

SOME MEXICAN AND COSTA RICAN MAYFLIES

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Campsurus cuspidatus Eaton

Campsurus cuspidatus Eaton, 1871, Trans. Ent. Soc. London 1871: 58, Pl. 3, fig. 12. Eaton, 1883, Revisional Monograph: 40, Pl. 5, fig. 8. Ulmer, 1942, Stett. Ent. Zeit. 103: 113-114, figs. 19 and 20.

Three male and two female specimens of a species of *Campsurus* which is probably *C. cuspidatus* were taken at Palitla, San Luis Potosi, Mexico, on Dec. 19, 1940 (A. Carr). These were sent to me by Dr. Lewis Berner to whom one male and one female specimen have been returned, the others remaining in my personal collection. Only males of this species have hitherto been known. Eaton's very brief description is as follows: "Imago (dried), ♂. Pronotum mouse-grey, tinged slightly with greenish. Abdomen smoky-white above, yellowish-white beneath. Wings transparent, whitish throughout. Length of body 10.5, wing 11 mm. Hab. Guatemala (De Selys-Longchamps Mus.). This species is easily recognizable by the cuspidate outline of the subgenital plate". Since Ulmer's more detailed redescription (1942) does not coincide in all points with the Mexican form, it seems well to present a short account of the latter. Differences in coloration may be due to the manner in which the specimens have been preserved, those from Mexico being in alcohol. However, the mode of preservation does not affect venational features, such as the position of MP_2 of the fore wing in relation to CuA . Of the type specimens, Ulmer says: " M_2 scheint aus Cu_1 zu entspringen", etc. This feature is shown in his Fig. 19a. Venation of the hind wings corresponds well with Ulmer's figure, but in only one of the ten wings of the Mexican forms does MP_2 of the fore wing seem to arise from CuA basally. Rather, in nine of these wings MP_2 ends parallel to CuA , slightly nearer to CuA than to the MP intercalary, connected by cross veins to each of these. In this respect, the Mexican specimens resemble *latipennis* Walker, while in the type specimens this feature is similar to *albifilum* Walker, as shown in Ulmer's figure. As Traver has indicated (1947), the relationship between MP_2 and CuA is not as constant within a species as Needham and Murphy

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(1924) believed it to be, nor is this feature always correlated with presence or absence of a prothoracic hump. Such a hump *is* present in the types of *cuspidatus*, presumably (Ulmer says: "Pronotum sehr verlängert"), likewise in the Mexican specimens.

Male imago (Mexico): Body 10–10.5 mm.; fore wing 11 mm. Head purplish black above; eyes black; ocelli ivory white, bases black; basal segments of antenna yellowish with considerable grayish shading, filament pale.

Pronotal hump extends over posterior margin of head. Pronotum grayish in mid-area, median line narrowly darker; yellow laterally in posterior half, this area partially divided by a narrow dark submedian line; narrow blackish lines along lateral margin of hump and laterad of the yellow area; two dark transverse dashes on posterior margin, one each side of median line. Anterior margin of prosternum brownish. Meso- and metanota yellowish brown, joinings of sclerites narrowly brownish; some gray shading just anterior to mesonotal scutellum. Two oblique brown streaks anterior to fore wing, on pleura; antero-lateral margin of mesonotum brown. Pleura and sternum concolorous with mesonotum.

Fore legs grayish above, purplish streak at base; femur paler ventrally except at margins, yellowish area near base; black spot at base of tibia; tarsal joinings pale.

Wings white. In fore wing, humeral cross vein, C, Sc and R purplish brown, these longitudinals somewhat paler distally; other longitudinals as far as MP_2 faintly colored; other veins pale. In hind wing, humeral cross vein and basal third of Sc purplish brown. Venation as in Fig. 1.

Background of abdominal tergites yellow, apicals tinged with orange; pale median line. Gray submedian streak on each middle tergite, rather irregular; continued posteriorly on 3 and 4 at right angles toward pleural fold, on 5–8 extending obliquely toward antero-lateral angle; in angle between oblique and submedian streaks a pale oval area enclosing a gray spot. On tergites 1 and 2 a gray somewhat triangular blotch each side of median line. Posterior margins of 9 and 10 narrowly dark brown, dark submedian lines on each; narrow dark dashes on 8 along pleural fold. Sternites pale yellow: lateral patches deeper yellow; ganglionic areas whitish. Tails white. Genitalia pale yellow; see Figs. 3, 6, 7 and 9 for shape of these in different aspects.

Female imago: Body 11 mm.; fore wing 15 mm. Head and thorax much as in male. Fore legs darker in color, blackish brown. Fore wing with veins more conspicuous because darker in color; costal margin definitely tinged with purplish brown; both longi-

tudinal and cross veins as far back as CuA brownish basally and in disc of wing, paler toward outer margin; hind wing much as in male. Abdomen deep yellow except that apical tergites are pale reddish brown. Tergites quite widely black on posterior margins, less pronounced on 1 and 2 which are heavily shaded with dark gray in middle area, leaving paler lateral portions and a pale transverse streak surrounded by gray on tergite 2. Pale median line faintly indicated on middle tergites. Sternites unmarked; subanal plate narrowly black on apical margin. Tails whitish.

Dr. Berner says of the area in which these Mexican specimens were collected: "Five miles north of Tomazunchale at Palitla, San Luis Potosi. A small swift to moderate clear stream with a rock strewn bottom. Abundant green filamentous algae. Mayflies abundant in swift reaches. Stream flowing through tropical terrain; ferns, orchids, bromeliads, vines abundant".

Traverella presidiana (Traver)

Thraulius presidianus Traver, 1934, J. Elisha Mitchell Sci. Soc. 50: 199-200. Traver, 1935, *In Biology of Mayflies*: 555; figs. 146 and 147.

Traverella presidiana (Traver), Edmunds, 1948, Proc. Biol. Soc. Wash. 61: 143.

Two male imagos and one female imago of the genus *Traverella* are among specimens sent to me by Dr. Berner. Although there are certain minor differences between these males and the holotype of the above species, I believe that these three specimens should be placed in *presidiana*. *T. presidiana* was described from a single male taken at Presidio, Texas, the specimen lacking both middle and hind legs as well as genital forceps. The female has not been described. Additional notes on this species are therefore desirable. It will be noted by comparison of the new figure of the genitalia with that of the holotype given in *Biology of Mayflies* that the slender processes dependent from the penes were evidently distorted in the holotype specimen; in both of the recently acquired males these processes are straight, not S-shaped. Additional notes are drawn from these two males.

Cross veins in fore wing of male somewhat more numerous than in the holotype, especially in the apical portion; here also are 10-12 very faint costal cross veins before the bulla, not indicated for the holotype. A comparison of Fig. 4 of this paper with Fig. 147 in *Biology of Mayflies* shows that more cross veins are present in the hind wing also, although the number and arrangement of these varies somewhat in the wings of the two Mexican males. A slight

sexual dimorphism in the hind wing is seen here, as indicated in Figs. 4 and 5; wing of female longer and relatively narrower, the stem of Rs much shorter than in male, area beyond fork longer and narrower. A similar dimorphism occurs in *T. ehrhardti* but is not noticeable in *T. albertana*.

Male imago: Body 7 mm.; fore wing 8 mm.; fore leg 8 mm. Upper portion of eyes large, oval to round, contiguous apically, deep orange in color, concealing most of head and part of pronotum. Thorax rather dark reddish brown. Black lateral and posterior margins on pronotum; black submedian streaks. Mesonotal shield outlined in black; pale median and submedian lines; scutellum likewise black-margined but not itself black. Black lines above bases of middle and hind legs. Basal segments of all legs dark reddish brown. All femora light yellowish to reddish brown, with rather wide blackish median and apical bands which are least well defined on the fore femur and most prominent on the third. Fore tibia very pale reddish brown, knee darker; second and third tibiae yellowish, knees faintly brown-shaded. All tarsi pale yellowish. Fore tarsal segments range in order of length as 1, 5, 4, 3, the latter subequal to 2. Basal portion of forewing red-tinged; longitudinal veins pale amber, deeper in color near base, more distinct than cross veins; stigmatic areas of costal and subcostal spaces with fine granulations. Hind wing very faintly red-tinged at extreme base only; C, Sc and R₁ amber from base to costal angulation, likewise cross veins in this area. Middle abdominal segments pale yellowish, translucent, venter slightly deeper yellow than dorsum; apical segments opaque, reddish brown. Tergite 1 dark gray, likewise posterior half of 2; posterior $\frac{3}{4}$ of tergites 6 and 7 paler gray. All tergites narrowly dark gray on posterior margins. Pale mid-dorsal streak on all tergites. Anterior margin of tergite 8 narrowly pale. Small grayish spots or blotches on tergites 3-7 above pleural fold, seeming to extend upward and forward from dark posterior margins; faint on 3 and 4, more pronounced on 5-7. Pleural fold margined with reddish brown. Ganglionic area pale; joinings of sternites likewise pale. Forceps whitish; basal joint narrowed near middle, somewhat bowed at this point; apical joint narrower than second. Genitalia as in Figs. 2 and 8. Tails yellowish white, narrowly ringed with reddish in basal portions.

Female imago: Body 7 mm.; fore wing 8 mm. Head yellowish; oblique brown band on vertex extending from middle ocellus to bases of lateral ocelli. Pronotum marbled with blackish, these markings consisting of an oblique submedian streak from posterior margin to end of a dark band halfway between mid-line and

lateral margin, and dark areas along anterior border; lateral, postero-lateral and middle of posterior margin narrowly edged with black. Large pale area on pleura anterior to fore wing base. Wings, legs and remainder of thorax essentially as in male. Abdomen very similar to that of male except for grayish shading occupying most of median area of each tergite, leaving the following areas pale: wide band above pleural fold; antero- and postero-lateral triangles; anterior margins of middle tergites; and mid-dorsal line. On middle tergites, this median pale line is widened into a triangle with base on anterior margin; on all tergites, bounded by grayish submedian streaks. Subanal plate shaded with reddish brown, its apical margin not as deeply notched medially as in the female of *albertana* McD.; indeed, the emargination is so slight as to be barely noticeable. This female specimen I designate as the *allotype* of the species.

Male and female specimens, as described above, taken at Rio Guayalejo, Tamaulipas Province, Mexico, Dec. 22, 1939, by Dr. Lewis Berner. One male in collection of L. Berner; other male and female in private collection of J. R. Traver.

Of the locality in which the specimens were collected, Dr. Berner writes: "Guayalejo River . . . near village of Magiscatzin where river crosses Tampico road. Broad (200-300 feet), deep. Slowly flowing in deeper areas . . . Upstream $\frac{1}{4}$ mile, river widens and becomes shallow to form rapids; here are many large rocks. . . . Mayflies here were extremely abundant."

Traverella primana (Eaton)

Thraulius primanus Eaton, 1892, Ephemerae in *Biologia Centrali-Americana* 38: 7, fig. 7. Kimmins, 1934, *Ann. Mag. Nat. Hist.* Ser. 10, 14: 342, fig. 5. Travers, 1947, *Rev. de Entomologia* 18(1, 2): 149-150, figs. 2-4.

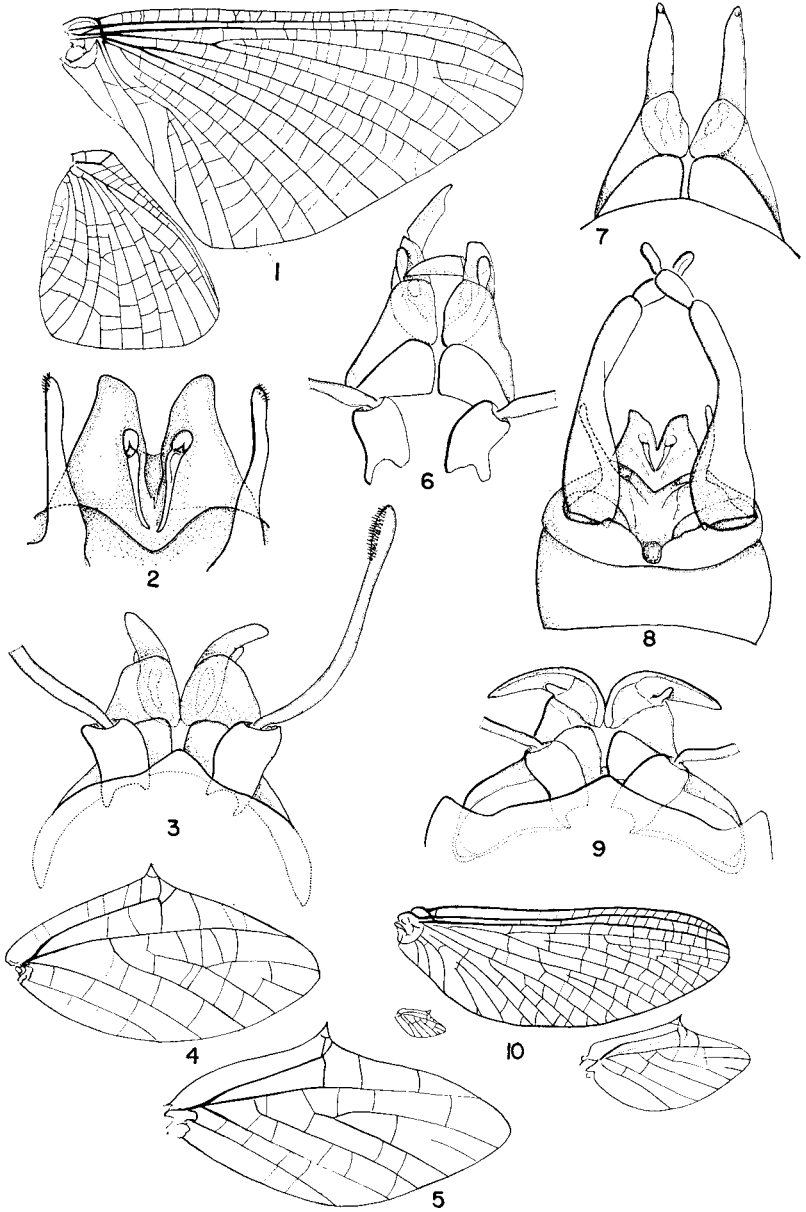
Traverella primanus (Eaton), Edmunds, 1950, *Rev. de Entomologia* 21(3): 551, figs. 2a, 2b.

Eaton has three specimens from Mexico: two males from Vera Cruz, and a female doubtfully referred to the same species from

EXPLANATION OF PLATE

Fig. 1, *Campsurus cuspidatus*, wings, male. Fig. 2, *Traverella presidiana*, penes, enlarged. Figs. 3, 6, 7 and 9, *Campsurus cuspidatus*, different views of male genitalia. Fig. 4, *Traverella presidiana*, hind wing, male. Fig. 5, same, hind wing, female. Fig. 8, same, male genitalia. Fig. 10, *Traverella primana*, wings.

TRAYER



Tabasco. He figured the hind wings of one male and of one female. Kimmins selected one of Eaton's males as the type, added a few notes on the species, and figured the subanal plate of the female. Edmunds published figures of fore and hind wings of the type male, from sketches prepared for him by Kimmins. Traver had four males from Costa Rica which were referred to *primana*; these showed some slight differences in size and coloration from Eaton's description; hind wing and genitalia were figured. A comparison of the wings of these Costa Rican specimens with the figures of the type male indicates that the former do not differ materially from the latter. It is therefore very probable that the Costa Rican specimens are *primana*, and that the figures of the genitalia published for these specimens should be considered representative of the species, unless and until other specimens are collected which seem closer to Eaton's description. Fig. 10 shows venation of fore and hind wings of one of these Costa Rican males for comparison with Edmunds' figures of the type.

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ERRATUM

The name of one species of *Leptohypes* occurring north of the Amazon River was inadvertently omitted from the summary of the previous part of this series. This species is *L. mithras* Traver (1958, Ann. Ent. Soc. America 51: 497). Recognition characters are as follows: Head and thorax reddish brown, purplish brown bands on abdominal tergites; fore claws of male similar, blunt; tails yellowish; wings with relatively few cross veins; hind wings present in *both* sexes; *no membranous processes* from scutellum.