



## TAENIONEMA JEANAE, A NEW SPECIES OF STONEFLY FROM SOUTHERN CALIFORNIA (PLECOPTERA: TAENIOPTERYGIDAE)

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### ABSTRACT

*Taenionema jeanae* sp. n. is described from Silverado Canyon, Orange County, California. The new species was compared with the *Taenionema* species that occur in western North America, and was found to be most similar to *T. californicum* (Needham and Claassen).

**Keywords:** Plecoptera, Taeniopterygidae, *Taenionema*, new species, California, USA

### INTRODUCTION

The Holarctic stonefly genus *Taenionema* was revised recently (Stanger and Baumann 1993). Twelve species were recognized from North America and one from eastern Asia. A single pair collected in Silverado Canyon, Orange County, California was discovered near the end of this study that could have represented an undescribed species. However, since this male and female were the only specimens known, a decision about this question was deferred until additional specimens could be obtained. Finally in 2005 a good series of adults was collected in Silverado Canyon by Eugene Drake. These specimens were made available to the authors by Kenneth Stewart, who knew about the question. Consequently, after studying this material, a new species of *Taenionema* is now being described in honor of Jean Stanger Leavitt.

Descriptions are based on a composite of specimens that were available for study. Morphological terminology follows that used in Stanger and Baumann (1993). The holotype of *T. californicum* (Needham and Claassen) was borrowed from the Illinois Natural History Survey so that the identity could be confirmed for comparison with the

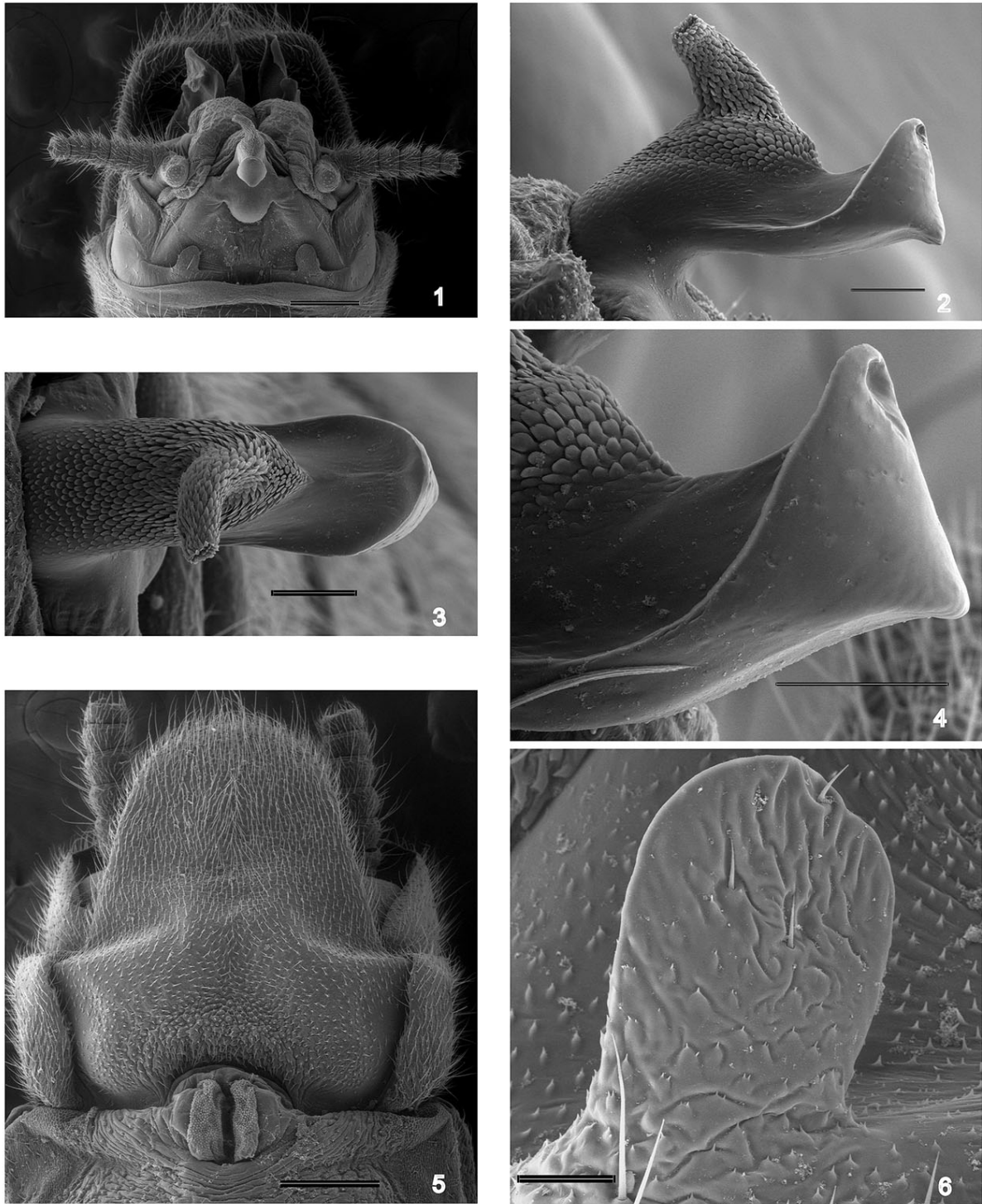
new species. The SEM micrographs were taken using a Philips XL30 ESEM FEG microscope.

### RESULTS AND DISCUSSION

*Taenionema jeanae* sp. n.  
(Figs. 1-6)

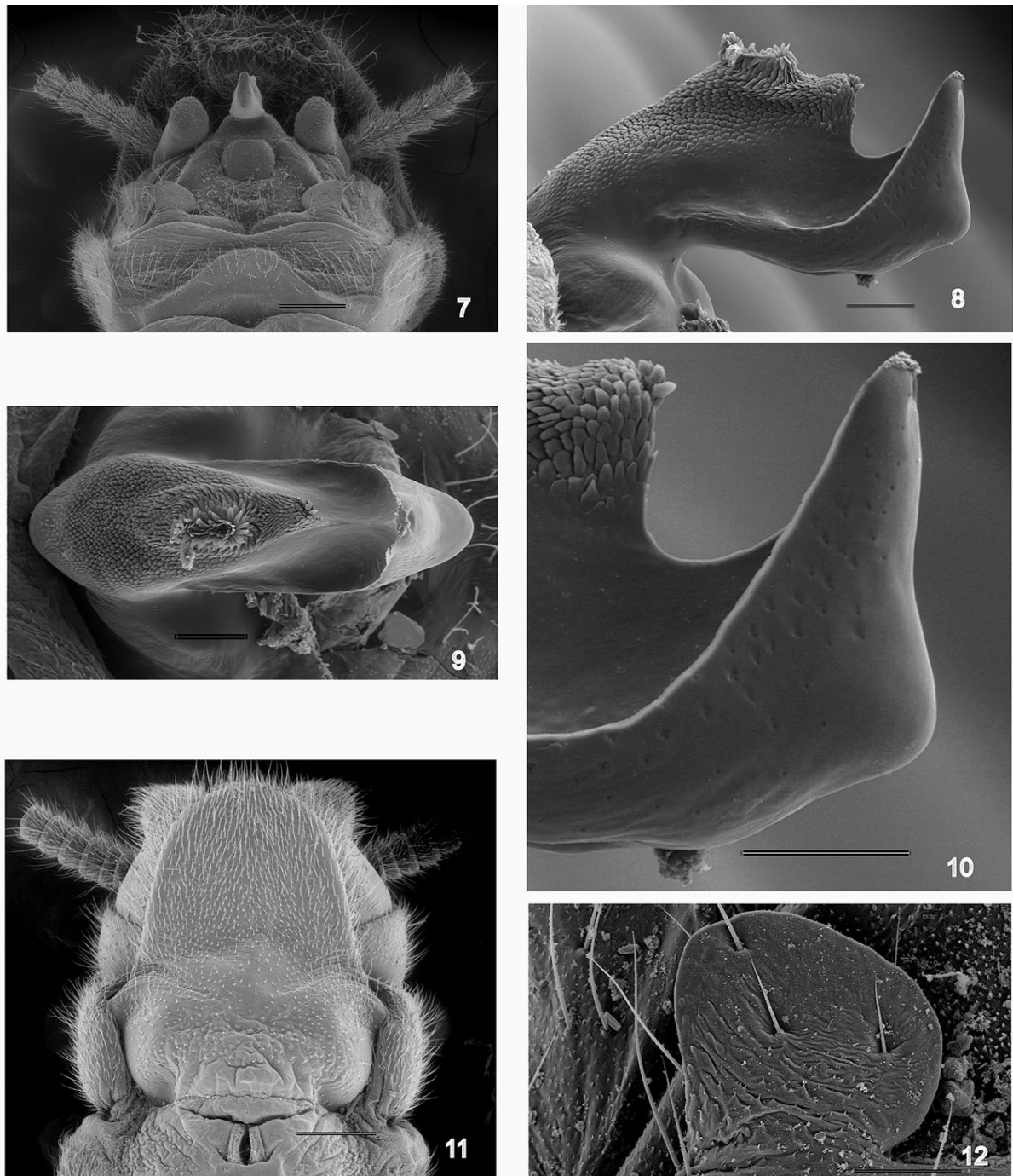
**Material examined.** Holotype ♂ and paratype ♀ from California, Orange Co., Silverado Creek, 0.5 miles below Silverado Library, Silverado Canyon, 18 February 1985, D.C. McClain, deposited at the California Academy of Sciences. Additional paratypes: California: Orange Co., Silverado Creek, 100 m above "fire gate", N 33° 45' W 117° 35', 9 February 2005, E.F. Drake, 1 ♂, 1 ♀; Silverado Creek, at end of county road, at USFS gate, Silverado Canyon, N 33° 45' W 117° 35', 25 March 2005, E.F. Drake, 62 ♂, 16 ♀ (BYUC) Brigham Young University Collection, Provo, Utah and (KWSC) Kenneth Stewart Collection, Denton, Texas.

**Adult habitus.** General color brown, head and pronotum brown, with multiple dark rugosities, abdominal sterna light brown. Wings transparent with brown veins, legs light brown ventrally, with dark bands on tibia at junction of femur.



Figures 1-6. *Taenionema jeanae*, new species, Silverado Creek, Orange County, California. 1. male terminalia, dorsal view, scale 200  $\mu\text{m}$ , 2. male epiproct lateral view, scale 50  $\mu\text{m}$ , 3. male epiproct dorsal view, apex to right, scale 50  $\mu\text{m}$ , 4. male epiproct terminal detail, lateral view, scale 50  $\mu\text{m}$ , 5. female terminalia, ventral view, scale 200  $\mu\text{m}$ , 6. male right lobe of tergum 10, scale 25  $\mu\text{m}$ .





Figures 7-12. *Taenionema californicum* (Needham & Claassen), Arroyo Mocho, Alameda County, California. 7. male terminalia, dorsal view, scale 200  $\mu\text{m}$ , 8. male epiproct lateral view, scale 50  $\mu\text{m}$ , 9. male epiproct dorsal view, apex to right, scale 50  $\mu\text{m}$ , 10. male epiproct terminal detail, lateral view, scale 50  $\mu\text{m}$ , 11. female terminalia, ventral view, scale 200  $\mu\text{m}$ , 12. male right lobe of tergum 10, scale 25  $\mu\text{m}$ .

**Male.** Macropterous. Forewing length 7.5-8.5 mm, length of body 6.0-7.0 mm. Tergum 8 slightly

expanded posteriorly, with dark, thin triangular pattern medially; posterior margin lightly colored

(Fig. 1). Lobes on tergum 10 moderately produced, elongate, nearly parallel sided, with outer margin longer, inner margin rounded, sloping toward mid line of tergum (Fig. 6). Epiproct with dorsal scales on basal two thirds of length and on dorsal extrusion. Apex sclerotized, short and stout, upper member rounded, tip open dorsally, with indentation ventrally below apex, lower member directed downward, forming concave area near apex, outline of ventrolateral aspect nearly straight (Figs. 2-4). Basicercal processes directed upwards, lightly sclerotized, bearing many hairs, slightly pointed at apex. Sternum 9 rounded ventrally, somewhat truncate apically (Fig. 1).

**Female.** Macropterous. Forewing length 9.0-10.0 mm, length of body 7.0-8.5 mm. Sternum 9 moderately produced and broadly rounded apically. Margin of sternum 8 above ovipore nearly straight, lightly sclerotized, ovipore large, with distinct lateral bars at opening (Fig. 5).

**Etymology.** We are pleased to name this *Taenionema* species after Jean Stanger Leavitt. Jean studied the genus for her M.S. thesis (Stanger 1982), which resulted in a revision of *Taenionema* (Stanger and Baumann 1993). Additionally, we would like to honor Jean for the many excellent illustrations of stoneflies (Plecoptera) that she has produced over the past twenty plus years.

**Diagnosis.** *Taenionema jeanae* is most similar to *T. californicum*. The epiproct differs in the following ways. In dorsal view, the apex is pointed in *T. californicum*, and a cavity occurs below the tip (Fig. 9), while in *T. jeanae* the apex is broadly rounded (Fig. 3), with the apical area open. Laterally, the apex is large, with a definite upwardly directed process nearly one-half the anterior face height, and the ventral margin is convex with a prominent protruding boss at one-half its length in *T. californicum* (Figs. 8, 10), while in *T. jeanae* the apex is smaller, with a short dorsal process about one-third the anterior base height, and a small ventral process, with a pointed apex about one-third its length, while the ventral margin is almost straight, but concave apically (Figs. 2, 4). The lobes on tergum 10 are somewhat rounded with a narrow base in *T. californicum* (Figs. 7, 12), while in *T. jeanae* they are more elongate, nearly parallel sided, with a broader base (Figs. 1, 6). The females are not separable without associated males, however, figures of the

female genitalia are provided for comparison: *T. jeanae* (Fig. 5) and *T. californicum* (Fig. 11).

**Remarks.** *Taenionema jeanae* is presently known only from Silverado Canyon in southern California. The type locality of *T. californicum* is Palo Alto, Santa Clara County, California (Needham and Claassen 1925), but it is recorded from several counties in Stanger and Baumann (1993), mostly from sites in central and northern California. However, an in depth study should be done of the specimens available, using a scanning electron microscope, so better decisions can be made regarding the specific status of other populations.

#### ACKNOWLEDGEMENTS

Thanks are given to David McClain, American Fork, Utah for collecting the original specimens in 1985 that started this study. Kenneth Stewart, University of North Texas searched for more specimens and enlisted the help of Eugene Drake, University of California, Riverside who finally collected a series of specimens that enabled us to describe this interesting species. Richard Hoebeke loaned us the *T. californicum* holotype and allotype from the Cornell University Collection. Mary Thomas, U.S. Forest Service, Trabuco Ranger District, Corona, California issued Administrative Pass #2004-050262-1446 to allow fieldwork leading to this publication. Michael Standing of the Brigham Young University, Electron Microscope Laboratory, helped produce the photographs used in the plates.

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