

A NEW SPECIES OF THE MAYFLY GENUS *STENONEMA*  
TRAVER FROM EASTERN UNITED STATES  
(EPHEMEROPTERA: HEPTAGENIIDAE)

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*Abstract.*—Nymphal and adult stages of a new species, *Stenonema sinclairi*, from Tennessee are described.

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A new species belonging to the mayfly genus *Stenonema* was found among two separate collections of mayflies from Sequatchie and Marion Counties, Tennessee.

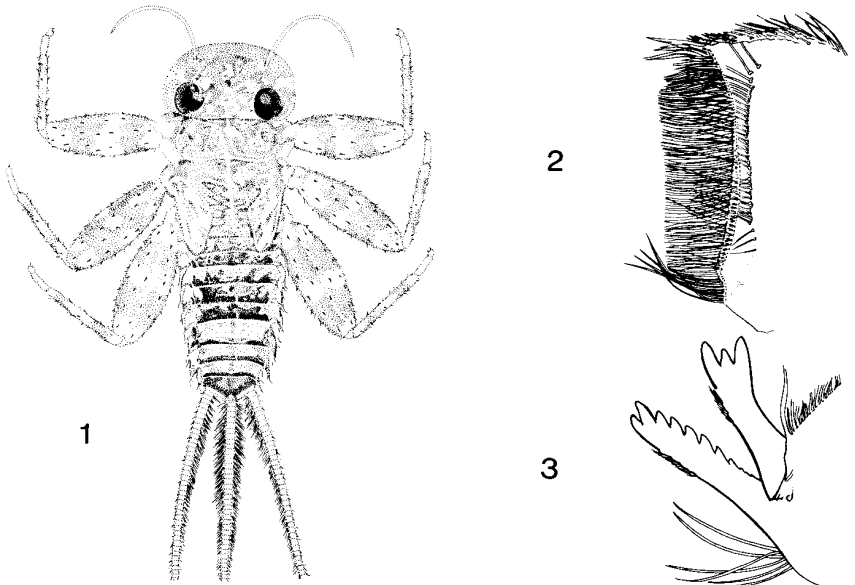
*Stenonema sinclairi* Lewis, NEW SPECIES

Nymph (Fig. 1).—Length of body, 10–12 mm.

*Head:* Brown with minute freckle-like white dots, often coalescing to form small spots anterior to eyes; white band running from anterolateral angle of each compound eye to lateral margin; area posterior to eyes mostly white; each ocellus surrounded by a large white spot. Scapes of antennae dusky, remainder of antennae light tan. Maxillae (Fig. 2) with armature on crowns consisting of 3 pectinate spines and 30–50 setae; ventral surface of galea-laciniae with 30–40 lateral setae. Mandibles (Fig. 3) with 8–10 teeth on inner margin of each outer canine; inner canine of right mandible with 3 sharp teeth on inner margin. Lacinia mobilis lanceolate, undivided at tip.

*Thorax:* Light brown with large white spots near anterior margin of pronotum and in center of mesonotum, lateral margins of pronotum entirely white. Femora white with 2 irregular brown bands across dorsal surface (when an apical brown band is also present the dorsal surface is predominantly brown); tibiae pale with basal and median brown bands present; tarsi brown in middle and pale at both ends; claws not pectinate.

*Abdomen:* Terga 1, 2, 4, 7, and 8 white with brown posterior margins; terga 5 and 9 about equally brown and white; and terga 3, 6, and 10 brown with a few white dots on meson and larger white spots at lateral margins (Fig. 1). Venter entirely pale on segments 1 to 7 except for occasional spec-



Figs. 1-3. *Stenonema sinclairi*, nymph. 1, Dorsal view. 2, Left maxilla, ventral view. 3, Left mandible.

imens with brown shading in sublateral and median areas at posterior margins of more posterior segments; sternum 9 with posterolateral angles brown (Fig. 4). Abdominal segments 3 to 9 produced as posterolateral spines. Gills 1 to 6 truncate at apices, each with brownish-purple tracheae; 7th gill with fringe of hairs, but without tracheae. Caudal filaments yellow tan with circle of strong spines at alternating joints; a row of setae only on mesal margin of each (Fig. 1).

Male imago.—*Length*: Body, 11 to 12 mm; fore wing, 11 mm; tails, 30 mm.

*Head*: Gray-brownish white in frontal portion below eyes; vertex dark brown, ocelli ringed with black at bases; pedicels of antennae tan, each flagellum purple in basal  $\frac{1}{2}$ , becoming white at tip.

*Thorax*: Light brown on pronotum, gradually darkening posteriorly so that mesoscutellum is dark brown; pleura tan with patches of dark brown pigment near base of each leg. Legs yellowish gray; brown median bands on each femur; fore tarsal ratio 3.5. Fore wings hyaline with light brown veins; cross veins about evenly spaced throughout the wing (not crowded in bulla area) (Fig. 5); white stain in costal and subcostal interspaces in stigmatic area. Hind wing hyaline with light brown cross veins.

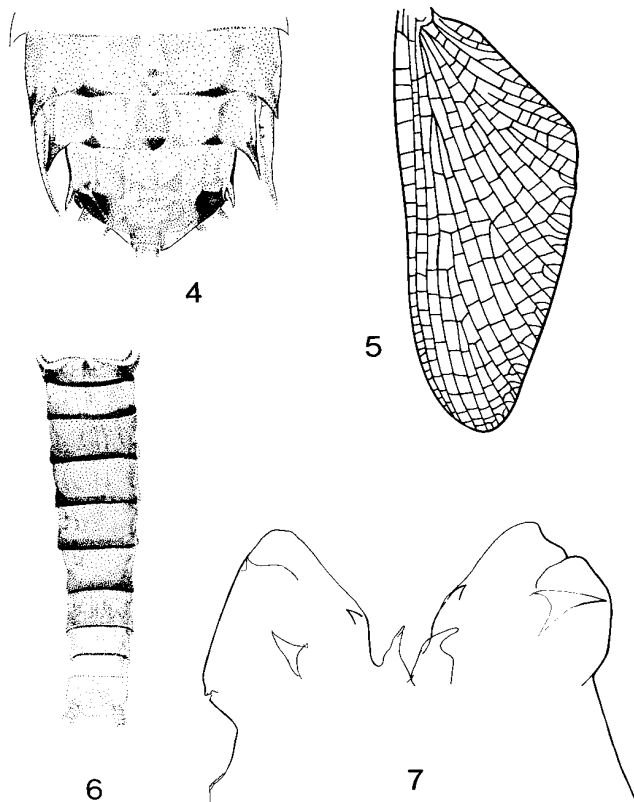


Fig. 4. *Stenonema sinclairi*, nymph, posterior sterna. Figs. 5-7. *Stenonema sinclairi*, male imago. 5, Fore wing. 6, Dorsal view of abdomen. 7, Genitalia.

**Abdomen:** Segments 1 to 8 rusty brown throughout (Fig. 6); terga 9 and 10 yellow brown; posterior margins of terga 1-8 with narrow black bands; no dark spiracular spots. Genitalia (Fig. 7) with large discal spine and small apical spine on each penis lobe; penis lobes not as boot-shaped as in most *Stenonema* species. Caudal filaments tan with reddish-brown joints; covered with short setae and fringed on mesial sides with long setae.

**Holotype.**—♂ imago; Spring Brook of Gladly Fork Creek, Sequatchie County, TENNESSEE 30-IV-76 (Reared 1-V-76); collected by R. Sinclair, Jr. and J. Rossman; deposited at U.S. National Museum of Natural History, Washington, D.C. (USNM Type no. 75942).

**Paratypes.**—♀ imago; same data as Holotype; deposited at National Mu-

seum of Natural History. Four nymphs; Glady Fork Creek, Bledsoe County, TENNESSEE 10-VII-75; collected by R. Sinclair, Jr.; deposited at Florida A&M University Museum, Tallahassee. One ♂ imago, 1 ♂ subimago, and 2 ♀ imagoes; Spring Brook of Glady Fork Creek, Saquatchie County, TENNESSEE 30-IV-76; collected by Ralph Sinclair, Jr. and Joe Rossman; deposited at Florida A&M University Museum.

Additional nymphs of this species were examined from Kellys Creek, Marion County, TENNESSEE (Collected 10-24-78 by Wendell L. Pennington).

Ecology and distribution.—The small streams from which the nymphs were collected flow through an area that was strip-mined many years ago. These soft-water streams are cold and slow-flowing with stream beds composed of smooth stones, cobble, and sand over underlying sandstone bedrock. At the times of collection the water temperature ranged from 13 to 26°C, the dissolved oxygen was between 6.0 and 9.0 ppm, the pH ranged from 5.5 to 7.8, and the alkalinity as CaCO<sub>3</sub> was less than 6 mg/l.

This species has been collected only from the very small tributaries of the Sequatchie River in Tennessee.

Discussion.—*Stenonema sinclairi* is closely related to *S. fuscum* Clemens and *S. pudicum* Hagen. The male imago keys to *S. fuscum* (couplet 24) and the nymph keys to *S. pudicum* (couplet 24) in Lewis (1974).

The fore tarsal ratio (3.5) of the male will separate *Stenonema sinclairi* from all other *Stenonema* except *S. vicarium* Walker. The characteristic penis lobes which are only slightly boot-shaped and the large discal spines distinguish this species from all other members of the *vicarium* complex (including *S. fuscum* and *S. pudicum*). Both males and females lack the crowded cross veins in the bulla region and the dark hind wing margins so characteristic of *S. pudicum* and *S. carlsoni* Lewis.

The nymph is separated from *S. pudicum* by having fewer than five pectinate spines on the crown of each maxilla compared to five to eight in *S. pudicum*. The absence of dark bands on the sterna of segments 4 to 8 also appears to be diagnostic. The nymph of *S. sinclairi* differs from *S. fuscum* in lacking dark posterior margins on sterna 2 to 8.

Etymology.—The name is in honor of Ralph Sinclair, Jr., who collected and reared the species during a water pollution study in Southeast Tennessee, and sent the type-material for examination.

#### ACKNOWLEDGMENTS

I wish to thank Ralph Sinclair, Jr., Tennessee Department of Health, and Wendell L. Pennington, Resources Consultants, for providing the reared specimens from which this species was described and for the data on distribution and ecology. The figures were drawn by Stephen E. Wilson from photographs provided by the author.

## LITERATURE CITED

- Lewis, P. A. 1974. Taxonomy and Ecology of *Stenonema* Mayflies (Heptageniidae: Ephemeroptera). United States Environmental Protection Agency, Environmental Monitoring Series, EPA-670/4-74-006, 81 p.

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81(2), 1979, p. 325

## NOTE

The Gender of *Nosopon* Hopkins (Mallophaga)

The genus *Nosopon* was erected by Hopkins in 1950 (Ann. Mag. Nat. Hist. (12) 3:239) with the sole species indicated as *Menopon* "fulvofasciatum var." *minor* Piaget. No new combination was made nor was a statement made regarding either gender or derivation of the generic name. A few authors have placed additional species in the genus. The latest of these is Price (1976. J. Kans. Entomol. Soc. 49:23-26) who describes a new species and includes four other species in his key to the genus; viz., *N. australiensis* Price, *N. casteli*, *N. chanabensis*, *N. clayae*, and *N. lucidum*, the latter four without citation of authors' names.

It seems evident that the generic name is analogous to *Menopon*, inasmuch as no other reasonable derivation for it can be found in lexicons. Erichson (*In* Agassiz. 1846. Nomenclator Zoologicus. Fasc. 9 & 10. Epi-zoa:1) derived *Menopon* from Greek *menos* 'force, strength' + *ōps* 'face, aspect.' The name therefore has a suffix or termination *-on* appended to it. This changes its gender from that of *ops* to neuter (Internatl. Code of Zool. Nomencl., Art. 30.a.i.3). *Nosopon* may be derived from Greek *nosos* 'disease, distress' + *ōps* + *on*. Inasmuch as *-on*, as used in these names, is generally associated with neuter gender, both *Menopon* and *Nosopon* should be considered of neuter gender, as the former generally has been. Two of the species of *Nosopon* bearing adjectival species epithets should be in the neuter form; viz., *N. chanabense* and *N. australiense*. *Nosopon lucidum* is correctly neuter, and the other two epithets are in the genitive case. The neuter form of the epithet *minor*, incidentally, is *minus*.

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