

A Rare Mayfly *Siphuriscus chinensis* Ulmer (Ephemeroptera: Siphuriscidae) from Vietnam

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Abstract

A rare mayfly *Siphuriscus chinensis* Ulmer, 1920, the monotypic species of the *Siphuriscus* and Siphuriscidae, is recorded for the first time in Vietnam. The larva of Siphuriscidae is characterized by the coxal gills on the forelegs and midlegs, single, basal, moveable, and dactyl-like appendage on the claws, and labial and maxillary gills. Diagnosis, material data, and biological notes are provided.

Key words: *Siphuriscus chinensis*, Siphuriscidae, new distributional record, Vietnam

Introduction

The superfamily Siphonuroidea can be divided into two groups, the northern and southern groups (Kluge *et al.* 1995): the families distributed only in the Northern Hemisphere include Siphonuridae, Dipteromimidae, Ameletidae, Metretopodidae, Acanthametropodidae, and Ametropodidae, while those in the Southern Hemisphere include the families Oniscigastridae, Nesameletidae, Rallidentidae, and Ameletopsidae. Ulmer (1920) established the genus *Siphuriscus* based on the monotypic species *Siphuriscus chinensis* Ulmer which was described from China based on male imago and female subimago. This genus was originally placed in the family Siphonuridae, *sensu lato*. Then, McCafferty and Wang (1994) transferred *Siphuriscus* to the family Siphonuridae *sensu stricto*. Zhou and Peters (2003) described associated larva, male imago, and female imago of *Siphuriscus chinensis*, and established the family Siphuriscidae which belonged to the superfamily Siphonuroidea.

The larvae of the Siphonuroidea are normally swimming type and their caudal filaments bear primary swimming setae, setae arranged in a regular row on each lateral side of the paracercus and on the inner side of each cercus. The larval abdominal gills have plate-like two costae.

We firstly report the distribution of *Siphuriscus chinensis* from a high mountain stream in Northern Vietnam.

Materials and methods

The larvae of *Siphuriscus chinensis* were collected from

mountain streams in northern Vietnam using hand net and Surber net (50 cm × 50 cm, mesh 0.2 mm). All the specimens are preserved in 70% ethanol and deposited in the Biodiversity Laboratory, Department of Invertebrate Zoology, Faculty of Biology, Hanoi University of Science in Hanoi, Vietnam and the Entomological Museum of Korea University in Seoul, Korea.

Taxonomic accounts

Order Ephemeroptera

Family Siphuriscidae Zhou

Genus *Siphuriscus* Ulmer, 1920

Type species: *Siphuriscus chinensis* Ulmer, 1920, original designation.

Siphuriscus chinensis Ulmer, 1920

Siphuriscus chinensis Ulmer, 1920: 62 (male imago, subimago); Demoulin, 1955: 1 (subimago); McCafferty & Wang, 1994: 211 (male imago and subimago); Zhou & Peters, 2003: 351 (larva, male and female imago).

Diagnosis and measurement. Body length about 23–25 mm; caudal filaments 7.0–7.5 mm (Figs 1A, B). Body brown or yellow. *Head.* Head length 4.5 mm and width 3.2–3.5 mm. Antennae short, 6-segmented, length 0.5–0.7 mm. Scape thicker than other segments; apical segment of flagellum hair-like. Labrum with Y-shaped suture on dorsal surface and short setae on margins, length 1.6 mm and width 0.6–0.7 mm. Mandibles with large blade-like outer incisor and

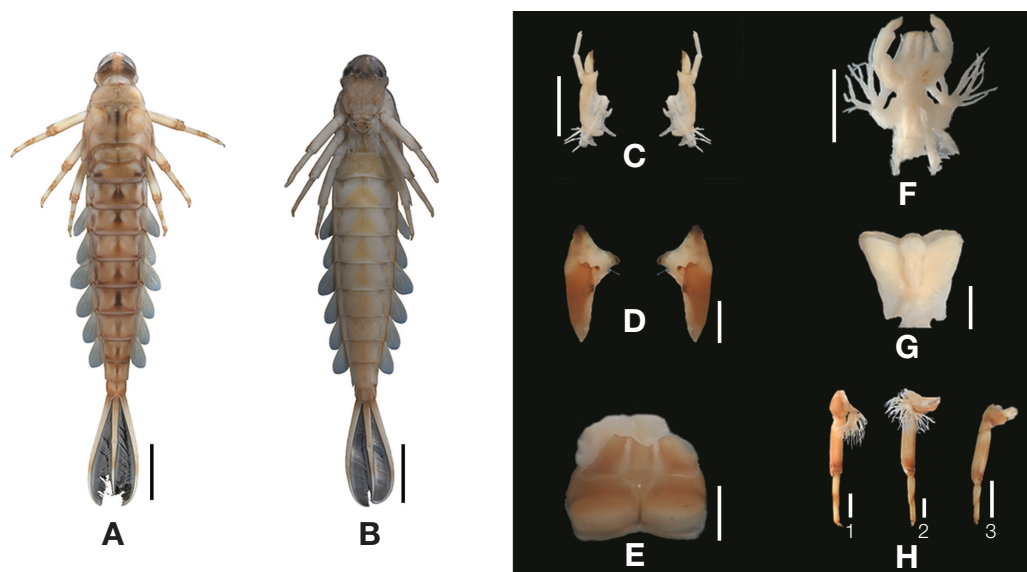


Figure 1. Larva of *Siphuriscus chinensis*. (A) habitus, dorsal view, (B) habitus, ventral view, (C) maxilla, (D) mandible, (E) labrum, (F) labium, (G) hypopharynx, (H-1) foreleg, (H-2) midleg, (H-3) hindleg. Scale bar=5 mm (A, B); 1.5 mm (C); 1 mm (D, F, G); 0.5 mm (E); 2 mm (H).

small spine-like inner incisor; length 2.5–2.7 mm, width 1.4 mm. Maxillae with tuft of gills on inner and outer basal surfaces (Fig. 1C). Postmentum well-developed, with one pair of gill tufts laterally. Maxilla length 2.6–2.7 mm; maxillary palp 2.0 mm. Labium basally with gills (Fig. 1F), length 2.0 mm, width 1.2 mm. *Thorax*. Thorax length 6.0–6.5 mm, width 4.5 mm. Forelegs and midlegs with coxal gill tufts (Figs 1H-1 and 1H-2). Tibiae and tarsi of all legs subequal in length, together shorter than femur; apex of femur divided into 3 lobes. All legs yellow. Length of forecoxae 2.0 mm, foretrochanters 0.7 mm, forefemora 4.0 mm, foretibiae 2.0 mm, foretarsi 1.7 mm, and foreclaws 0.4 mm; midcoxae 1.0 mm, midtrochanters 0.9 mm, midfemora 4.0 mm, midtibiae 2.0 mm, midtarsi 2.0 mm, and midclaws 0.5 mm; hindcoxae 1.0 mm, hindtrochanters 0.6 mm, hindfemora 4.0 mm, hindtibiae 1.0 mm, hindtarsi 0.7 mm, and hindclaws 0.4 mm. *Abdomen*. Abdomen length 16.5–17.5 mm. Terga 1–10 brown or yellow. Gills on abdominal segments 1–7, all gills single, oval; gills 1 smallest, length 0.6 mm and indistinct; gills 2–7 with small spines apically on anterior margin, length 2.5–3.0 mm. **Remarks.** Zhou and Peters (2003) provided full description of the larva of this species.

Material examined. Vietnam: 4 larvae, San Sa Ho, Vang stream, Lao Cai Province (1878 m), 23.iv.2012; 3 larvae, San Sa Ho, Tram Ton-Nui Xe, Lao Cai Province, (1884 m), 30.v.2013, V.V. Nguyen and V.H. Nguyen; 3 larvae, Xin Man, Nam Dan, Thac Tien-Đeo Gio, Ha Giang Province, (1150 m), 11.v.2014, V.V. Nguyen and A.D. Tran.

Biology. The larvae of *S. chinensis* occurred in high mountain streams at altitude ranging 1150–1884 m. The streams were 3–6 m wide and 8–10 cm deep, surrounded by large riparian

trees. The substrates consisted mainly of sand and gravel (size 6–16 mm, about 80%). The larvae swam very fast and held small branches and stones while resting.

Distribution. Vietnam (new record), China.

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