

Aquatic invasive species prevention program

Preventing the spread of aquatic invasive species: 2019 - 2020 accomplishments

Hennepin County has received funding from the State of Minnesota since 2014 to implement plans to stop the introduction or limit the spread of AIS. In 2019, county staff engaged more than 60 stakeholders in evaluating the county's AIS prevention programs, guidelines, and funding options.

The following adjustments were made to the county's [AIS prevention aid guidelines](#) to direct the use of funds received 2020 through 2025:

- Updating the goals to reflect the Hennepin County Natural Resources Strategic Plan.
- Defining the county's best practices for public water access design.
- Encouraging enforcement partners to increase randomization and unpredictability.
- Allocating funding by categories to ensure the program is comprehensive.
- Funding core program functions – watercraft inspection and education at public accesses – outside of the grant process to help partners with long-term planning and streamline administrative tasks involved with public access redesigns.

Aquatic invasive species are “non-native, aquatic organisms that invade water beyond their natural and historic range” (Minnesota Statute 477A.19). Aquatic invasive species may harm economic, environmental or human health and threaten our natural resources. A list of prohibited, regulated and unregulated non-native species is available at dnr.state.mn.us/invasives/laws.

In 2019, Hennepin County received \$317,728 to implement projects that prevent the spread of aquatic invasive species. In 2020 Hennepin County received \$316,174. The following provides a summary of the project accomplishments in 2019 and 2020.

Early detection

Early detection efforts involve training citizen volunteers to work alongside scientists to conduct lake surveys as well as to look for signs of aquatic invasive species in their daily activities. These efforts focus on early detection of aquatic invasive species where management options may still be available.

- In 2019, we funded the participation of lakeshore homeowners in the University of Minnesota AIS Detector course. We partnered homeowners interested in learning more with a local limnologist for on-the-lake early detection. These have become informative and fun for lakeshore homeowners, unfortunately this was not offered in 2020 due to COVID-19. For anyone that has interest in continuing early detection work on their lake, we will provide the equipment for this monitoring. Several lakeshore homeowners were empowered to continue monitoring for aquatic invasive species on their own. The county supports these residents by sending an e-newsletter with information about what to look for and updates specific to AIS prevention.
- In 2020, Hennepin County, in partnership with HCI Hughes Company Innovations, conducted an innovative project for early detection of aquatic invasive species using an industrial drone. The drone, equipped with high-resolution optical and multispectral sensors, mapped approximately 50 acres on Medicine Lake. This area is known to have three aquatic invasive species, including Starry Stonewort. Starry Stonewort has only been found in 14 water bodies in Minnesota and was first discovered in Medicine Lake in 2018. This project is looking to see if this technology can be used for improvements with early detection, rapid response, and management of aquatic invasive species throughout the county and Minnesota. The initial flight occurred in May of 2020, and the preliminary results are encouraging!
- In 2020, Hennepin County partnered with the Lake Minnetonka Association in search of starry stonewort. In addition to the access sites, over 1,705 locations were searched throughout Lake Minnetonka. The great news is that starry stonewort was not identified. Currently Medicine Lake is the only location starry stonewort has been identified in the Hennepin County.



Drone image of Medicine Lake



Starry stonewort

Boater behavior study and survey

Behavior study

To provide some measurement, we conducted an observational boater study from 2017-2019. This observation was done incognito, at large and small accesses, and at some locations that have been specifically redesigned with an AIS prevention emphasis. With help from an intern from St. Olaf College, statistical modeling methods were used to find associations and relationships between boater characteristics and the likelihood that those that exhibit particular characteristics are to violate.

This work created numerous models and significance values that show important and intriguing trends. The following are some of the findings: the odds of a boater AIS violation was significantly higher early in the boating season (typical season is May end of September), the likelihood of a boater AIS violation was significantly lower if they properly followed traffic markings/prompts that indicated protocol actions, and fishing boats as well as ski/cruiser users were at a higher risk of an AIS violation. Observations are planned to be conducted again in 2021.

Boater survey

In 2019 we surveyed boaters at standard accesses (87 surveys) and accesses that have been redesigned with an AIS prevention focus (71 surveys). Of those surveyed, 95% were boating on the lake for less than 24 hours. At redesigned accesses, over 50% felt they were "Very Confident" and 34% "Quite confident" they understood the specific AIS prevention actions to take on their boat. More than 1 out of 4 boaters utilized the CD3 cleaning stations and 82% found the process to be "Very easy." 28% said they go to four or more different lakes in a year, which demonstrates the need for everyone to Clean, Drain, Dry and Dispose.

Boat access redesign and boat cleaning stations

The county's research shows that redesigning accesses can be an effective tool to prevent the spread of aquatic invasive species. In 2018, the county conducted observations of boater's behaviors and found that public accesses redesigned to emphasize aquatic invasive species prevention actions had half the violation rates and self-inspection rates increased by one-third. The county's current behavior change strategies at accesses include:

- CD3 waterless cleaning system that provides the tools for boaters to take appropriate actions.
- Pavement markings to influence traffic flow.
- Stop bars to designate locations to take aquatic invasive species prevention measures.
- AIS prompt signage.

These measures can help overcome the issue of boaters operating on autopilot as they complete the tasks to launch or remove their watercraft and prompt them to take the necessary actions.

The county continued to partner with agencies that own/manage public accesses in 2019 and 2020. Currently, of the 49 accesses with a ramp, we have installed re-design efforts with an AIS prevention focus at 13 different locations. Currently there are 12 accesses with CD3 stations in operation with another five anticipated to start-up in 2021. To date, from the pilot start in 2017, we have recorded over 75,000 CD3 tool uses in Hennepin County.

Inspections and decontamination

In 2020, Hennepin County, with staff from WaterGuards LLC, provided randomized inspections and boater education. Inspectors were present at times and locations where they have not typically been present before. The focus was on educating boaters about the simple steps they should take to prevent the spread of aquatic invasive species while also tracking compliance rates.

We also continued to work with our local partners in 2020, including Three Rivers Park District, Minneapolis Park and Recreation Board, and the Christmas Lake Homeowners Association with public access inspections and decontamination. Countywide boaters compliance with AIS prevention actions was 97.3% in 2019 and 98.55% in 2020. The 2020 percentage comes from 45,957 inspections, 19,648 hours, at 33 different accesses and 24 water bodies and 2019 inspection numbers were similar. Four countywide decontaminations were available at Lake Minnetonka Regional Park, Independence, Medicine, and Christmas lakes.

Media outreach

In partnership with 18 other MN counties, the USFWS, Wildlife Forever, and Kare 11 we participated in CabinCast which resulted in 23,318,264 impressions in 2020 and Lindner Angling Buzz with over 50,000 likes and 10,000,000 impressions.

Research and pathway analysis

Research projects provide insights on potential management options for aquatic invasive species and the effectiveness of various programs aimed at preventing the spread of aquatic invasive species. The county participated in three separate research projects in 2019 and 2020.



A CD3 outpost at Spring Park Public Access on Lake Minnetonka



Boat inspection



CabinCast non-motorized boat PSA

Hybrid milfoil project

In 2016, we participated in a \$20,000 grant project with Minnehaha Creek Watershed District, the University of Minnesota, and the University of Montana lab called "Occurrence and Distribution of Eurasian, Northern and Hybrid Watermilfoil in Lake Minnetonka and Christmas Lake: genetic analysis."

Seeing the importance of this issue, the University of Minnesota expanded on this research and has completed more sampling statewide. They note that Eurasian watermilfoil hybridizes with the native Northern watermilfoil (*M. sibiricum*) (Moody and Les 2002), which raises new issues regarding management strategies for controlling infestations. It is quite difficult to distinguish between Eurasian watermilfoil and hybrids and thus they are typically treated with similar management strategies. There is increasing concern that hybrid watermilfoil may be more invasive than Eurasian watermilfoil (Moody and Les 2002) or harder to control.

We sampled five additional lakes in 2020. Initial takeaways are interesting and results continue to be analyzed in context of the larger hybrid milfoil research project being led by the University of Minnesota.

- Previous sampling by the University of Minnesota found there is one common strain of Eurasian watermilfoil present throughout much of Minnesota. This same strain was found in the lakes we sampled in 2020 and appears to have been spread throughout much of the state.
- Hybrid milfoil was confirmed in two of the lakes we sampled. Both lakes had unique strains not found in any lakes previously sampled by the University of Minnesota. One lake had two unique strains and the other had three. Numerous questions arise from these findings, as many previously sampled lakes have shown hybrid milfoil strains that are unique to that lake. We know hybrid milfoil can spread lake to lake, but we are not seeing common strains of hybrid milfoil across lakes in Hennepin County. Further analysis may help better our understanding of how prevalent hybrid milfoil is in the county and if there are similar strains that are found across lakes. Furthermore, if the same hybrid strains are not being found in multiple county lakes, understanding the mechanisms for hybrid milfoil spread is important. It's possible that our AIS prevention strategies have been effective at reducing the spread of milfoil, or perhaps there are also other variables at play.

Learn more in the [University of Minnesota's summary \(PDF\)](#).

Zebra Mussel research and eDNA study

Hennepin County partnered with a project being led by the USGS in coordination with the University of Minnesota Aquatic Invasive Species Research Center to evaluate the efficacy of low-dose copper treatments to control zebra mussel populations by targeted suppression of the early life stages. The county funding was used to analyze potential treatment-related impacts of non-targeted plankton and benthic animals. Go to maisrc.umn.edu/zebramussel-research for more information.

In 2019, we partnered with the Minneapolis Park and Recreation Board to conduct eDNA study on six Minneapolis lakes. Zebra mussel DNA was only found in Lake Hiawatha and this was corroborated by all other early detection data. This looks to be a useful tool in combination with other early detection techniques.

Goldfish study

In 2020, we partnered with the Nine Mile Creek Watershed District to assess the goldfish population and movement in Lake Cornelia system. Goldfish up to 16 inches in length were captured during this study and it was estimated that 27,472 goldfish exist in North Cornelia alone. Goldfish were recently added to the priority list for investigation and the county is on the leading edge of this work. Antennas were installed to monitor the movements of tagged goldfish to identify recruitment locations. [Read the entire report here \(PDF\)](#).

Contact information

For more information on the county's AIS prevention efforts, contact:

Tony Brough, Senior Environmentalist

Tony.Brough@hennepin.us or 612-348-4378

hennepin.us/aisprevention