



## ***PARACAPNIA HUMBOLDTA* (PLECOPTERA: CAPNIIDAE), A NEW WINTER STONEFLY FROM NORTHERN CALIFORNIA, U.S.A.**

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### **ABSTRACT**

*Paracapnia humboldta*, n.sp., is described from specimens collected at Mason Gulch in the Coast Range of northern California. The new species is compared to the three named species that occur in the Pacific coastal states.

**Keywords:** Plecoptera, Capniidae, *Paracapnia*, new species, California

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### **INTRODUCTION**

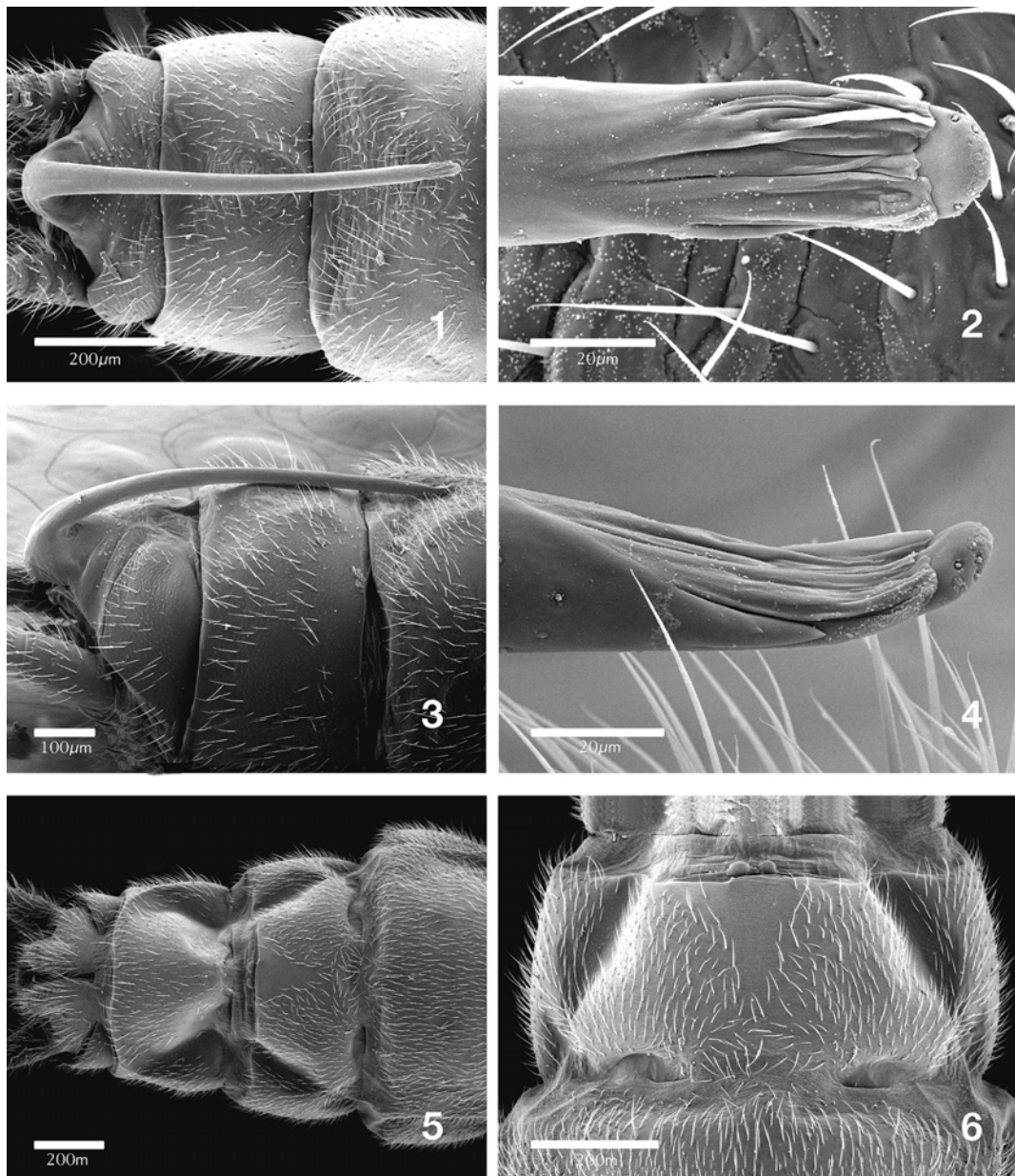
The winter stonefly genus *Paracapnia* was reviewed by Stark and Baumann (2004). The three Palearctic species were noted and the five Nearctic species were studied in detail. *Paracapnia boris* Stark and Baumann, was described as new from northern California. Thus, it was a pleasant surprise when an additional new species was discovered in 2007 from the region. Since the genus *Paracapnia* was revised so recently, it was easy to see that these specimens represented a taxon not previously described. This paper provides the description and compares the new species with the three presently recognized species that occur in the Pacific coastal states of the United States.

This new stonefly has only been found in Mason Gulch, Humboldt County, California. Mason Gulch Creek, a second order stream flowing from the north, runs under State Highway 299 at mile marker 29.68 and immediately into the upper portion of Willow Creek. Specimens were collected at the mouth of Mason Gulch and upstream about a hundred meters. Elevation along this stretch of creek is approximately

800 meters. Wilkinson (1986), in a study of the spring emergence of stoneflies in the Willow Creek drainage, noted Mason Gulch had the lowest pH (5.4-5.6) of his study sites. Primary riparian vegetation in the lower section of Mason Gulch includes (from Wilkinson 1986): *Alnus rubra*, *Salix* sp., *Rubus* sp., and *Pseudotsuga menziesii*. The aquatic moss, *Fontinalis antipyretica*, is common in the creek.

If only female individuals were known, it could be difficult to separate them from *P. disala* (Jewett), which occurs in coastal California and Oregon. However, the females of these two species can be differentiated by examining the length of the light band on the abdominal terga. The male is quite distinctive and easy to recognize by the epiproct shape.

The holotype male will be deposited at the California Academy of Sciences, San Francisco, California, and paratype specimens will be placed in the following collections: Bill P. Stark Collection, Mississippi College, Clinton, MS; Brigham Young University Collection, Provo, UT; California Academy of Sciences Collection, San Francisco, CA;



Figs. 1-6. *Paracapnia humboldta*: 1. Male terminalia, epiproct, dorsal. 2. Epiproct tip, dorsal. 3. Male terminalia, epiproct, lateral. 4. Epiproct tip, lateral. 5. Female terminalia, ventral. 6. Female subgenital plate, ventral.

C.P. Gillette Collection, Colorado State University, Fort Collins, CO, and Jonathan Lee Collection, Eureka, CA.

*Paracapnia humboldta* sp.n.  
(Figs. 1-6)

**Material examined.** Holotype ♂ from California,

Humboldt County, Mason Gulch Creek, January 20, 2007, J.J. Lee. Type deposited at the California Academy of Sciences, San Francisco, California. Paratypes: California, Humboldt Co., Mason Gulch Creek, Hwy 299, mile 29.68, near junction Willow Creek, 19 Jan. 2007, J.J. Lee, 5♂ 1♀; 20 Jan. 2007, J.J. Lee, 23♂ 12♀; 1 Feb. 2007, J.J. Lee, 4♂ 1♀; 14 Feb. 2007, J.J. Lee, 10♂ 9♀; 23 Mar. 2007, J.J. Lee, 1♀.

**Male.** Apterous. Body length 4.5-5.5 mm. Body and appendages dark brown, with light areas laterally at junction of terga and sterna and between segments, light areas medially on terga 7, 8 and 9. Epiproct recurved anteriorly over terminal abdominal segments, long and very thin, width similar from base to apex, extending almost to tergum 7 (Figs. 1, 3); tip rounded dorsally and slightly upturned laterally, bearing elongate feather-like structures (Figs 2, 4); curve of epiproct nearly flat laterally, slightly turned to the left dorsally, near apex (Figs. 1, 3). Cerci long, composed of 10-14 segments.

**Female.** Apterous. Body length 6.0-7.0 mm. Body and appendages dark brown, with light areas at junction of segments and in pleural space, with broad, light membranous band dorsally extending from abdominal segments 2-7. Subgenital plate large and well defined, extending to posterior border of sternum 8, broadly rounded to truncate, sometimes with a tiny median point, with triangle shaped hairless area medially (Figs 5, 6). Cerci long, composed of 14-16 segments.

**Etymology.** The species name is taken from Humboldt County, California where this species occurs.

**Diagnosis.** The male of *P. humboldta* has the narrowest epiproct of any known species in the genus. It is equally wide from base to apex and slightly upturned at the tip. In addition, it always turns slightly to the left near the apex. Only *P. boris* has an epiproct that turns up at the apex, however, it is much wider both dorsally and laterally. The feather-like projections occur only very near the apex of the epiproct in *P. humboldta* while they extend to nearly 1/3 the length of the apex in both *P. disala* and *P. ensicala* (Jewett). Females of *P. humboldta* exhibit a wide dorsal abdominal band that only extends to segment 7. This makes it possible to separate the females of this species from the other Nearctic *Paracapnia* species since their band extends to segment 8 as it does in the genus *Capnia*. Generally the females of *P. disala* and *P. ensicala* can be hard to distinguish in the absence of males. However, *P. humboldta* can be separated from them by the above character and also from the females of the odd species *C. fialai* Nelson and Baumann, which occurs in the Willow Creek drainage (Nelson and Baumann 1990).

**Notes.** *Paracapaia disala* is recorded in the revision of the genus *Paracapnia* by Stark and Baumann (2004) as

occurring only in Benton and Lane County, Oregon. However, recent collecting of winter stoneflies in Humboldt County, California, by the second author, has shown that this species is common in northwestern California. The following are records from five sites: Red Mountain Creek at rd. 10 N 12, 23 November 2005, 12♂ 11♀; 24 February 2006, 36♂ 50♀. Slide Creek at rd. 13 N 01, 14 December 2005, 9♂ 17♀; 23 January 2006, 8♂ 11♀. Upper Willow Creek drainage, Hwy 299: stream, mile 31.23, 7 February 2006, 4♂ 11♀; stream, mile 31.33, 14 February 2007, 10♂ 7♀; stream, mile 32.23, 7 February 2006, 4♀. In addition, 4♀ specimens were collected at Del Norte Co., tributary Middle Fork Smith River, 10 miles upstream from Jedediah Smith State Park, 12 March 1994, G.R. Fiala, that probably belong to this species.

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