



Photo credit: Bell Museum

UNIVERSITY OF MINNESOTA

# BUGS BELOW ZERO

Discovering Winter Aquatic Insects in Minnesota

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Bugs are everywhere in the summer, but have you ever thought about what happens to them in the winter? Have you ever noticed small mosquito-like flies on snowbanks surrounding trout streams in winter? Believe it or not, these flies, known as “non-biting midges,” are vital to the winter diet of trout in our Minnesota streams.

Researchers have been discovering the life-cycle dynamics of non-biting midges and their importance to trout for more than a decade. Now, our Bugs Below Zero team is looking for volunteers to help with research and monitoring efforts. Visit [BugsBelowZero.com](http://BugsBelowZero.com) to learn more about our community science program and to view videos, classroom resources, and details on upcoming educational events.

Bugs Below Zero is a research, education, and outreach project being conducted at the University of Minnesota with funding provided by the Minnesota Environment and Natural Resources Trust Fund.





**About the project:** Bugs Below Zero is supported by an interdisciplinary team of experts from the agricultural and environmental sciences, science communication, entomology, fisheries, wildlife, and conservation biology disciplines. Our work combines classroom resources, educational events, digital tools, and a participatory science effort. We focus on winter aquatic insects in trout streams around Minnesota. These bugs are vitally important to the health of trout ecosystems.

**Join the research:** The team is searching for help to expand the scope of this winter research project. Our community science program is perfect for outdoor recreational enthusiasts, conservationists, nature centers, families, classrooms, and trout fisherman. If you are interested, please contact us:



Visit us online at  
[bugsbelowzero.com](http://bugsbelowzero.com)



Email the Bugs Below Zero research team at [midge@umn.edu](mailto:midge@umn.edu).

*“There are not many researchers working in this area, so it is helpful to have more people interested in the research and providing information on areas that we have not been able to investigate. With the help of others, we could be able to gather more data on distant streams and it is likely that some of the species found could be completely unknown. We do not know a lot about winter, and citizen scientists would be able to help us contribute to new discoveries and a deeper understanding of winter-active midges.”*



*Dr. Corrie Nyquist  
Ph.D. - Entomology, University  
of Minnesota*