

A New Species of *Siphonurus*¹ from Nova Scotia, Canada²

BORIS C. KONDRATIEFF AND J. REESE VOSHELL, JR.

Department of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061

ABSTRACT

Ann. Entomol. Soc. Am. 74: 545-547 (1981)

A new species, *Siphonurus demarayi*, is described and figured from specimens from Nova Scotia, Canada. The male genitalia of *Siphonurus barbaroides* McDunnough is illustrated to correct an error in the original description and to facilitate identification of the new species. Notes on the biology of the new species are given.

The genus *Siphonurus* was established by Eaton (1883-1888) and presently includes 17 species from North America (Edmunds et al. 1976). Through the kindness of R. S. Demaray, Lower Sackville, Nova Scotia, a collection of Ephemeroptera from Canada was made available to us for determination and study. Included in this material was an undescribed species of *Siphonurus*.

Siphonurus demarayi Kondratieff and Voshell, New Species

Male Imago (In Alcohol)

Body length 10 to 11.5 mm, forewings 10.5 to 11 mm, caudal filaments 12 to 13 mm. Compound eyes gray with dorsal portion separated by darker transverse band; contiguous mesally on dorsum. Ocelli white; ocellar elevations dark brown. Vertex mostly brown; wide red-brown band across transverse shelf of face. Antennae white, tinged with brown. Thorax brown; sutures tinged with purple-brown; mesothorax yellowish near midline; subalar sclerites reddish-brown; basalar sclerites purple; all pleural membranes yellowish. Prothoracic leg entirely light brown. Meso- and metathoracic legs with coxae brown; trochanters brown with lateral, yellowish band longitudinally; femora and tibiae yellowish, tinged with brown at base and apex; tarsal segments yellowish, tinged with brown at apex. Wings hyaline with all veins brown. Abdominal terga brown with dark brown tracheations and anterolateral, diffuse pale areas. Sterna whitish with oblique, purple-brown lateral stripes which are broadly contiguous on anterior margins of segments 1 and 2 and narrowly joined on 3 to 5 (sometimes 6); two brown dots near center of each sternite (Fig. 1). Genitalia as in Fig. 2; forceps brown; penis lobes brown with membranes white. Caudal filaments yellowish; tan at bases with brown articulations.

Female Imago (In Alcohol)

Body length 10 to 12 mm, forewings 12 to 13 mm, caudal filaments 12 to 13 mm. Compound eyes gray with no oblique line; separated dorsally by ca. 2.5 × width of lateral ocellus. Ocelli white; ocellar elevations dark brown. Vertex brown; wide, red-brown band across transverse shelf of face. Antennae white, tinged with brown. Thorax of similar

maculation to male but paler. Legs colored as in male. Wings hyaline with all veins brown. Abdominal terga light brown with dark tracheations; lateral, reddish-brown spots on terga 2 to 8. Sterna white with oblique, purple-brown lateral stripes; stripes broadly contiguous on anterior margins of sterna 1 and 2, narrowly joined on anterior of 3, and broadly contiguous on posterior of 7; two brown dots near center of sternites 5 (sometimes 4) to 9. Caudal filaments similar to male; subgenital plate with apical margin somewhat truncate.

Nymph (From Exuviae)

Body length 12 to 14 mm, caudal filaments 4 to 6 mm. Front of head with pair of dark longitudinal bars medially; clypeus and labrum reddish-brown. Legs patterned similar to adults. Abdominal tergites with pair of submedian dashes and pair of lateral dark spots on 2 to 9; tergite 6 also with larger diffuse posteromedian dark spot; tergite 7 with diffuse, dark lateral areas; tergites 2 to 9 with dark, anterior transverse lines interrupted medially, fused with sub-



FIG. 1.—*S. demarayi* n. sp. abdomen, ventral.

¹ Ephemeroptera: Siphonuridae.

² Received for publication 31 December 1980.

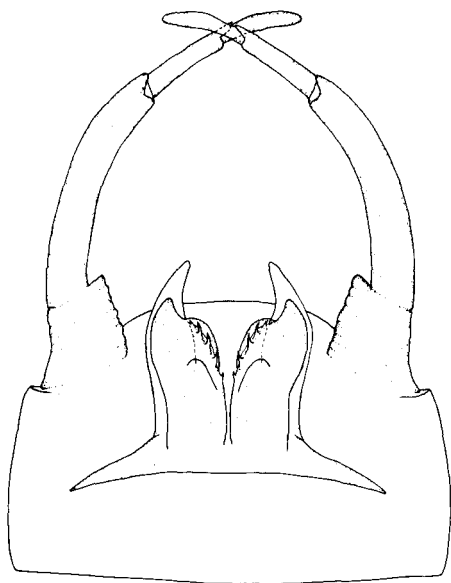


FIG. 2.—*S. demarayi* n. sp. male genitalia, ventral.

median dashes. Sternites 1 to 8 with dark lateral streaks. Gills double on abdominal segments 1 and 2 only; gills on segments 3 to 7 single; all gills with dark tracheations. Each caudal filament with broad brown crossband near middle and narrower crossband at apex.

Material

Holotype, allotype: Canada, Nova Scotia, Hant County, reared from puddle 8 m from Bog Brook, Highway 1, 8 July 1980, R. S. Demaray. Paratypes (reared): same, 6♂♂, 7♂♂; same but 14 July 1980, 1♂, 1♀; Nova Scotia, Cumberland County, stagnant backwater of East Apple River, Highway 2, 5 August 1980, R. S. Demaray, 1♂, 1♀ same but 6 August 1980, 1♂, 1♀; Nova Scotia, Cumberland County, Moose River, Highway 2, 7 August 1980, R. S. Demaray, 2♂♂.

The holotype and allotype, and four male and four female paratypes deposited in Canadian National Collection (CNC Holotype no. 16388), two males and one female paratype deposited in the United States National Museum of Natural History, and two male and two female paratypes deposited in Florida A & M University collection; remaining paratypes deposited in collection of R. S. Demaray and Virginia Polytechnic Institute and State University collection.

Etymology

The patronym honors the collector, Ron S. Demaray. Demaray is an avid fisherman with equal enthusiasm for aquatic insects; his diligent collecting and meticulous biological observations have contributed valuable scientific information.

Diagnosis

Siphonurus demarayi resembles *S. barbaroides*

McDunnough, *S. columbianus* McDunnough, and *S. occidentalis* Eaton in the form of the male genitalia. Our study of three paratype slides indicated that the original illustration of *S. barbaroides* by McDunnough (see Fig. 9, p. 172 in McDunnough [1929]) was inaccurate. For this reason we have correctly illustrated *S. barbaroides* (Fig. 3). In *S. barbaroides* the ventral division of the penes has numerous (16 to 20) mediolateral spines. The distal projection is acute and toothed. There is no basal lobe of the ventral division as illustrated by McDunnough (1929). Close examinations of all paratypes that were mounted on slides (including the one probably used for illustration) indicated that this lobelike structure probably resulted from tearing during slide preparation. The holotype and allotype of *S. barbaroides* are mounted on the same pin, and a slide of the male genitalia was not made (J. E. H. Martin, personal communication). In *S. demarayi* the ventral division of the penes (Fig. 2) has only four to five inner, sublateral spines, and the distal projection is blunt and unarmed. *S. demarayi* may be distinguished from *S. columbianus* by having the inner sublateral spines on the ventral division of the penes. In *S. columbianus* the ventral division of the penes has 12 to 16 mediolateral spines. *S. occidentalis* also resembles *S. demarayi* in penis structure but may be readily separated by having distinct U-shaped marks on all sternites.

It is not possible to define the distinguishing characters of the nymph of *S. demarayi* because the nymphs of many species in the genus are unknown.

Biological Notes

Ron S. Demaray provided the following biological notes on the new species. At the type locality,

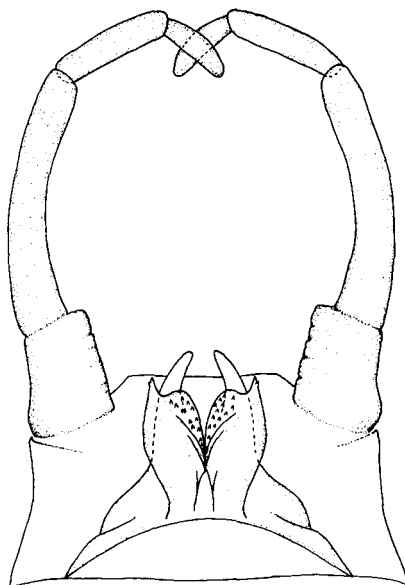


FIG. 3.—*S. barbaroides* McDunnough. male genitalia, ventral.

nymphs ranging from 4 mm to fully mature were collected 8 July 1980 from a small (1 by 1.5 m) and shallow (maximum depth, 14 cm) puddle ca. 8 m from Bog Brook. Mature nymphs were successfully reared. The puddle was apparently a remnant of spring run-off. Substrate consisted of fine gravel and coarse sand, with a few rocks 10 to 25 cm in diameter. Water temperature at the time of collection was 18° C. Numerous exuviae were found on the rocks, but no adults were collected. An intensive search of Bog Brook revealed no *S. demarayi* nymphs. An occasional *Paraleptophlebia* sp. nymph was collected with *S. demarayi*.

At the East Apple River site, nymphs ranging from 6 to 14 mm were collected 6 August 1980 from a stagnant backwater area. Maximum depth at this site was 10 cm. Substrate was a mixture of very soft mud and silt overlaying compacted mud. No exuviae or adults were observed.

Acknowledgement

We thank J. E. H. Martin, Canadian National Collection, Ottawa, for loaning type material, and Penelope Firth Kondratieff for her assistance with the illustrations.

REFERENCES CITED

- Eaton, A. E. 1883-1888. A revisional monograph of recent Ephemeroidea or mayflies. Trans. Linn. Soc. London, 2nd Ser. Zool., No. 3: 1-352, 65 plates.
- Edmunds, G. F., Jr., S. L. Jensen, and L. Berner. 1976. The mayflies of North and Central America. Univ. Minn. Press, Minneapolis. 330 pp.
- McDunnough, J. 1929. Notes on North American Ephemeroptera with descriptions of new species, II. Can. Entomol. 61: 169-180.

Reprinted from the

ANNALS OF THE ENTOMOLOGICAL SOCIETY OF AMERICA