



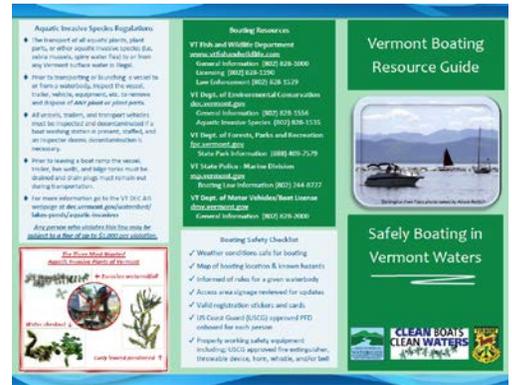
Aquatic Invasive Species Program 2018 Update

Vermont Department of Environmental Conservation, April 2019

To reduce and prevent the environmental and socioeconomic impacts of aquatic invasive and nuisance species to protect and improve water quality, aquatic and terrestrial wildlife habitat, and lake ecosystem functions.

Spread Prevention

- Twenty-nine Vermont waterbodies were covered by **Boat Greeter Programs** in 2018. VTDEC staff provided technical assistance, sample identification and general support to all active programs. Five formal trainings were offered in locations statewide in the spring and early summer. Public access greeters performed 25,495 watercraft inspections in 2018. In 613 instances, aquatic invasive species were confirmed on a vessel. Staff also provided **sample identification support** to the Lake Champlain Boat Launch Steward Program.
- The Aquatic Invasive Species (AIS) Program staff partnered with the VT Fish & Wildlife Department staff to develop a **Vermont Boating Resource Guide** to inform boaters of the passage of **Act 67's** requirement that boaters inspect their watercraft prior to entering, and upon leaving a body of water. Boaters must also remove their bilge plugs and drain water from all compartments (other than legal bait boxes) of their boat before traveling over land. It is now illegal to refuse inspection and decontamination at an authorized watercraft inspection station.
- **VTDEC watercraft decontamination stations** were in use for the third time in 2018. Six public accesses around the state had a watercraft decontamination station available. DEC staff provided additional decontamination services at accesses across Vermont. As part of this program, watercraft inspections and decontaminations were offered to the boating public. This program will be expanded to cover more access areas in 2019.
- **Aquatic Invasive Species signs** posted at public boat access points to remind users to practice "Clean, Drain, Dry" spread prevention measures were maintained; downed signs were re-installed; and brochure boxes were replaced if needed and filled. New 2' x 2' metal signs were installed informing access users of new regulations following passage of Act 67.



For more information, contact:

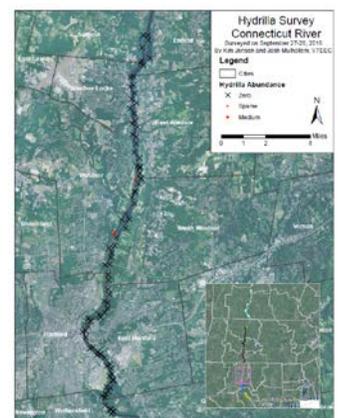
Vermont Aquatic Invasive Species Management

1 National Life Drive, Main 2 Montpelier, VT 05620-3522

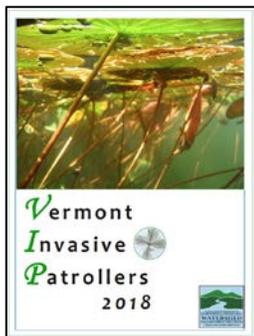
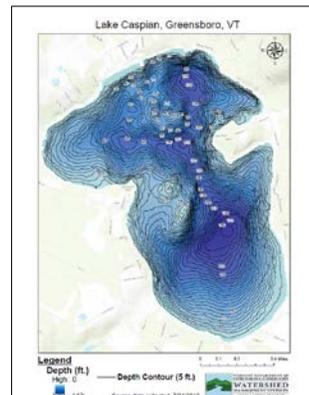
Phone: (802) 828-1535 www.watershedmanagement.vt.gov/lakes.htm

Monitoring

- The AIS Team partnered with the UVM Spatial Analysis Lab to develop a **Water Chestnut Aerial Survey** in the Lake Champlain Basin using Unmanned Aircraft Systems (aka drones). The project was piloted during the 2018 field season to deploy and acquire data to map Water chestnut, an aquatic invasive species and native aquatic species, while distinguishing and formulating the unique signatures of both. The project will continue in 2019.
- Efforts to support the eradication of **two new 2017 populations of Eurasian watermilfoil (*Myriophyllum spicatum*)** were continued. The population found in Salem Lake (Derby, VT) was managed via suction harvesting. Another Eurasian watermilfoil population was found in Stoughton Pond (Weathersfield, VT).
- Efforts to manage the macro algae **starry stonewort (*Nitilopsis obtusa*)**, an invasive species found in Vermont in 2015. 2018 surveys for starry stonewort were repeated at Lake Derby and found that the population continues to expand since the 2016 survey. Signs alerting the public to this species and promoting Clean, Drain, Dry were maintained at public access points at both lakes and throughout the region. A staffed high-pressure, hot-water decontamination unit was deployed over multiple days at the Lake Derby public boat access area. In addition, the AIS Team partnered with VT Fish & Wildlife to develop a rack card that was included in angler tournament registrations.
- **Two new populations of curly leaf pondweed (*Potamogeton crispus*)** were identified. One population was discovered in Arrowhead Mountain Lake (Georgia/Milton, VT). The other population was confirmed in Black Creek Marsh (St. Albans, VT). No active management of either population was implemented.
- Presence of **zebra mussel (*Dreissena polymorpha*)** was **confirmed in Lake Memphremagog** by the Memphremagog MRC. The population is located in the northern portion of the lake near Magog, QC. DEC staff took action to monitor movement of the population to the southern portion of the lake. Five locations were sampled for zebra mussel veligers – two locations adjacent to Newport, VT and three locations near the International Border. Snorkelers surveyed suitable habitat for adult zebra mussels in several locations in the US portion of the lake. No zebra mussels were detected in US waters. Monitoring efforts will continue in 2019.
- The AIS Team assisted in a multi-state effort for an **Early Detection & Rapid Response (EDRR) to Hydrilla (*Hydrilla verticillata*)**, touted as the worst aquatic invasive species, found in the Connecticut River in Connecticut in 2018. Vermont, New Hampshire, Massachusetts, and Connecticut aquatic invasive teams surveyed and mapped the extent of the population. The AIS program provided grant funds for a detailed EDRR Survey in the Connecticut River within the VT/NH/MA border and found none.
- Ongoing efforts were revitalized with the VT Invasive Exotic Plant Committee to develop a strategic effort to manage all invasive species found in Vermont including five invasive aquatic and wetland plants – **Japanese knotweed (*Fallopia japonica*)**, **flowering rush (*Butomus umbellatus*)**, **yellow flag iris (*Iris pseudacorus*)**, **purple loosestrife (*Lythrum salicaria*)**, **common reed (*Phragmites australis*)**.
- Thirty-nine inland lakes and ponds were sampled for the presence of invasive animals. **No new infestations of zebra mussels or spiny waterflea were documented.**



- The AIS Program initiated a **Biobase Mapping Project** that uses sonar to map aquatic vegetation, bathymetric measurements, and bottom hardness in lakes and ponds. In 2018, the AIS team produced 60 separate maps of lakes and ponds in Vermont that are available for use by lake associations, anglers, and the public at large. Biobase Mapping will continue in 2019.



- Five of six scheduled **Vermont Invasive Patroller (VIP)** workshops were conducted throughout the state (one was canceled due to inclement weather) and hosted by several community organizations and sister agencies. These included VT Forests, Parks & Recreation, Black River Action Team, Windham and Ottauquechee Conservation Districts, Winooski Valley Park District, Echo Lake Protective Association, and Franklin Watershed Committee. Workshops were well attended with 48 participants. Each participant received an updated 2018 VIP Manual to assist patrollers with their surveys.

- A new aquatic invader to Vermont, Asian clam (*Corbicula fluminea*), was again found in Lake Bomoseen (first found in 2016).** Further delineation of the population showed minimal dispersal from the 14 acres in which this bivalve was originally found. No Asian clams have been found in the Castleton River. Asian clam sampling in Lake Bomoseen and other Vermont waterbodies will occur again in 2018. Management plans for this species and the potential of control efforts are also being considered for 2018 and beyond.
- Fishhook waterflea was found in Lake Champlain** and was already present in high numbers by late September 2018. The fishhook waterflea is a close cousin of spiny waterflea, posing similar challenges.

Control and Management

- In 2018 VTDEC staff, contractors, and other partners conducted **water chestnut management** efforts in Lake Champlain and in the surrounding basin. Efforts were successful at preventing spread in Lake Champlain and at other waterbody sites. Water chestnut is found in 30 waterbodies, including Lake Champlain. Mechanical harvesting was used on dense mats in Lake Champlain. 100% of mechanical harvesting spoils were composted at one location in Benson. Lake Champlain control efforts span over an estimated 120 miles of shoreline in New York and Vermont. Lake Champlain control efforts ended 1.5 miles south of the Narrows of Dresden. Roughly 11 miles of the Lake Champlain with water chestnut was not managed. In 2018, harvesting crews removed more than 1,000 tons of water chestnut from Lake Champlain. Plans are underway for similar efforts in 2019.
- Staff provided **technical assistance** on management of aquatic invasive species to dozens of groups (e.g., lake and river associations, government and non-government entities, municipalities), often working with multiple individuals per group. The AIS team produced a publication to inform lake associations and members of acceptable practices entitled **“Managing Aquatic Invasive Species: A Resource Guide for Lake Managers”**.
- Control and search efforts relating to Vermont’s first **variable-leaved watermilfoil** population in Halls Lake in Newbury (confirmed in 2008) continued. Three surveys have been conducted since 2016 with no variable-leaved watermilfoil found. Variable-leaved watermilfoil has not been found in the lake since June 2011.
- Staff provided technical review of submitted applications seeking coverage under the **Aquatic Nuisance**



Control Permit Program. Proposed projects included the use of herbicides, benthic mats, mechanical harvesting and diver operated suction harvesting to manage Eurasian watermilfoil.

Funding and Grants

- The Program was successful in obtaining federal funds to support the 2018 program and partner efforts, as well as grants to municipalities. Federal funds came from Lake Champlain Basin Program, U.S. Army Corps of Engineers Aquatic Plant Control Program, and the USFWS through the Lake Champlain Basin ANS Plan and the Partnership Program.
- Funds from the Vermont Motorboat Registration Fund and Army Corps of Engineers supported \$446,689 in **Aquatic Nuisance Control grant funds**. 46 aquatic nuisance control projects were funded with this grant money. Most funded projects represented education and outreach efforts (i.e. public access greeter programs) and aquatic nuisance control endeavors.

Staff Support

- The AIS Program hired a new aquatic plant expert, **Kim Jensen**, to assist with the overall efforts of the AIS Program including revitalizing the VIP Program and increasing collaborative partnerships throughout the state and in New England.
- The AIS Program again participated in the UVM Rubenstein School of Environment and Natural Resources' Perennial Summer Internship Program and was fortunate to have intern, **Lianne Parmalee**, support a variety of Program activities during the summer months.
- Two seasonal AIS technicians joined the AIS Program during the 2018 field season both who were former interns. **Caleb Basa and Joe Taft** were valuable members of the team and assisted with all work conducted by the Program.

Looking Ahead

- Expand tools for [Early Detection & Rapid Response \(EDRR\)](#). The AIS team is developing a Boat Greeter Data app so that information on boaters and potential threats can be uploaded to a central database. The information will be incorporated into a "Lakes at Risk of Infestation" Map to protect and prioritize efforts for lakes that are vulnerable to new aquatic invasive species threats.
- Update the [Aquatic Invasive Species Map](#) to interface with the EDRR tools described above, and to make the map more user-friendly for those seeking locations of Boat Greeter Programs and Watercraft Decontamination Stations.
- This season, a multi-state effort is underway to develop an Environmental DNA Pilot Study in Northeast Regional Lakes that we hope will lead to a more efficient sampling program for two invasive invertebrates, Asian clam and zebra mussel. If all goes well, this pilot will enable us to include in [our long-term management plan](#) a pre-emptive set of EDRR protocols to prevent the spread of invasive animal species.
- In partnership with the VT Fish & Wildlife Department, the AIS team is developing AIS information packets for Game Wardens, containing education and outreach information and publications that will be distributed to law enforcement officers. Officers will disseminate the information and document their collective time educating the public about aquatic invasive species, enforcing applicable invasive species laws, or undergoing other activities related to the control and spread prevention of aquatic invasive species.

