Vermont Water Resources and Lake Studies Center

Congressional Authorization:
Water Resources Research Act of 1964 (Public Law 88-379)

FY 2022 Funding: Federal: $133,770
Non-federal: $133,770
Total:
$267,540

FY 2023 Funding:
Federal: $146,840
Non-federal: $146,840
Total:
$293,680

Host:
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The Vermont Water Resources and Lake Studies Center (Vermont Water Center) is one of 54 state water resources research institutes established by the Water Resources Research Act of 1964 and located at land-grant universities. Through cooperation with the U.S. Geological Survey's National Institutes for Water Resources, the Vermont Water Center leverages expertise in research and communications to address Vermont's water resource challenges.

The Vermont Water Center runs an annual competition to fund research projects that inform and impact important water resource issues. The Center shares research results with stakeholders and uses findings to educate Vermonters about state water resources. Projects are led by Vermont-based researchers.

USGS-NIWR annual base funding to Vermont supports:

- A website and quarterly newsletter about recent ecological findings in Vermont available at www.econews.org.
- 4-5 research projects per year that include training for about 5 graduate and 5 undergraduate students from a range of disciplines.
- About 3-5 peer-reviewed publications, 2-4 theses, and 12+ outreach products per year.
- Scientific knowledge that informs water resources management in Vermont. Examples from recent research:
  - First published report of bloom-forming cyanobacteria in Vermont's high-elevation acid-impaired lakes contributes to development and implementation of biotic indices for rapid assessment of water quality impairment.
  - Research on the adaptation of freshwater whitefish to environmental variability helps understand the range of possible responses to climate change and assists managers to conserve fisheries.

USGS science for a changing world

NIWR THE NATIONAL INSTITUTES FOR WATER RESOURCES

2022 Research Projects


Photo by Ashton Kirol

Nutrient loading during winter and growing season high-flow events in the Lake Champlain basin

Andrew Schroth & Graduate Student Sonya Vogel, University of Vermont

Warming winters increase the number and intensity of winter thaws and rain-on-snow events in Vermont. Researchers are sampling water from five sites in Lake Champlain tributaries during winter high-flow events and comparing them to other seasons' high-flow events. Findings will improve our understanding of how winter high-flow events contribute to nutrient loading in surface waters.

Potential impacts of road salt storage facilities on drinking water in vulnerable communities

Stephanie Hurley, University of Vermont

Road salt storage facilities are concentrated, year-round locations of road salt which can leach salt into waterways and damage ecosystems. Road salt use and salt concentrations in some waterways are both increasing, and locations of storage facilities are currently undocumented. Researchers are creating a salt storage facility geospatial database and evaluating the risks that salt storage facilities pose to ecosystems and communities, especially vulnerable communities.

Food web responses to round goby and quagga mussel invasions within Lake Champlain ecosystems

Jason Stockwell, University of Vermont

Although not yet found in Lake Champlain, invasive round goby fish and quagga mussels pose serious threats to Lake Champlain. Both have drastically altered food webs, nutrient cycling, and energy pathways in the Great Lakes and many other lake systems. Researchers are sampling fish and invertebrate communities in the five main areas of Lake Champlain to examine the potential resilience of different ecosystems to these invasive species.

Lake Champlain winter microbial dynamics and long-term data trends

Erin Eggleston, Middlebury College

Increasingly warm and ice-free winter conditions on Lake Champlain suggest that winter microbial dynamics may play a role in phytoplankton and cyanobacteria blooms. Researchers are using historical datasets and analyzing new winter water samples in different areas of Lake Champlain to build ecological models to predict and measure spring and summer phytoplankton and cyanobacteria.