

NEW WESTERN EPHEMEROPTERA II¹

VELMA KNOX MAYO

*Nickel Plate, British Columbia**Ephemerella pelosa* Mayo, new species

(figures 6, 7)

Nymph (figs. 6, 7). Dark brown species with yellow markings. No tubercles, but long hairs on head, thorax and abdomen. *Head* yellow with brown vertex and brown stripe along midline the entire length of face. Antennae yellow at base, tinged with light brown distally. Line of hairs on anterior surface of basal segment of antennae. Long, dense fringe of hairs on genae from eyes to mouthparts. No frontal shelf. Hairs also on occiput. Maxillary palp present. *Prothorax* dark brown along posterior margin and medially, antero-lateral angles and two thirds of lateral margin yellow. Long white hairs on either side of midline. Mesonotum dark brown with yellow markings (see fig. 6). Long, fine white hairs on either side of midline on entire thorax. Unsclerotised areas on pleuron and ventral surface smoky. Sclerites yellowish brown. *Legs* yellow with two wide brown stripes on upper surfaces of femora, and along anterior border of tibiae and tarsi. Posterior surfaces of femora washed with brown in basal two thirds. Small spines along posterior borders of fore tibiae and all tarsi. Claws with three small spines. *Legs* with heavy fringe of hairs on upper surfaces of all segments; note arrangement of hairs on upper surface of all femora (fig. 6). Abdominal tergites very dark brown, tergite 8 yellowish along lateral posterior margins. Instead of bearing tubercles, tergites have paired tufts of hair on posterior margins. They resemble little whisk brooms with about twenty coarse hairs in a tuft. The hairs are longer than the distance between tufts. Tufts are further apart on segments 1-2 (those on 1 covered by wing pads); about equidistant on segments 3-6, closer together on 7-8 and on 9 they are close to midline. Long hairs along entire midline on 10th segment. Traces of light spots above tufts on segments 5-7; laterally on segments 8-9. Lateral posterior border of segment 10 yellow. *Tails* yellow with one distinct brown band on each, near base; brown spines in whorls at joinings of segments. *Tails* with long fringe of hairs on anterior surface. Gills present on abdominal segments 3-7. No spines on posterior-lateral angles on tergites. Abdominal sternites yellowish-brown basally, dark brown towards the tail. As in *E. doddsi* Needham, there is an adhesive disc formed of hairs on the ventral surface. The entire sternites 3-8 are covered with long, white hairs (fig. 7). These radiate from a point at the midline on the posterior border of segments 3-7, and those on segment 8 all grow from the anterior border. Length: body 8 mm., tails 8 mm.

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Holotype, nymph (in alcohol), NORTH FORK CREEK above BASS LAKE, FRESNO COUNTY, CALIFORNIA, June 15, 1934. Altitude 3,300 ft. Collected by P. R. Needham and party. Type in the California Academy of Sciences.

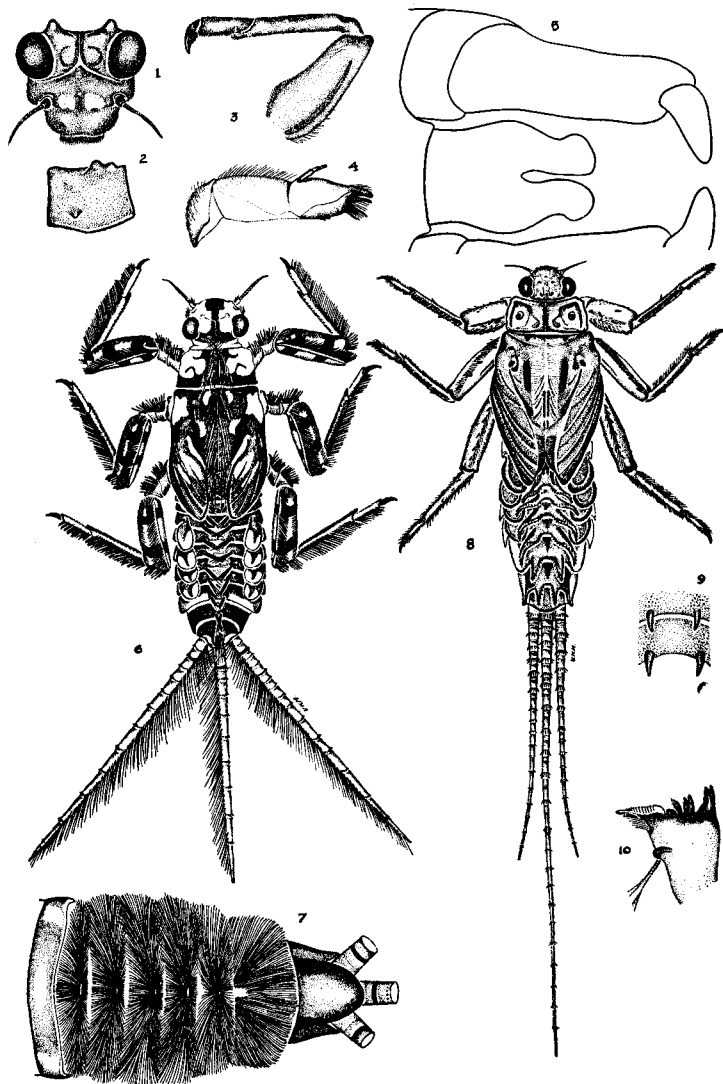
Ephemerella pelosa n. sp. appears to be unique in having hairs and tufts in place of tubercles. It resembles *E. doddsi* in but one characteristic, that of the adhesive disc.

Ephemerella spinosa Mayo, new species

(figure 8)

Nymph (fig. 8). Color dark brown, lighter in immature specimens. Pattern on head and thorax as in figure. No tubercles on head or thorax. Legs yellowish brown. Fore femora with six or eight coarse spicules on posterior margin and upper surface. Middle and hind femora with coarse spicules and fringe of hairs along posterior margin. All tibiae with several spicules medially and at tarsal joinings. Fringe of hairs on fore tibiae and double fringe on middle and hind tibiae. All tarsi with regular row of spines along anterior margin. Claws with 8 or 10 denticles. All joinings dark brown; distal portion of tarsi and claws dark brown. Abdomen conspicuous with prominent spines on tergites 2-9. Those on 2 very close together and straight. Those on 3 farther apart and directed slightly outward. On segments 4-7 they are widely divergent and increase in size to rearward. They are directed both laterally and posteriorly, the tips curved as in fig. 8. Each spine bears a row of coarse spicules from the base on posterior margin, obliquely curving out to the anterior surface of the tip (fig. 8). On segments 8-9 the spines are stout but much shorter and straight, directed but slightly outward, those on 9 shorter than those on 8. The tergites are light brown with dark patches extending from the anterior margins, forming triangles along the midline and dark areas under each gill. All abdominal sternites marked with prominent dark lateral triangles which are connected medially along anterior border. Ganglionic area brown on sternites 1, 6, 7; most prominent on 7. Tails yellowish-brown, each ringed near the base with a dark brown band. Posteriorly each segment of tails with whorl of prominent brown spicules. Outer tails not quite $\frac{2}{3}$ length middle tail. Length of body: 7 mm.; of middle tail, 11 mm.

Holotype, nymph (in alcohol), SOUTH FORK BISHOP CREEK, INYO COUNTY, CALIFORNIA, altitude 9,500 ft., July 4, 1938. Collected by the writer. Paratypes, two specimens, one same locality, June 25, 1934; collected by P. R. Needham and party; one Big Pine Creek, altitude 8,100 ft., Inyo County, California, July 2, 1939; collected by the writer. Holotype in the California Academy of Sciences, paratypes in the collection of the writer.



Figs. 1-5, *Ephemerella* species number 1: fig. 1, head of nymph; fig. 2, lateral view pronotum of nymph; fig. 3, foreleg of nymph; fig. 4, maxilla of nymph; fig. 5, male genitalia of subimago. Fig. 6, nymph of *Ephemerella pelosa*. Fig. 7, ventral view of abdomen showing adhesive disc of nymph of *Ephemerella pelosa*. Fig. 8, nymph of *Ephemerella spinosa*. Fig. 9, abdominal tergites 7-8 of nymph of *Ephemerella* species number 1. Fig. 10, mandible of nymph of *Ephemerella* species number 1.

E. spinosa n. sp. is a member of the Needhami Group, and is closely related to *E. hystrix* Traver, from Montana. Dr. Needham kindly compared *spinosa* with the type of *E. hystrix* Traver and states that "*spinosa* is relatively broader in form of body, and there appears to be a distinct difference in the form of the dorsal spines of the abdomen. In *E. hystrix* Traver they are straight and nearly smooth." In *spinosa* they are distinctly curved and bear prominent spicules their entire length. Gills darkened in *spinosa*, pale in *hystrix* Traver. In McDunnough's description of *hystrix* Traver (Can. Ent., 67:98) he states that the outer tails are only "slightly shorter than median one, being about $4/5$ its length." In *spinosa* the outer tails are less than $2/3$ length of median.

EPHEMERELLA SPECIES NUMBER 1

(figures 1-5, 9, 10)

Male subimago (fig. 5). Abdomen reddish, thorax pale. Anterior margin of pronotum with a V-shaped notch at midline, and posterior margin curved to fit mesoscutum; pale medially, dark brown laterally with a mottled pattern. Mesoscutum creamy with dark brown along lateral sutures and at wing bases. Prescutum dark brown. Pleural sclerites dark brown; unsclerotised areas creamy. Wing veins brown. All femora yellow basally, dark red in apical half. Fore tibiae narrowly yellow along anterior surface, dark red elsewhere. Middle and hind tibiae yellow; all tarsi yellow. Black streak at joinings of tibiae and tarsi, and narrowly black at tarsal joinings. Claws dissimilar. Abdominal tergites with a wide red area along midline which is paler medially, dark red laterally, banded by yellow on either side. Lateral to the yellow bands are red patches; pleural fold is yellow. The abdominal sternites are more uniformly red, with the lateral margins yellow. At the anterior margin of sternites 1-8 are pale oblique streaks, one on either side of midline. Posterior margin of sternite 9 dark reddish brown. Forceps yellowish, penes pale, lyre-shaped. Tails dark red basally, yellow distally, covered with very fine dark hairs. Length: body 11 mm., wing about 14 mm.

Nymph (figs. 1-4, 9, 10). Very dark uniform brown. Tubercles present, but short and blunt. The pronotum with a pair of blunt twin tubercles, the posterior of these much shorter. About midway between these is a wart-like tubercle on either side of midline. Anterior to this group and near lateral margin of pronotum is a sharper tubercle, one on either side. Prosternum with tubercle directed towards head. Ridge along anterior margin of mesonotum but no real tubercles except a slight elevation on scutellum. The mesonotum is roughened and covered with minute dark brown spicules. No teeth on fore femora (fig. 3). Femora brown, tibiae and tarsi yellowish-brown, marked in basal portion of each segment with blackish. Claws dark red with six denticles. Abdominal tergites with

paired spines on segments 2-9. These are wider apart than the length of the spines; on segments 2 and 9 they are slightly closer together than on other segments. All spines practically equal in size, those on 8-9 being but slightly stouter. The spines and tergites sprinkled with minute, dark spicules such as are present on thorax. All tergites evenly colored reddish brown. Gills present on segments 3-7. Tails reddish brown basally, alternating with yellow in outer two thirds. Ventrally the markings of the subimago show through abdominal sternites as two oblique streaks from anterior margin. Laterally is a faint streak on each sternite. Lateral abdominal angles well developed. Length: body, 10 mm.

Male subimago (in alcohol), Cottonwood Creek near Oasis Ranch, California, Mono County line close to California-Nevada boundary, altitude 5,100 ft., June 11, 1939; collected by the writer. Specimens in the collection of the California Academy of Sciences and in that of the writer.

Nymphal material same data; twenty-three specimens.

Ephemerella species number 1 is very closely allied to *E. grandis* Eaton. In the subimago of *E. grandis* Eaton the fore legs are longer than those of *E. species number 1*. The forceps are similar, but the penes are of different shape (see fig. 5). Those of *E. grandis* Eaton more slender, narrower midway between base and tips. In *E. species number 1* there is a widening on either side, midway between base and tips, suggesting the shape of a lyre.

In the nymphs the prothoracic tubercles of *E. grandis* are slightly larger than those of *E. species number 1*. The wart-like tubercles close to the twin tubercles in *grandis* are laterad; in *E. species number 1* they are median. The maculation of the abdominal segments is not similar in the two species.

REFERENCES

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