

TWO NEW MAYFLIES FROM THE PACIFIC COAST

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During the months of June and July, 1936, the author collected ephemerids in the San Joaquin Valley. Two species were especially plentiful. A *Hexagenia*, the first member of this genus to be reported from any of the Western States, was collected in large numbers around lights over a period of ten days or two weeks, after which only an occasional lone specimen was found. A species of *Callibaëtis*, however, could be found in fair numbers around lights throughout the summer.

These two species, belonging to the families Ephemeridæ and Bætidæ respectively, are here described for the first time. I wish to acknowledge the invaluable assistance given me by Dr. Jay R. Traver of Cornell University who so kindly compared these specimens with closely related species and added much to the descriptions as they finally stand.

Hexagenia californica Upholt, new species

A yellow species, marked prominently with reddish-brown; outer margin of hind wing usually dark-bordered; ventral triangles attain anterior margin. Size: Male, body 17-20 mm., wing 17 mm., caudal filaments 47-50 mm.; female, body 20-25 mm., wing 18-22 mm., caudal filaments 25-35 mm.

Male: Head yellowish; eyes yellow above. Pronotum pale yellow with two dorsal dark red-brown stripes on either side of median line; dark reddish-brown spot between fore coxæ. Terga and pleura of meso- and meta-thorax pale yellow except for the reddish-brown lateral margin of mesoscutum, reddish-brown tip of mesoscutellum, and a reddish-brown streak extending from the base of the wing antero-ventrally through the pleurotrochantin. Meso- and meta-sternum reddish-brown, grading to yellow marginally. Fore legs dark red-brown, the femora lighter than tibiæ and tarsi. Middle and hind legs yellow with a greenish tinge; claws, distal tarsal segments except at base, and joints of other tarsal segments light purplish-brown. Wings hyaline, the costal margins tinged with reddish-brown; veins piceous, many cross veins margined with reddish-brown. Outer margin of hind wing usually with a prominent reddish-brown border. Abdominal tergites pale yellow, suffused with red except medially and on lateral

margins. Dark Indian-red brown streaks medianly and on each tergite from antero-lateral margin to posterior border medianly. Abdominal sternites pale yellow except for a reddish-brown triangle that extends to the anterior margin. Genitalia reddish-brown, second segment of forceps yellowish basally. Penes more or less hook-like, similar to those of *occulta* Walker. Caudal filaments pale reddish-brown, distinctly darker at joints.

Female: Very similar to male but much lighter in color, sometimes being nearly white. Wings occasionally all yellow with very little brown pigmentation. Fore legs rather uniformly reddish-brown, much shorter than in the male. Larger in size but with shorter caudal filaments.

Egg masses large, pale yellow-orange.

Holotype: (Dried male imago) No. 4350, Calif. Acad. Sci. Ent., taken June 30, 1936, at Kingsburg, Fresno County, California, by Upholt. Allotype: (Dried female imago) No. 4351, C. A. S. Ent., and a series of paratypes as follows: (In alcohol) 2 male subimagoes, 21 female imagoes; (dried) 1 male subimago, 15 female imagoes, and 3 female subimagoes, June 23-July 6, 1936; same locality as holotype; in the collection of the California Academy of Sciences, J. R. Traver, and the author.

This species may be distinguished from *occulta* Walker by its paler color generally and by numerous differences in the color pattern of the thorax. In color this species more nearly approaches *marilandica* Traver from which it differs in its larger size, in having the outer margins of hind wings margined, and in the ventral abdominal triangles which attain the anterior margin.

Callibaetis traveræ Upholt, new species

Male yellowish white marked with brown; female pale reddish-yellow; cross veins intermediate in number; marginal intercalaries single; wings of male unpigmented; vitta of female wing discontinuous. Size: Male, body 5.5-7 mm., wing 7 mm., caudal filament 10 mm. or more. Female, body 6-7 mm., wing 8 mm., caudal filaments 10 mm. or more.

Male: Head and thorax deep Van Dyke brown; sclerites margined in pale brown; pleura somewhat lighter in color than notum. (In alcoholic specimens, this difference between notum and pleura is more pronounced, both being much lighter and with more of a yellow tinge; also groups of two or three reddish-brown dots are present on the pleura just above each leg and below each wing

base). Eyes deep brown, lower half piceous. (Upper half of eyes yellow in alcoholic specimens). Legs white with very faint indications of brown preapical bands on femora; tarsal claws and joints brown (legs entirely white except for an occasional brown tarsal joint in alcoholic specimens). Abdominal tergites very pale brownish-white with a broad longitudinal median brown band interrupted by a narrow median pale line; also narrow submarginal brown streaks (not always present in alcoholic specimens). Sternites entirely white except for irregular submedian brown streaks. (In alcoholic material especially, the sternites and lateral aspects of the tergites are very similar in color, being nearly white). Forceps white; caudal filaments white except for very faint tinge of reddish-brown at base and a tendency toward yellowish joints.

Female: Head brownish-red (white, in alcoholic specimens, with reddish marks above the antennæ and at the back of the head). Eyes piceous. Body uniformly testaceous speckled with reddish-brown, except for deeper brown areas dorsally. (In alcoholic specimens, the body is entirely white except for a broad median pale smoky-brown band extending the length of the dorsum and with a paler median line as in the male). Legs similar to body in basic color, minutely irrorated with dull brown and with a line of larger brown spots along the front surface of femora; fore femora each with a thin brown line extending most of its length on the posterior surface; (in alcoholic specimens, legs entirely white without these brown spots and lines); tarsal joints deeper brown; claws black. Wings hyaline; longitudinal veins intermittently brown and white; cross veins all white, intermediate in number (about 30-35 behind Radius I). Vitta extremely variable but always discontinuous and very irregular; pale, smoky-brown except where it contacts longitudinal veins basally; in these spots it is deep brown; hyaline spots in costal and subcostal spaces numerous to dominant; vitta broader basally. Caudal filaments reddish-yellow, slightly deeper at base.

Holotype: (Dried male imago) No. 4352, C. A. S. Ent., July, 1936; Kingsburg, Fresno County, California, Upholt, collector. Allotype: (Dried female imago) No. 4353, C. A. S. Ent., and the following series of paratypes: (Alcoholic) 5 male imagoes, 10 female imagoes, (dried) 11 male imagoes, 15 female imagoes. Same data as holotype, in collection of California Academy of Sciences, J. R. Traver, and the author.

This species may be distinguished from *fluctuans* Walsh by its more reddish-yellow color and more plentiful cross veins. It is probably very close to *montanus* Eaton but differs markedly in the discontinuous nature of the vitta and in the coloring and number of cross veins. Dr. Traver has doubtfully associated a

specimen in her collection from San Angelo, Texas, with this species. I take great pleasure in naming this species for Dr. Jay R. Traver, of Cornell University, in appreciation of the kind and invaluable assistance and encouragement she has given me throughout my brief study of western ephemerids.

A NEW RACE OF PLEBEIUS SCUDDERII

BY FRANK CLAY CROSS

Plebeius scudderii ricei Cross, subsp. nov.

Expand: 28 to 29 mm. Holotype, male; upper side of wings, purplish blue with a greenish cast when viewed aslant. Fringes white with a narrow, dark brown, or blackish band bounding them inwardly. Allotype, female; upper side of wings, brown with a coppery glint. Fringes and marginal band as of the male. Two very faint and ill defined yellowish crescents on the secondaries, near the anal angle.

On the under side the wings of both sexes are a dusty, whitish gray. The submarginal yellow crescents, typical of *scudderii*, are either obsolescent or entirely absent in most specimens. Among twelve types on which the race is founded, four lack these crescents entirely, five have them very faintly discernible, and only three have them in more conspicuous evidence. The discal and basal black spots on the secondaries are usually very small, or sometimes, like the crescents, altogether lacking, leaving the wing immaculate. The spots on the forewings, however, are always present though much reduced in size.

This race of *scudderii* is obviously quite variable, but the predominant form tends to lose all its markings. Among seven females, three have no crescents at all discernible on the upper side of the secondaries (both wings are a uniform brown); three others exhibit them very faintly; and only one shows them at all clearly.

The twelve type specimens were taken in August, 1936, in the vicinity of Big Cultus Lake, Oregon, by Mr. Harold E. Rice, of Eugene, for whom the race is named. Holotype, allotype and eight paratypes in the author's collection in the Colorado Museum of Natural History; two paratypes go to the California Academy of Sciences.