

THE NYMPH OF *HANSONOPERLA APPALACHIA* NELSON
(PLECOPTERA: PERLIDAE)

RALPH F. KIRCHNER¹ AND BORIS C. KONDRATIEFF

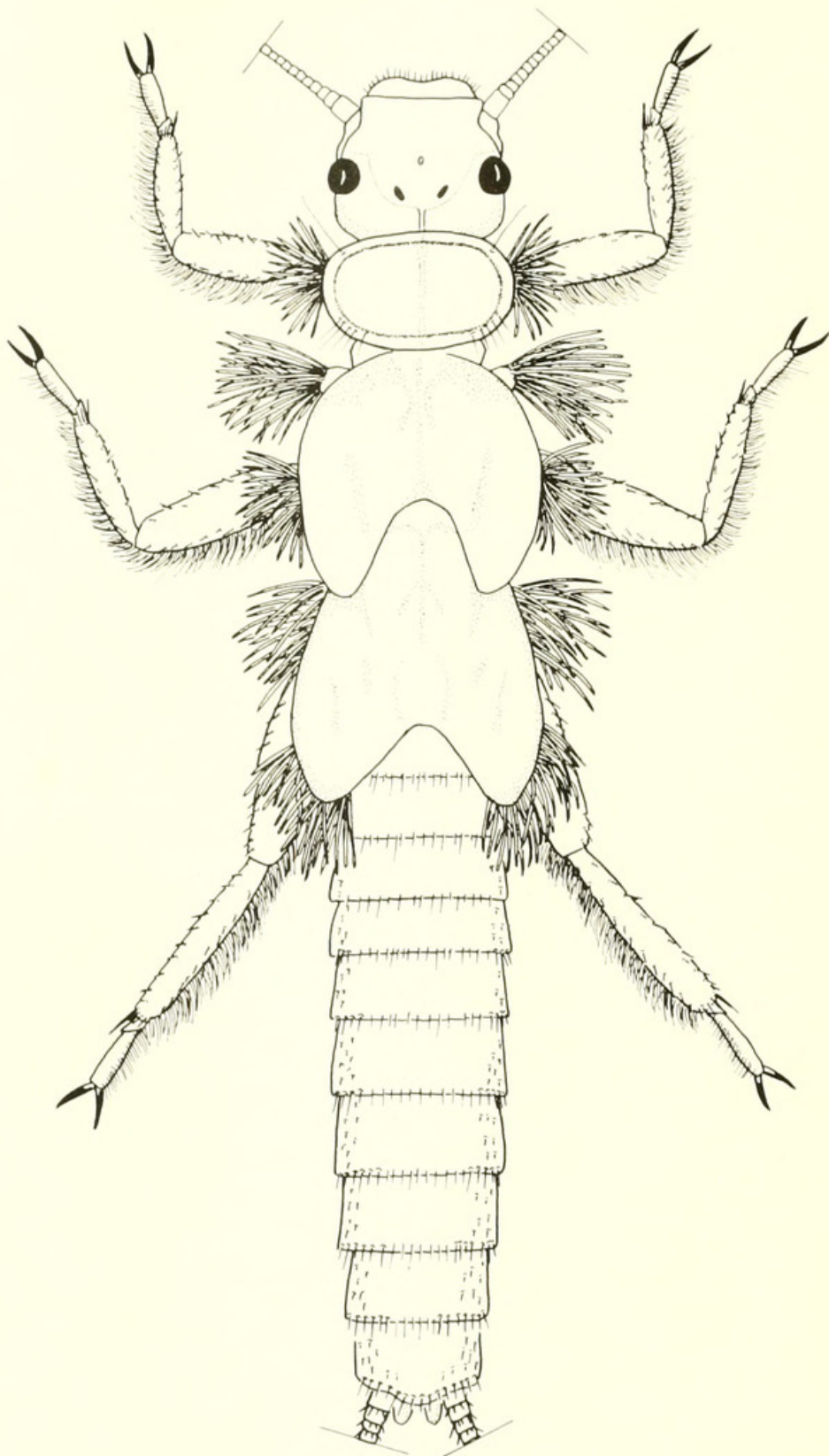
(RFK) Department of the Army, Huntington District Corps of Engineers, Water Quality Section, 502 8th Street, Huntington, West Virginia 25701-2070; (BCK) Environmental and Chemical Sciences, Inc., P.O. Box 1393, Aiken, South Carolina 29802.

Abstract.—The mature nymph of *Hansonoperla appalachia* Nelson is described and illustrated for the first time from specimens collected in West Virginia. Nymphs of this genus are morphologically similar to those of the nearctic genus *Perlinella* Banks and characters for separation are given.

During a 1975 collecting trip to Nicholas and Greenbrier counties, West Virginia, an unknown *Perlinella*-like nymph was collected from the North Fork of Cherry River. In 1979 Nelson described the adults of *Hansonoperla appalachia*, as a new nearctic genus and species of Perlidae. His material included two males and two females collected from Tennessee and Maine. At that time we suspected that our *Perlinella*-like nymph from West Virginia could be the undescribed nymph of this new taxon. Efforts were made in March 1983 and February 1984 to secure additional material. Five nymphs were collected from Panther Creek, Nicholas County, and two adult males were successfully reared, confirming our tentative identification. An additional nine nymphs were collected in April 1984 from North Fork of Cherry River, Greenbrier County, West Virginia by Stewart, Kondratieff, and Kirchner and were transported to North Texas State University for rearing and recording of adult drumming signals.

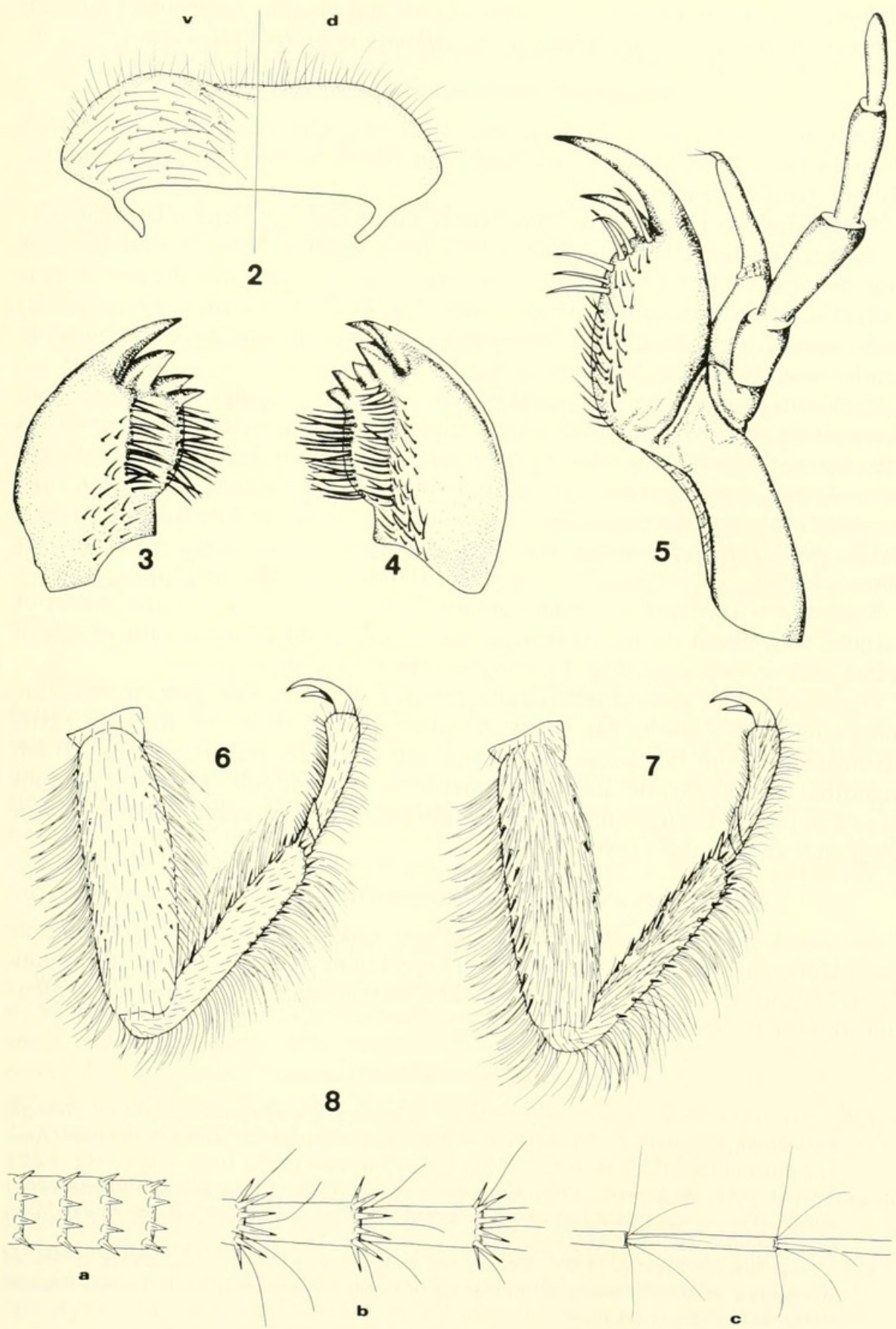
Hansonoperla appalachia apparently prefers cool montane streams at the higher elevations of the Appalachian Mountains. Nearly all nymphs were collected from undercut banks of riffle areas where roots of riparian vegetation trapped coarse detritus material and caused deposits of sand to accumulate. The early emergence (mid-April to mid-May), atypical for many eastern perlids, may account for the rarity of adults in collections. This species is currently being considered by the U.S. Fish and Wildlife Service, Department of Interior, for addition to the list of "Endangered and Threatened Wildlife and Plants" of the United States (Federal Register, 1984). Other Plecoptera collected with *H. appalachia* were *Tallaperla maria* (Needham and Smith), *Acroneuria abnormis* (Newman), *A. carolinensis* (Banks), *Sweltsa lateralis* (Banks), *S. onkos* (Ricker), *Isoperla similis* (Hagen),

¹ The views of the author do not purport to reflect the position of the Department of the Army or the Department of Defense.



1

Fig. 1. *Hansonoperla appalachia*. General habitus of mature nymph.



Figs. 2-5. *Hansonoperla appalachia*. 2, Labrum, ventral and dorsal view. 3, Right mandible (ventral). 4, Left mandible (ventral). 5, Left maxillary palpus (ventral). Fig. 6. *Perlinella drymo*, right foreleg. Figs. 7-8. *Hansonoperla appalachia*. 7, Right foreleg. 8, Cerci segments, a. basal, b. medial, c. distal.

Diploperla duplicata (Banks), *D. robusta* Stark and Gauvin, *Isogenoides hansonii* (Ricker), *Malirekus hastatus* (Banks) and *Allonarcys proteus* (Newman).

***Hansonoperla appalachia* Nelson, 1979**

Description of Nymph. — Body length 14–20 mm; antennae up to 10 mm; cerci up to 11 mm. Body clothed with appressed brown hairs; color golden brown, without distinct pattern (Fig. 1).

Head almost as long as wide; three ocelli forming an equilateral triangle; eyes set forward on head nearly in line with anterior ocellus. Labrum four times as wide as long; ventral surface with long setae (Fig. 2). Right mandible with four teeth (Fig. 3); left mandible with five teeth (Fig. 4). Lacinia with two large apical teeth, second tooth smaller; six stout setae on inner margin, followed by more slender setae to base of lacinia (Fig. 5).

Pronotum with dark narrow marginal groove; sides and angles broadly rounded. Mesonotum and metanotum irregularly marked with appressed brown hairs. Legs with dorsal fringe of long silky hairs; femora and tibia heavily clothed with appressed setae, dorsal and ventral margins with scattered stout spines (Fig. 7). Gills branched with long filaments. Gill formula (follows usage of Shepard and Stewart, 1983): ASC₁ (anterior supracoxal), PSC₁ (posterior supracoxal), AT₂ (anterior thoracic), PSC₂, AT₃, PSC₃, PT₃ (posterior thoracic), A₁ (abdominal).

Abdomen with tergal intercalary spines confined to lateral margins; posterior margins with mesal section of slender setae. Cerci slender, nodes with whorls of spines and/or long setae (Fig. 8). Subanal lobe (SL) without gills.

Diagnosis. — The general habitus and morphology of *Hansonoperla* nymphs are most similar to those of the genus *Perlinella* Banks. However, they are easily distinguished from this genus by: (1) legs with only a dorsal hair fringe, (2) left mandible with five teeth, and (3) subanal lobes without gills. *Perlinella* nymphs have a dorsal and ventral hair fringe on the legs (Fig. 6), left mandible with four teeth, and gills on the subanal lobes.

ACKNOWLEDGMENTS

We thank B. P. Stark, Mississippi College, and K. W. Stewart, North Texas State University, for providing additional specimens of *Perlinella*. We also thank C. H. Nelson, University of Tennessee at Chattanooga, for confirming the identification of *H. appalachia*.

LITERATURE CITED

- Nelson, C. H. 1979. *Hansonoperla appalachia*, a new genus and a new species of eastern Nearctic Acroneuriini (Plecoptera: Perlidae), with a phenetic analysis of the genera of the tribe. Ann. Am. Entomol. Soc. 72: 735–739.
- Shepard, W. D. and K. W. Stewart. 1983. Comparative study of the nymphal gills in North American stonefly (Plecoptera) genera and a new, proposed paradigm of Plecoptera gill evolution. Misc. Publ. Entomol. Soc. Am. 55: 1–57.
- U.S. Fish and Wildlife Service. 1984. Endangered and threatened wildlife and plants: review of invertebrate wildlife for listing as endangered or threatened species (Part 3). Federal Register 49: 21664–21675.



Kirchner, Ralph F and Kondratieff, Boris C. 1985. "The Nymph Of Hansonoperla appalachia Nelson (Plecoptera, Perlidae)." *Proceedings of the Entomological Society of Washington* 87, 593–596.

View This Item Online: <https://www.biodiversitylibrary.org/item/54866>

Permalink: <https://www.biodiversitylibrary.org/partpdf/55846>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Smithsonian

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Entomological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.