Lake Vermilion AIS Program Status Report

Submitted to St Louis County
September 30, 2019

Introductory Comments

The Vermilion Lake Association (VLA) is pleased with our progress on the **Lake Vermilion AIS Program** during 2019. Now in our fourth year, we've built on everything we've learned to protect Lake Vermilion and those lakes next visited by our boaters.

The twin goals of our long-term aquatic invasive species (AIS) program are easy to understand:

- **Prevention**. Prevent all new AIS infestations from becoming established at Lake Vermilion, with emphasis on those which would be game changers for our fishery, recreational boaters, and business community.
- **Containment**. Prevent the expansion of all existing infestations, with emphasis on those which are game changers.

The benefits of the Lake Vermilion AIS Program extend far beyond Lake Vermilion. Those who visit our lake take their AIS knowledge and good habits with them, protecting the next lake they visit. A clean Lake Vermilion also helps keep the Vermilion River and the entire downstream watershed healthy.

Property owners, fishermen and recreational boaters who use Lake Vermilion play a strong role in our AIS prevention program. Building their understanding of AIS, their self-inspection skills, and their stewardship at Lake Vermilion is vital.

We understand well that the resources – funding, trained volunteers, and proven contractors – to fully defend Lake Vermilion from all AIS threats will never be completely available. We're committed to deploying the resources we can muster efficiently on our highest priorities.

We thank you for helping us reach our AIS goals. The primary funding for our 2019 Lake Vermilion AIS Program comes from the 2018 and 2019 St Louis County AIS Prevention grants. Supplemental funding was received from the Initiative Foundation for work with our resort partners and for public access traffic analysis.

This status report is organized into five sections:

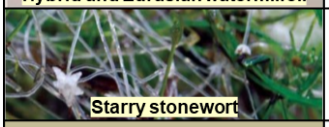
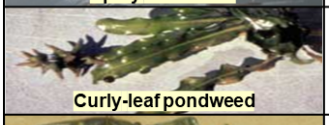
- Habitat Evaluation and Risk Assessment
- Watercraft Inspection and Decontamination
- Public Education and Stewardship
- Early Detection and Population Management
- Regional and Statewide Partnership Development

Habitat Evaluation and Risk Assessment

Vermilion's water chemistry sets us apart from most Minnesota lakes. Our low calcium and low pH make us low risk for zebra mussels. Our risk for Eurasian and hybrid watermilfoil and starry stonewort also appears to be low. However, until those risks are fully evaluated by researchers, both stay at the top of our Vermilion threat table.

While our soft water protects us from many game-changing invasives that plague central Minnesota and much of Wisconsin and Michigan, it can also expose us to other invaders no one is talking about. We are looking toward the Canadian Shield lakes to our north for information about AIS that prefer a soft water habitat.

Currently, our threat table looks like this:

Species	Introduction Risk	Habitat Suitability	Impact if Population Established	
			Fishery & Ecosystem	Recreational Boating
 Hybrid and Eurasian watermilfoil	Hybrid increasing as more lakes become infested.	Hybrid unknown. May be suitable in specific bays.	Serious stressor. Unknown impact on each fishery.	Severe in bays with suitable habitat.
 Starry stonewort	Increasing as more Minnesota lakes become infested	Unknown. Limited to specific bays?	Serious stressor. Unknown impact on each fishery.	Severe in bays with suitable habitat.
? Unknown Soft-Water Specialist	Likely low. Connectivity to soft water lakes limited.	Presumed moderate/high.	Unknown	Unknown
 Zebra mussels	Very high.	Low. Limited to calcium hotspots with suitable pH?	Serious stressor. Filters zooplankton, limiting growth of fry.	Generally negative but water clarity appeals to some.
 Spiny waterfleas	Present in many bays. Discovered in 2015.	High in deep basins.	Varies by fish species. Consume zooplankton, limiting growth of fry.	Low. Gets tangled in fishing or recreational gear.
 Curly-leaf pondweed	Present in 4 small areas.	Moderate/high in specific bays.	Stress on native plant diversity. Unknown impact on each fishery.	May become severe in bays with suitable habitat.
 Rusty crayfish	Present in east basin and west to Niles Bay.	High for sandy, rocky, rubble bottoms.	Weed bed destruction impacting several fish species.	Low to moderate.

After a thorough assessment of East Two River calcium concentration by the Natural Resources Research Institute (NRRI) at UMD and by VLA volunteers in 2017, we have cautiously concluded zebra mussels cannot become established in Lake Vermilion. The calcium and pH in East Two River – the only known calcium source at Vermilion – are too low. Some follow-up testing was done in 2018 and 2019. Routine calcium testing has now been discontinued.

Craig Beveroth taking water sample

Research is underway on hybrids between invasive Eurasian watermilfoil and our native northern watermilfoil. Anecdotal reports suggest increased invasiveness and evidence of herbicide resistance. In Lake Vermilion, native watermilfoil co-exists with other native vegetation. We have no known Eurasian watermilfoil – an indication our habitat and water chemistry may not be suitable. However, at this point, no one knows whether a specific hybrid

genotype may find our habitat suitable and overwhelm our native vegetation.

To understand better our risk that hybrid watermilfoil might be introduced at Vermilion, the VLA asked RMB Environmental Labs to check the Eurasian watermilfoil infestation at the Gilbert Pit for evidence of northern or hybrid watermilfoil. Neither was found during a 2018 visit. At this point, it's unclear whether northern cannot live in the Gilbert Pit … or it can but was overwhelmed by the more aggressive Eurasian that dominates the waterbody.

A hybrid watermilfoil incubator close to Vermilion – a 45-min trip for a trailered boat – would be a significant risk.

Watercraft Inspection and Decontamination

Watercraft inspection and decontamination continue as our most important tools to prevent new infestations at Lake Vermilion. Our partner North St Louis SWCD handles all operational aspects of boat inspections and decon at Vermilion's public and private accesses. Please refer to their reports for details.

The Vermilion Lake Association and North St Louis SWCD, however, work together to improve the inspection process and extend it to new areas. Several of these initiatives are discussed below:

Enhanced Training for Inspectors. For the third year, a one-day enhanced training for L1 and L2 inspectors was held at Vermilion Community College soon after Memorial Day. The curriculum – jointly developed by Burntside and Vermilion Lake Associations and North St Louis SWCD – includes AIS biology, customer service skills, conflict management, introduction of local COs, and advice from the COs on when they need to get involved. This training has been instrumental in giving boat inspectors the skills to interact with the public in a professional manner.

Fishing Tournaments. Boat inspections at fishing tournaments are a special challenge. The key is inspecting participants boats when they first arrive for "pre-fishing" the week prior to the tournament. A key access was staffed for extended hours for participant convenience. Cooperation by tournament directors was excellent, with 7 of 8 tournaments achieving near 100% inspection rates. SWCD, Fortune Bay, and 1854 Treaty Authority inspectors worked together during the tournament, which is typically headquartered at Fortune Bay Marina.

Traffic Analysis. The key to an efficient inspection program is deploying inspectors at the busiest accesses at the busiest times of the day for the entire season. Trail cameras were used throughout the 2019 season to gather traffic data for accesses and times where L1 survey data was lacking. SWCD interns deployed the cameras and collected the data. A Vermilion Community College (VCC) intern analyzed camera photos to convert photos to a boat count. After off-season analysis, deployment guidance with boats-per-hour predictions for each deployment will be available.

Risk Analysis of Trailered Boats Entering Vermilion. As we deploy inspectors based on traffic, we want to emphasize boats coming from lakes with known Eurasian watermilfoil, hybrid watermilfoil or starry stonewort infestations. Analysis of survey data tells us boats arriving at resorts are about 3 times as likely to have come from those lakes. As a result, we have set a target of 100% inspection of resort boats. Inspections by resort employees (see below) is the first step, but additional options need to be developed to cover all resort situations.

Inspections at Private Resorts, Campgrounds and Marinas. This trail blazing extension of traditional AIS inspections to private accesses debuted in 2018 and was expanded in 2019. The DNR and North St Louis SWCD developed an online certification process, making training for resort dock attendants practical. In 2019, we project about 2500 boats will be inspected through this effort, many from high-risk lakes.

Fortune Bay AIS Relationship. The Vermilion Lake Association and Fortune Bay Resort Casino continue to build a solid relationship on AIS prevention. The marina used SWCD private-access tablets to record inspections during 2019 – an important step. We expect that working relationship to improve further in 2020.

Public Education and Stewardship

All who use Lake Vermilion play an important role in protecting Vermilion from invasive species. Building their understanding of AIS, their self-inspection skills, and their stewardship at Lake Vermilion is vital. We reach out to them in many ways:

Business Partners. In 2019, we expanded our work with local businesses and organizations to help them explain AIS issues to their customers and members. Currently we have partnerships with over 50 business, many sharing free VLA newsletters and AIS literature with their customers. Two restaurants and one resort dining room use AIS placemats. Almost all 30+ Vermilion resorts provide AIS info to their guests.

VLA AIS public information table at 2019 Antique and Classic Boat Show

Public Events. VLA volunteers staff info tables at selected public events (e.g., Antique and Classic Boat Show at Lake Vermilion). AIS is always a major discussion topic.

Newsletter. In early 2018, the VLA changed its newsletter partner to add color, more pictures, and a more professional look. The AIS page content has stayed level but is more readable. Free distribution at local businesses and resorts has increased.

Ramp signage at Gruben's Marina

Website/Facebook. Fifty-four articles were posted on our website and then on Facebook during the Jan-Sept period. About a third relate to AIS. Others help build lake stewardship. A growing number of lake stewards – now about 300 persons – subscribe to our Wednesday morning email on lake issues.

Presentations to Organizations. During 2019, the VLA has made about six presentations to civic organizations, home owner associations, other lake associations, and similar groups. AIS is always a part of the discussion.

Signage for Resorts. Invasive species prevention signs, banners and materials – some custom – were provided to 20+ resorts to help them explain their AIS commitment to their customers.

Early Detection and Population Management

If a new invasive were to evade our inspection and decontamination firewall, we rely on early detection to give us the best chance of eradication or containment.

In 2019, the VLA expanded its sentry project – a vegetation early detection effort – to all 17 public accesses. Volunteers agreed to “adopt” a specific public access and visit that access once a month during June, July and August to look for suspicious vegetation. No new invasives were found at Vermilion’s public accesses … good news.

AIS Detector Bob McNamara using sampling rake

One new AIS Detector was trained in 2019, keeping our crew at 4 to provide coverage on both ends of the lake. Fortunately, we did not keep them busy investigating vegetation discoveries. One investigation based on a property owner report was native vegetation. More investigations may happen as docks and lifts are removed this fall.

In 2020, we will be working with our resort partners to extend sentry coverage to our resort community. Some resorts are already covering their waterfront; others may choose to have an AIS Detector stop by three times each year … similar to our sentry program at public accesses.

Emily Nelson trains sentries at Everett Bay public access

RMB Environmental Labs (Detroit Lakes) returned to Lake Vermilion in late July to check for undiscovered Eurasian/hybrid watermilfoil and for starry stonewort. They spent 2 days on the water at weed-friendly bays and high-traffic accesses. A VLA volunteer and an 1854 Treaty Authority technician joined the RMB team. No infestations were found. A link to the RMB report follows.

Rich Rezanka (DNR AIS Specialist) checked our known curly-leaf pondweed infestation at Everett Bay in June. While the two-acre infestation changes shape a bit each year, it is not expanding geographically and not overwhelming native vegetation. No chemical treatment is planned.

Regional and Statewide Partnership Development

The Vermilion Lake Association feels strong AIS partnerships are critical at all levels.

Beyond our vital local partnerships, we have been working statewide to influence AIS research direction and to share AIS prevention ideas among AIS prevention leaders. St Louis County and Lake Vermilion both benefit from the accelerated learning. VLA leaders serve on the MAISRC Advisory Board (Jeff Lovgren) and the Walleye Advisory Committee (Terry Grosshauser).

Statewide, lake association directors and AIS volunteers participated and/or presented at several meetings, including the DNR Roundtable in January, the Minnesota AIS Research Center (MAISRC) Research and Management Showcase in September, and three MAISRC Advisory Board meetings throughout the year. In addition, four VLA volunteers have taken MAISRC training to become AIS Detectors.

Regionally, the VLA joined Cass SWCD and Itasca County SWCD in 2017 in a proposal to the Initiative Foundation (IF) to fund a Multi-Region Resort Ambassador Project to pilot innovative concepts to extend traditional AIS work at public accesses to resorts, campgrounds and marinas. During 2018 and 2019, we were able to team up with Itasca and Cass to simultaneously test our best ideas in multiple regions to speed the learning.

References

Recent reports:

2019 RMB Vegetation Survey Report – Vermilion [pdf]

Upcoming reports and plans:

2019 Lake Vermilion AIS Program Final Report
2020 Lake Vermilion AIS Program