

**Description of the Imagines
of *Ephemerella verruca* Allen and Edmunds
(Ephemeroptera: Ephemerellidae)¹**

by

Françoise HARPER and Charles P. HAWKINS

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The imagines of *Ephemerella verruca* Allen and Edmunds are described and the taxonomic relation of males to other species of the genus is discussed. Brief notes on the species' natural history are included.

F. HARPER, Département de Sciences Biologiques, Université de Montréal, C.P. 6128, Montréal, Québec, H3C 3J7, Canada.
Ch. P. HAWKINS, Department of Entomology, Oregon State University, Corvallis, Oregon 97331, USA.

*Ephemerella** *verruca* was described from larvae collected from Mary's Peak, the highest summit in the Oregon Coast Range and has not yet been reported elsewhere (Allen and Edmunds, 1965; Allen, 1968). Larvae and subimagines collected during the summer of 1980 were successfully reared in the laboratory, and a description can now be provided of the imagines.

Male imago (in alcohol)

Length: body 10-11 mm; forewing 11-13 mm. Upper portion of compound eye reddish brown, lower portion gray. Fore leg dark brown, femur paler than other segments (one specimen with all segments of fore leg dark tan); fore femur 2.0 mm, fore tibia 3.1 mm; tarsus I 0.2 mm, tarsus II 1.5 mm, tarsis III 1.5 mm, tarsus IV 1.1 mm, tarsus V 0.4 mm; middle and hind legs cream colored, tarsal segments more grayish. Wings hyaline with longitudinal veins dark brown; cross veins and intercalaries paler brown, wing attachment milky white. Thoracic notum blackish brown, pale markings along lateral margin of mesonotum. Abdominal terga dark reddish brown, with a darker median longitudinal line; a dark blotch on lateral margin of each tergite around spiracular opening (may not be evident in very dark specimens); tergites 8 and 9 with distinct posterolateral projections; pleural fold of abdomen pale yellowish; abdominal sterna 1-7 translucent, lighter brown than

1. Technical paper No. 5718, Oregon Agricultural Experiment Station.

**Ephemerella* s.s. as recognized by Allen (1980).

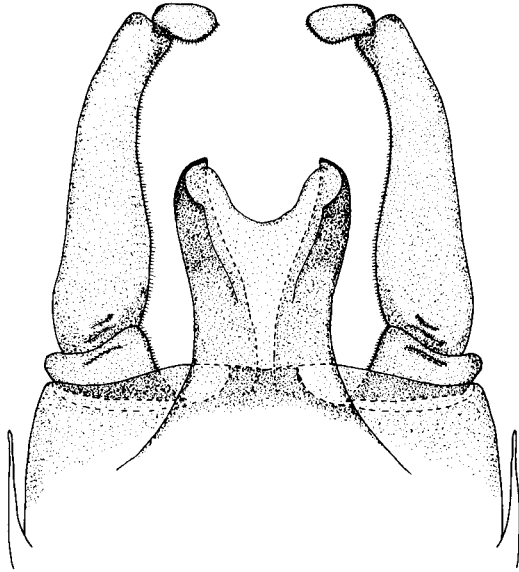


Fig. 1. Dorsal view of the male genitalia of *Ephemera verruca*.

terga; posterior sternites opaque, darker brown laterally but with diffuse blotch of alabaster white medially. Penes the *invaria*-type (lobes short, only a shallow notch between them), but without spines; lateral margin rounded; second segment genital forceps the *inermis*-type, i.e. without apical expansions (Fig. 1). Caudal filaments brown, darker basally.

Female imago (in alcohol)

Length: body 10-11 mm; forewing 11-13 mm. Head largely alabaster white, vertex dark brown. Legs cream colored, fore legs darker. Thoracic notum olive gray or light tan. Abdominal terga dark brown; posterior margin of tergite 7 with alabaster white; tergites 8-10 largely alabaster white; abdominal sternites dark brown, sternites 7-9 washed with alabaster white.

Descriptions are based on the examination of 5♂ imagines and 5♀ imagines reared either from larvae or from subimagines. All specimens were collected from Parker Creek on Mary's Peak, Benton Co., Oregon: 1♂ and 1♀ were reared from larvae and emerged April 18, 1980; 2♂ and 4♀ were reared from larvae collected June 28, 1980; 2♂ were reared from subimagines collected June 28, 1980; 3♂ and 5♀ subimagines were also collected on June 28, 1980, but failed to moult into imagines.

Imagines have been deposited in the following collections: Oregon State University, Corvallis (2♂, 2♀); the Université de Montréal, Montréal, Québec (2♂, 2♀); California Academy of Sciences, San Francisco (1♂, 1♀).

TAXONOMY

On the basis of the larvae, Allen and Edmunds (1965) suggested that *E. verruca* may be a relative of *E. aurivillii* (Bengtsson). Examination of the imagines indicates, however, that its penes are of the *invaria*-type, but they are completely devoid of the usual spines. The absence of spines is also known in the western species *E. maculata* Traver and *E. altana* Allen and in the eastern *E. needhami* McDunnough. The penes of *E. catawba* Traver, an Appalachian species, are usually without spines.

Ephemerella verruca differs from the two above-mentioned western species by the shape of the genitalia; indeed, *E. altana* is of the *needhami*-type (i.e. penis lobes long with deep apical notch) and *E. maculata* belongs to a category of its own (Allen and Edmunds, 1965). Notwithstanding the absence of spines, *E. verruca* is reminiscent, among western species, of *E. inermis* Eaton and *E. lacustris* Allen and Edmunds by the shapes of the penes and the forceps; both species are smaller however. *Ephemerella lacustris* is exclusively a lake dweller, and the length of its penes relative to that of the forceps appears much greater than in *E. verruca* (from Allen and Edmund's drawing). *Ephemerella inermis* is much paler and its ninth sternite is more produced than in *E. verruca*.

The following key will serve to separate *E. verruca* from other western *Ephemerella*; it is modified from Allen (1968) and should be used in conjunction with his key and figures.

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|---|--------------------|
| 1. Penes without spines | 2A |
| —Penes with spines | 3 (in Allen's key) |
| 2A. (1) Abdominal sterna 2-7 with brown, notched, rectangular markings; apex each penis lobe flat; second segment genital forceps bowed | <i>maculata</i> |
| —Abdominal sterna without notched rectangular markings; penis lobes not flattened apically; second segment genital forceps not bowed | 2B |
| 2B (2A) Penes the <i>needhami</i> -type; penis lobes divergent apically, each lobe with a round apical protuberance encased in sheath; second segment genital forceps strongly incurved at apex | <i>altana</i> |
| —Penes the <i>invaria</i> -type; penis lobes convergent apically, with lateral margins rounded; second segment genital forceps rather straight | <i>verruca</i> |

BIOLOGY AND DISTRIBUTION

Larvae of *E. verruca* inhabit a short marshy spring area near the headwaters of Parker creek on Mary's Peak (elevation = 1250 m). Larvae are most abundant in submerged and decomposing mats of grass within the marshy section and appear to feed on both coarse and fine particulate detritus. No specimens of either imagines or larvae were found from higher gradient reaches either up or downstream from this particular stretch. Other sections of the stream have cobble or rubble substrates and lack large accumulations of detritus.

This species is now known to occur in streams other than those on Mary's Peak. G. W. Courtney (Oregon State University) has collected larvae from a tributary of Flynn Creek approximately 26 km west of Mary's Peak (elevation = 230 m) and

from Wolf Creek, a stream in the Oregon Cascade range about 100 km SE of Corvallis (elevation = 730 m). Larvae from these sites also were collected from marshy areas with abundant vegetation.

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