

ABSTRACT

The last comprehensive study of the species of mayflies (Insecta: Ephemeroptera) in the state of Minnesota occurred in the 1940s: there were approximately 60 species identified at that time. We have compiled an updated list of 105 species through the inclusion of new and historical data, including our own fieldwork and review of extensive collections at the University of Minnesota. This number is now comparable to adjoining states, yet there are still over a dozen counties that have no records and require further fieldwork for accurate sampling. The upper Mississippi River and lower South Western counties in particular are worthy of attention in order to determine whether some of the rarely reported species are still present in the state.



Fig. 1: A mayfly larva, *Maccaffertium* sp.

FIELDWORK PLANNED FOR 2015

A visit to the University of Minnesota in September 2014 to study their Ephemeroptera collection, as well as in state sampling and recent incorporations into the master data source, have pinpointed several Minnesota counties with no historical observations of mayflies.

These counties are clustered in three distinct regions of the state: the North West, West Central and South West areas. It is planned to make a coordinated visit to these locations and collect specimens in order to complete sample records of Ephemeroptera in Roseau, Lake of the Woods, Marshall, Pennington, Grant, Douglas, Stevens, Todd, Big Stone, Lincoln, Murray, Nobles, Cottonwood and Watonwan counties.

This targeted fieldwork will be undertaken via three nights spent in the cities of Thief River Falls, Alexandria and Worthington, MN in May 2015.

Recent Progress on the Study of Minnesota Mayflies (Insecta: Ephemeroptera)

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Fig. 2, Left: Part of the University of Minnesota's Ephemeroptera collection, Sept. 2014; Fig. 3, Above: Mayfly subadult, *Callibaetis* sp.



Figs. 4, Above & 5, Below: Two representative sampling locations during field work, Sept. 2014



Checklist of Families & Genera (# of Species)

Ameletidae

Arthropleidae (1)

Baetidae

Acentrella (2)

Acerpenna (1)

Baetis (5)

Callibaetis (4)

Heterocloeon (1)

Iswaeon (1)

Labiobaetis (1)

Paracloeodes (1)

Plauditus (4)

Procloeon (4)

Baetiscidae

Baetisca (3)

Behningiidae

Dolania (1)

Caenidae

Caenis (5)

Sparbarus (1)

Ephemerellidae

Attenella (2)

Dannella (1)

Drunella (2)

Ephemerella (5)

Eurylophella (8)

Serratella (1)

Teloganopsis (1)

Ephemeridae

Ephemerella (2)

Hexagenia (2)

Litobranchna (1)

Pentagenia (1)

Heptageniidae

Epeorus (1)

Heptagenia (3)

Leucrocuta (3)

Heptageniidae (cont.)

Maccaffertium (8)

Macdunnoa (1)

Nixe (1)

Raptoheptagenia (1)

Rhithrogena (1)

Stenacron (3)

Stenonema (1)

Isonychiidae

Isonychia (3)

Leptohyphidae

Tricorythodes (1)

Leptophlebiidae

Choroterpes (1)

Leptophlebia (2)

Paraleptophlebia (5)

Metretopodidae

Siphloplecton (1)

Polymitarcyidae

Ephoron (1)

Potamanthidae

Anthopotamus (2)

Siphonuridae

Parameletus (1)

Siphonurus (3)

The above list was compiled throughout the course of this project using existing literature, the collections of Purdue University and the University of Minnesota, as well as fieldwork during 2014.

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REFERENCES

Daggy, R.H. (1945) "New Species of Previously Undescribed Naiads of some Minnesota Mayflies (Ephemeroptera)", *Annals Entomological Society of America*, 38: 373- 396.

Guenther, J. L. and W. P. McCafferty. (2005) Mayflies (Ephemeroptera) of the Great Plains. III: North Dakota. *Transactions of the American Entomological Society* 131: 491-508.

Guenther, J. L. and W. P. McCafferty. (2008) Mayflies (Ephemeroptera) of the Great Plains. IV: South Dakota. *Transactions of the American Entomological Society* 134: 147-171.

Lager, T. M., M. D. Johnson, and W. P. McCafferty. (1982) Ephemeroptera of northeastern Minnesota. *Proceedings of the Entomological Society of Washington* 84: 729-741.

McCafferty, W. P., T. H. Klubertanz, R. P. Randolph, A. V. Provonsha, H. R. Lawson, and B. C. Kondratieff. (2001) Mayflies (Ephemeroptera) of the Great Plains. I: Nebraska. *Transactions of the American Entomological Society* 127: 5-29.

McCafferty, W. P., T. Hubbard, T. H. Klubertanz, R. P. Randolph, and M. Birmingham. (2003) Mayflies (Ephemeroptera) of the Great Plains. II. Iowa. *Transactions of the American Entomological Society* 129: 77-105.

Randolph, R. P. and W. P. McCafferty. (1998) *Diversity and distribution of the mayflies (Ephemeroptera) of Illinois, Indiana, Kentucky, Michigan, Ohio, and Wisconsin*. Ohio Biological Survey Bulletin New Series 13 (1): vii + 188pp.

United States Geological Survey (USGS). "Mayflies of Minnesota"; retrieved online, January 2014 from: <http://www.npwrc.usgs.gov/resource/distr/insects/mfly/mn/toc.htm>