

ON THE LIFE HISTORY OF *PARAMELETUS*
COLUMBIAE MCDUNNOUGH
(EPHEMEROPTERA)

George F. Edmunds, Jr.
University of Utah

THE five known species of the mayfly genus *Parameletus* occupy limited ranges in Norway, Sweden, Finland, and Canada. One of these, *Parameletus columbiae* McDunnough, is found in the western United States reaching its known southern limits at Brighton, Utah, at an elevation of 8700 feet. The nymphs of this species are found in ponds and pond-like situations on the edges of lakes in association with heavy growth of broad-leaved species of *Carex*. Although the nymphs are found scattered throughout such ponds and lake margins, they are often concentrated where there is a slight current.

The life history of this species is of extreme interest because of the abbreviated nymphal life. The shortest reported period of nymphal development for any mayfly is that a species of *Callibaetis* completes its nymphal life within six weeks (Needham and Lloyd 1930). In 1951 the writer observed the approximate length of the nymphal life of *Parameletus columbiae* after his 1950 observations had led him to suspect that the nymphal life was brief.

On a visit to Silver Lake at Brighton, May 19, 1951, the lake was frozen over except at the outlet. No mayfly nymphs were collected here even though a bolting-silk net was used. On May 26, the lake was still frozen, but there were a few small melted spots near some bushes in Silver Lake swamp. By means of a bolting-silk net, a few first and second instar nymphs of *Parameletus columbiae* were collected from this open water. By June 4, all the snow and ice had melted around the lake, and nymphs of *Parameletus* averaging five to six millimeters in length were abundant in the swamp. These nymphs were eight or less days old. At a nearby pool in the forest the ice had started to melt, but no nymphs were found. Six days later this forest pool was swarming with nymphs four to five millimeters long.

Nymphs from the Silver Lake swamp and the nearby forest pool were transferred to the laboratory on June 4. Those from the swamp emerged as subimagos on June 15 to 18, and those from

the forest pool emerged June 20 to 26. By June 16 the nymphs in Silver Lake swamp had emerged, except for a few in the cold waters at the edge of Silver Lake.

The eggs of *Parameletus columbiae* are deposited in the swamps and pools in mid-June. The eggs remain dormant during the summer and winter, and then hatch within one day after the snow melts the next May. The nymphs grow rapidly in the rather warm pools that during the middle of the day may have temperatures exceeding air temperatures. Within six days, the nymphs are four to five millimeters long, and within eight days they are five to six millimeters long. The nymphal life is complete within 16 to 22 days or less. The nymph crawls out of the water one or two inches onto a *Carex* leaf, and the subimago emerges and flies high into a tree. Imagines were not observed in the field, so the time and nature of the nuptial flight are unknown.

LITERATURE CITED

- Needham, J. G. and J. T. Lloyd. The life of inland waters. 2nd ed. Springfield, 1930. 438 p.