possessed a subgenital plate that varied from typical specimens. The apex of the subgenital plate was slender and tubular (Figs. 28 and 29) rather than having a rounded apex (Fig. 17). My ability to assess variation in the species is doubtful due to lack of material.

**Material Examined.** Two males, Ningxia Hui autonomous Region, Mt. Liupanshan, 106.3113° E, 35.4886° N, 2008. VI. 10, Jingxian Liu; five females (HIST), China: Henan Province, Luoyang, Song County, Mt. Baiyuanshan, 33.6790° N, 111.8410° E, 1500 m, 2008. V. 19., Weihai Li, 8 males, 10 females (CAU), Henan Province, Nanyang, Neixiang County, Baotianman National Nature Reserve, 111.9462° E, 33.5149° N, 1200 m, 2006. V. 17, Weihai Li and Yusi Cui, three males (CAU), same locality, 2006. V. 18, Weihai Li; one male (CAU), China: Hebei Province, Yu County, Mt. Xiaowutai, Shanjiankougou, 117.0605° E, 42.1636° N, 22. VI. 2009, Junchao Wang; three females (HIST), China: Shaanxi Province, Hu County, Zhuque National Forest Park, 108.5732° E, 33.7839° N, 2012. VII. 12, R. Bao.

**Distribution.** China (Gansu, Hebei, Henan, Ningxia, Shaanxi).

**Remarks.** Our new material of *S. longistyla* agrees well with the original description and illustrations (Wu 1938; figs. 184–186).
This species apparently emerges from May to July based on the present data. *Sweltsa recurvata* (Wu, 1938). A. recurvata Wu, 1938. *P. sinensium*: 154. Type locality: Kansu (Gansu) Province, Cheumen. *Sweltsa recurvata*: Illies. 1966. Das Tierreich 82: 434. *S. recurvata*: Stark and Sivec. 2009. *Illiesia* 5: 156.

**Remarks.** This species is known only from the original type material. Apparently, the completely dark-brown habitus and lack of the transverse ridge on tergum nine distinguish it from all other known Chinese *Sweltsa*. However, as Stark and Sivec (2009) indicated, it may not belong to *Sweltsa*.

**Distribution.** China (Gansu).

*S. wui* Stark and Sivec, 2009. *S. wui* Stark and Sivec, 2009. *Illiesia*, 5: 157. Type locality: China, Sichuan Province, Pitiao River, Welong, Balangshan Pass.

**Distribution.** China (Sichuan).

**Remarks.** This species has an inflated epiproct apex with a basal constriction, and a dumbbell-shaped brown spot on tergum 9 (Stark and Sivec 2009; figs. 210). It head pattern is confined to a triangular intercelar spot.

*S. yunnan* Tierno de Figueroa and Fochetti, 2002. *S. yunnan* Tierno de Figueroa and Fochetti, 2002. *Oriental Insects*, 36: 93. Type locality: China, Yunnan Province, Zhongdian, Sanba.

**Distribution.** China (Yunnan).

**Remarks.** This species is easily separated from other Chinese species by absence of a head color pattern and presence of only a brown line on pronotal margins and medially. In dorsal view, the subparallel epiproct from base to apex is also diagnostic (Tierno de Figueroa and Fochetti 2002; figs. 1–4).

**Nomenclature**

This article and the nomenclature it contains have been registered in ZooBank (www.zoobank.org). The LSID number is urn:lsid:zoobank.org:pub:1DD83B29-00C7-49DE-9DF8-BD605BE84C6D.

**Discussion.** Given the large geographic range of the five species currently known from China, no doubt additional taxa will be
discovered, particularly in new provinces. A provisional key to the Chinese species is presented to facilitate identification.

**Provisional Key to Males of Species of *Sweltsa* from China**

1. Tergum 9 with a transverse ridge ....................................................3
   - Tergum 9 without a transverse ridge ...............................................2
2. Head and pronotum dark brown...................................
   - Head and pronotum mostly pale yellow, with brown spot between ocelli.................................................................S. *wui*
3. Head and pronotum with distinct median dark brown pigmentation....................................................................................4
   - Head and pronotum without distinct color pattern except brown pronotal lines...............................................................S. *yunnan*
4. Pronotum with brown lateral margins, epiproct with distinct upraised apical cap .................................................. S. *baiyunshana* sp. nov.
   - Pronotum lacking brown lateral margins, epiproct with only smooth apex without a cap-shaped structure............S. *longistyla*

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