A NEW SPECIES OF *EPHEMERELLA* FROM WESTERN NORTH AMERICA (Ephemeroptera: Ephemerellidae)[1]

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ABSTRACT

Ephemerella alleni n. sp. is the eighth species in the subgenus *Ephemerella*, s.s., known from western North America. Descriptions of the mature nymph and characters for distinguishing the species are given.

The North American species of the mayfly genus *Ephemerella* recently have been revised with the subgenus *Ephemerella*, s.s., being treated in the final paper of eight published from 1959 to 1965, each treating one of the subgenera in North America (Allen and Edmunds, 1965 [with references to parts I to VII]). While this paper was in press the authors independently and almost simultaneously found the nymphs of an undescribed species of the subgenus *Ephemerella*, s.s., while studying mayfly collections from Idaho, Montana, and Wyoming. We take pleasure in naming this species for Dr. Richard K. Allen, California

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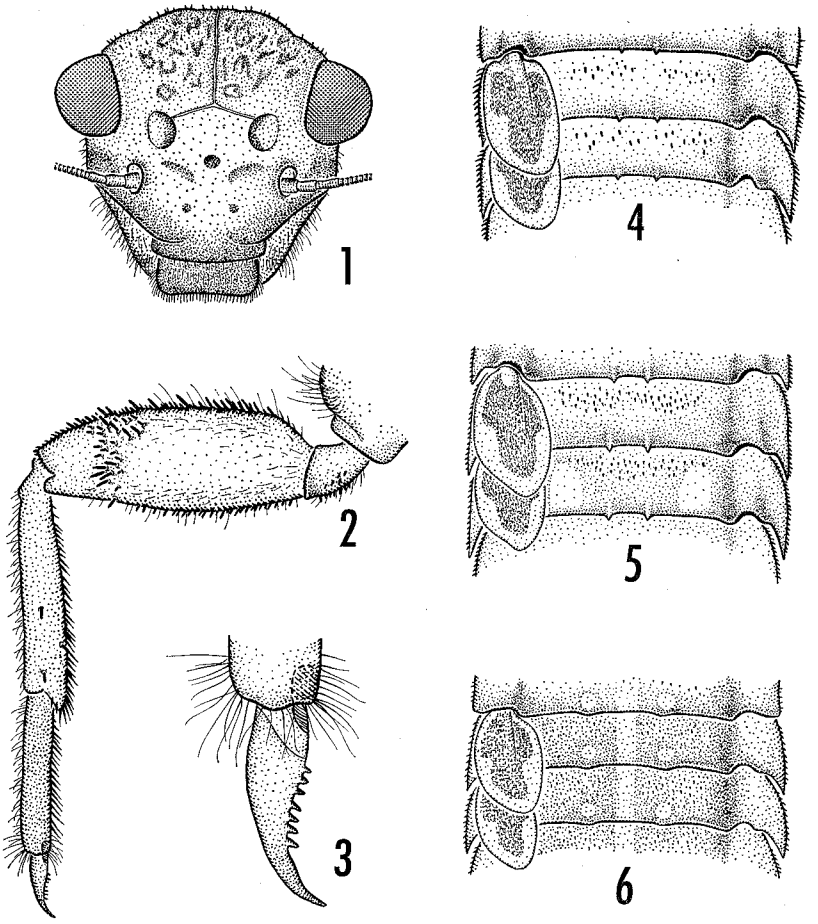
State College at Los Angeles, in recognition of his contribution as senior author of the revision of the North American species of the genus. We are appreciative of the personnel of the United States Forest Service for making the Idaho collections available to us, to Dr. Arden R. Gaufin of the University of Utah for the collections from Montana, and to Mr. Jay W. Richardson of the University of Utah for aid in collecting the Wyoming specimens.

Ephemerella (*Ephemerella*) *alleni* n. sp.

MATURE NYMPH (in alcohol). Length: body 9.5–11.5 mm; caudal filaments 9.0–10.5 mm. General color uniform dark brown. Head without distinct tubercles but with vertex irregular and spiculate; antennae brown, darker basally; head dark brown with darker brown vermiculate markings on vertex; frons with a pair of dark brown submedian dashes and a pair of submedian dots; clypeus and labrum dark brown with dark brown shading extending along ventral portion of genae (Fig. 1). Thorax without tubercles; thoracic notum rather uniform dark brown, slightly darker along lateral margins; thoracic sternum uniform brown; femora uniform light brown to brown with numerous spines; forefemora with a narrow subapical band of spines; tibiae and tarsi uniform light brown, unbanded, tarsi in some specimens slightly darker (Fig. 2); tarsal claws with 7–9 denticles, darker apically (Fig. 3). Abdominal terga with small, acute, paired submedian tubercles on segments 3–8, sometimes present also on segments 2 and 9 (Fig. 4); terga rather uniform dark brown, sometimes darker on segments 5–10; terga lightly spiculated; distinct posterolateral projections on segments 4–9, weakly produced or absent on segment 3 (Fig. 4); abdominal sterna brown, sterna 2–8 usually with paired sublateral dark brown maculae and dark brown anteromedian spots and oblique dashes. Caudal filaments dark brown at base, light brown apically; whorls of spines at apex of each segment the entire length of the filaments and with long, sparse intersegmental setae.

Holotype: Mature female nymph. Opal Creek at jct. Panther Creek, 18 mi. W. Cobalt, Salmon National Forest, Lemhi County, Idaho, 12-VII-1964, I. R. Thornton (U.S.F.S.), in collection of University of Utah, Salt Lake City. Paratopotype: 1 mature female nymph, same data as holotype. Paratypes: 3 mature female nymphs, small creek at Rising Sun Point, Glacier National Park, Montana, 6-VII-1963, A. R. Gaufin, in collection of University of Utah; 5 mature female nymphs, small creek at Rising Sun Point, Glacier National Park, Montana, 2-VII-1965, R. K. Allen, in personal collection of Richard K. Allen, California State College, Los Angeles; 5 mature female nymphs, Lava Creek, 4 mi. E. Mammoth Hot Springs, Yellowstone National Park, Wyoming, 26-VI-1964, S. L. Jensen and J. W. Richardson, 2 nymphs in collection of University of Idaho, Moscow, 1 nymph in collection of



FIGS. 1–4. *Ephemerella alleni*, mature female nymph, paratype: 1, front view of head; 2, right foreleg, 3, tarsal claw of right foreleg; 4, abdominal terga 4 and 5. FIG. 5. *E. verruca*, mature female nymph, paratype, abdominal terga 4 and 5. FIG. 6. *E. inermis*, mature female nymph, abdominal terga 4 and 5.

California Academy of Science, San Francisco, and 2 nymphs in collection of University of Utah.

Remarks. Ephemerella alleni is the eighth species in the subgenus *Ephemerella*, s.s., known to occur in western North America and appears to be most closely related to *E. verruca* Allen and Edmunds by the nature of the paired dorsal abdominal tubercles.

In the key to the nymphs of the subgenus *Ephemerella*, s.s., (Allen and Edmunds, 1965:249), *E. alleni* would seemingly come to an impasse

in couplet 2. The first half of the couplet reads ". . . if small [abdominal] tubercles are present . . . , postero-lateral projections present on segment 3 . . ." which then refers to couplet 3 which separates *E. verruca* and *E. aurivillii* (Bengtsson). While the paired abdominal tubercles of *E. alleni* (Fig. 4) are only slightly less developed than those of *E. verruca* (Fig. 5), the posterolateral projections on abdominal segment 3 of *E. alleni* are only weakly produced or absent (Fig. 4). The alternate choice in couplet 2 reads ". . . if small [abdominal] tubercles are present, postero-lateral projections are absent on segment 3 . . ." which then refers to couplet 4 and ensuing couplets which separate *E. mollitia* Seeman, *E. maculata* Traver, *E. inermis* Eaton, *E. infrequens* McDunnough, and *E. lacustris* Allen and Edmunds. The "small tubercles" referred to in this portion of the couplet are those sometimes found on *E. inermis* which, when present, are actually undulations or protuberances on the posterior margins of the terga (Fig. 6) and are not acute as are those found on *E. alleni* (Fig. 4).

If *E. alleni* is keyed to couplet 3 it is easily distinguished from *E. verruca* by lacking tubercles on the vertex of the head (Fig. 1) and by abdominal segment 3 having the posterolateral projections only weakly produced or absent (Fig. 4), and from *E. aurivillii* in the shape and position of the paired dorsal abdominal tubercles. If *E. alleni* is keyed to couplet 4 and ensuing couplets, it may be distinguished from *E. mollitia, E. maculata, E. inermis, E. infrequens,* and *E. lacustris* by having acute paired abdominal tubercles on terga 3 to 8 (Fig. 4), unbanded tibiae and tarsi (Fig. 2), and rather uniform brown coloration.

Biology. Little is known about the biology of this species. The Wyoming and Montana specimens were collected in small, moderately swift streams above elevations of 5,000 feet with sample summer daytime temperatures of 48° F. The nymphs were found in water 6 to 18 inches deep among rocks and gravel.

LITERATURE CITED

Allen, R. K., and G. F. Edmunds, Jr. 1965. A revision of the genus *Ephemerella* (Ephemeroptera: Ephemerellidae). VIII. The subgenus *Ephemerella* in North America. Misc. Pub. Entomol. Soc. Amer. 4:244–82, 81 figs.