

SCIENTIFIC NOTE

**FIRST NEARCTIC RECORDS OF *TEMPISQUITONEURA*
(DIPTERA: CHIRONOMIDAE: ORTHOCLADIINAE)
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Aquatic macroinvertebrates are increasingly being used as biological indicators of water and habitat quality in many water quality programs throughout North America (Barbour *et al.* 1999). The Western Environmental Monitoring and Assessment Program (WEMAP) is a four-year study of water quality of rivers and streams across 12 western states being conducted by the United States Environmental Protection Agency (USEPA). Included in this study is the collection and taxonomic analysis of aquatic, benthic macroinvertebrates. While processing benthic invertebrate samples for this project, taxonomists (BJK and GTL) at the environmental consulting firm EcoAnalysts, Inc., encountered larval Chironomidae that were not represented in any literature for North America. Specimens were sent to the third author (JHE) for examination, whereupon the larvae were determined to be *Tempisquitoneura merrillorum* Epler. There are too few collections of *T. merrillorum* as of yet to determine any water quality associations for this species.

Tempisquitoneura merrillorum was described from specimens collected in Costa Rica (Epler and de la Rosa 1995). Larvae were reported to be strictly symbiotic on *Corydalis* sp. larvae, attaching themselves to either the abdominal gills or thorax of the host. Pupae were found in constructed silken cases attached laterally to the thorax. Larvae and pupae collected in Arizona were found attached to *Corydalis* sp. larvae in a manner identical to those reported from Costa Rica.

The occurrences of *T. merrillorum* in Arizona represent the first Nearctic records of the genus. Figure 1 shows the geographic location of sample locations. Specimens reported herein are deposited in the collection at the EcoAnalysts, Inc. Macroinvertebrate Laboratory in Moscow, Idaho (EI), and the Florida State Collection of Arthropods at Florida A&M University in Tallahassee (FAMU). Collection data and specimen disposition are as follows:

ARIZONA: 10 larvae, Gila County, Tonto Creek, Lat. 34.28333, Long. 111.07086, V-22-2001, A. Francis (2 larvae FAMU, 8 larvae EI); One larva, Greenlee County, Blue River, Lat. 33.24044, Long. 109.1915, VI-19-2001, P. Matson (EI).

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EcoAnalysts, Inc. also encountered several larvae and one pupa with a pharate male in Arizona in 2002. Data for this collection is unavailable for publication due to confidentiality concerns of the client. The pupa and two larvae are deposited at FAMU with a coded sample location.

Physical habitat and water quality data for the two localities are presented in Table 1.

Table 1. Water quality parameters (grab samples) at *T. merrillorum* locations. These are one-time grab samples collected at the same time as the benthic invertebrate sample at each site. No means or variation are associated with the values.

Chemical Variable (mg/l)	Tonto Creek	Blue River
pH	8.65	9.12
Conductivity	296.8	426.8
Alkalinity	2909.27	3054.62
Turbidity	11.3	0.298
Total Suspended Solids	38.7	2.2
Dissolved Organic Carbon	1.86	1.99
Dissolved Inorganic Carbon	35.84	35.54
Total Phosphorus	55	40
Calcium	41.715	39.328
Magnesium	11.081	12.947
Sodium	2.831	31.394
Potassium	0.79	2.335
NH ₄	0.016	0.005
SO ₄	13.38	17.82
NO ₃	0.02	0
Chlorine	2.94	36.86
Total Nitrogen	2.94	36.86
Zinc	0.006	0.005
Silicon Dioxide	7.701	34.06

DISCUSSION

Epler and de la Rosa (1995) discuss taxonomic similarities and differences among *Thienemanniella*, *Corynoneura*, and *Tempisquitoneura* larvae and pupae in detail. Whole (unmounted) *Tempisquitoneura* larvae are generally similar in appearance to the closely related *Thienemanniella* and the genus is usually found attached to its corydalid host. Consequently, to date they may have been simply overlooked in benthic samples or misidentified as *Thienemanniella* sp. The pupa

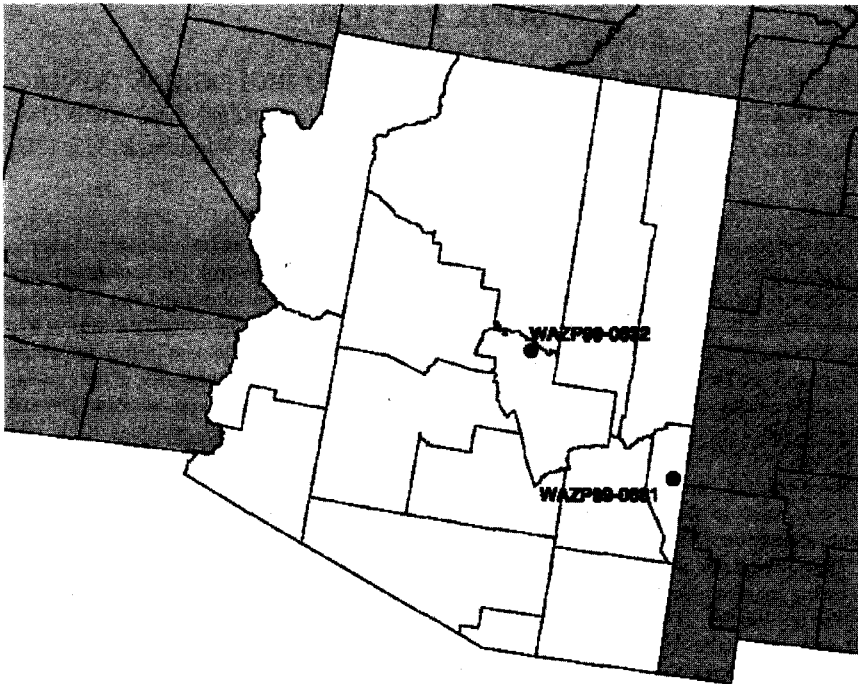


Figure 1. Locations of *Tempisquitoneura merrillorum* Epler in Arizona, southwestern U.S.A. site WAZP99-0632 is located in Tonto Creek whereas site WAZP99-0681 is located in the Blue River.

of *Tempisquitoneura* is probably separable from the other two genera by the incomplete setal fringe of the anal lobes, which is restricted to the apical half (Epler and de la Rosa 1995, Figure 3D), in addition to other characters listed in the original description.

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