



COOK COUNTY AQUATIC INVASIVE SPECIES PREVENTION PLAN

Guidelines for using
Aquatic Invasive Species
Prevention Aid
(MN Statute 477A.19)

Cook County, Minnesota



Prepared by
Cook County
Soil & Water
Conservation District



Updated 2021

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INTRODUCTION

Aquatic invasive species (AIS) are threatening Minnesota waters. These non-native species harm fish populations, water quality, and water recreation. This plan outlines the efforts that Cook County and Cook County Soil and Water Conservation District (SWCD) will undertake to help prevent the spread of harmful AIS within Minnesota.

Background

Cook County has received funding from the State of Minnesota since 2014 to implement plans to stop the introduction or limit the spread of aquatic invasive species (AIS). The Minnesota State Legislature appropriates \$10 million annually to Minnesota counties (Chapter 308, H.F. No. 3167: Omnibus tax bill) for this work, and Cook County receives approximately \$200,000 annually. The use of these funds have very few limitations allowing the county to decide the best use for preventing the spread of AIS.

Activities suggested include providing oversight, management, county wide public awareness, monitoring, and ways to enhance compliance. Funding guidelines state that counties are to use the funds to prevent or limit the spread of AIS at all accesses within the county and must use the funds consistent with an approved resolution or plan. After an AIS Task Force engagement process, the County Board approved the Cook County AIS Prevention Plan in 2014 that included key guiding principles that directed the AIS prevention work through 2020.

In 2020, a resolution approved the transfer of the responsibility of the Cook County AIS Prevention Plan to the SWCD. The SWCD developed an AIS Advisory Committee to oversee the Cook County AIS Prevention Plan and accomplishment guidelines for using the delegated funding.

Pathways of Introduction and Spread

There are many potential pathways of introduction and spread of AIS. Most species introductions are the result of people's actions. AIS are often unknowingly carried in or on recreational watercraft, fishing equipment, contaminated water, ballast (recreational and commercial), maintenance equipment, wind, and water.

Trailer recreational watercraft and associated equipment are high-risk pathways in Minnesota for the introduction and spread of AIS such as Eurasian watermilfoil, spiny waterflea, and zebra mussel. Movement of boat lifts, docks, waders, hip boots, fishing equipment, and waterfowl hunting gear are also potential pathways of spread for invasive plants and invertebrates.

Invasive aquatic plants purchased by mail or over the internet for water gardens and other uses are pathways for AIS, either because the plants that are ordered are invasive, or the shipment may be contaminated with AIS. The release of contaminated live bait by anglers and the release of pets, especially from aquaria, are pathways for introducing non-native plants, pathogens, and animals into the environment. Release of live study specimens by students and teachers is another pathway.

Connected waterways can be conduits for AIS to arrive without human assistance once they have been introduced.

Strategies

In the following pages, the plan utilizes six strategies with tactics and actions to accomplish the goals of the Cook County AIS Prevention Plan. The six strategies are as follows:

1. Risk Assessment
2. Watercraft Inspection and Compliance
3. Outreach and Education
4. Partnerships and Resources
5. Early Detection and Monitoring
6. Manage Existing Populations and Rapid Response

Specific actions are defined under each heading with a description of the program actions. The actions shaded blue are priority items to be accomplished each year. Unshaded actions are accomplished when resources are available. These actions are to be accomplished with the limited resources of the program and to supplement existing programs through other local, state, tribal, or federal programs.

Program action steps for the Cook County AIS Prevention Plan were developed with input from partners in the AIS Advisory Committee, as well as, members of the original AIS Task Force.

IMPLEMENTATION ACTIONS IN COOK COUNTY

Section 1: Risk Assessment

Action	Benefit to AIS Prevention
1.1 Understand the variety of pathways of introduction to local waters.	Knowing the pathways which AIS can be spread is essential to effective prevention.
1.2 Maintain public water access data on infestations, usability, and recreation.	AIS are more easily transported between infested waters and other connected waterbodies; knowing these linkages will help prioritize prevention resources.
1.3 Increase awareness of recreational flow within the county.	This will help prioritize resources by quantifying the rate of use for areas within the county.
1.4 Investigate new tools and ideas (e.g., logbooks for boats) for identifying AIS pathways.	Identifying pathways is a key tool in prevention AIS spread.

Section 2: Watercraft Inspection and Compliance

Anglers and water recreation users are best reached for education through person-to-person contact. Minnesota’s watercraft inspection program was created by the MNDNR to prevent the spread of AIS through boater education and watercraft inspections at public accesses. Level 1 watercraft inspectors conduct inspections of watercraft and related equipment. Level 2 watercraft inspectors decontaminate equipment. Cook County remains focused on boater education and interaction at public accesses. Law enforcement watercraft inspections are a key component to maintaining effective AIS law compliance.



Photo: Cook County Watercraft Inspector (A. Weberg)

Action	Benefit to AIS Prevention
2.1 Ensure that the county’s peace officers, volunteers, water safety patrol staff etc., have been trained to enforce and educate about AIS laws.	Having trained law enforcement will extend the capacity of local enforcement to ensure compliance with and understanding of AIS laws.
2.2 Increase watercraft inspections within the county by hiring 3-6 authorized watercraft inspectors through a delegation agreement with the MNDNR.	Watercraft inspectors help spread accurate prevention messages and compliance of AIS laws to boaters and develop in person connections. MNDNR training and authorization through a delegation agreement is required to conduct inspections.
2.3 Utilize DNR conservation officers to patrol public accesses near infested and priority lakes to issue compliance checks with AIS laws.	Compliance checks away from boat launches are effective at communicating the presence of law enforcement and help educate lake users on the seriousness of AIS laws and penalties for infractions.
2.4 Ensure that local authorities are aware of state regulations that prohibit transport and/or harvesting of prohibited invasive species, aquatic plants, and water from designated infested waters.	Consistent enforcement of AIS regulations aimed at containment will help to prevent the further spread of AIS.

<p>2.5 Investigate the cost and feasibility of renting decontamination trailers for use to clean boats and equipment used in infested lakes within the county during special events (e.g. fishing tournaments). Promote boat washing with a simple garden hose when possible.</p>	<p>Boat washing and decontamination of watercraft is a key tool in preventing AIS spread. Decontamination trailers are expensive and require extensive maintenance. No decontamination station is currently in Cook County. The County has partnered with existing businesses to provide boat cleaning prevention services.</p>
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Section 3: Outreach and Education

As a county with relatively few inland waterbody AIS infestations compared to others in the state, Cook County works actively toward AIS prevention. This is best accomplished by individuals changing their behavior to reflect sustainable AIS prevention habits. Education and outreach are key to facilitating prevention and remains a primary focus of programming.



Photos: Rusty Crayfish in Fish Pic Parade (A. Weberg); Exploratory Day at Sea Gull Lake (GES); Outreach booth at Festival (A. Weberg).

Action	Benefit to AIS Prevention
3.1 Support and ensure local businesses are reducing the risk of AIS spread. Lake Service Providers (LSPs) are required to be certified by the MNDNR.	The day-to-day operations of some businesses, whether regulated or not, can pose a risk of AIS spread.
3.2 Educate youth on AIS prevention through in-school presentations, partnerships, and summer programming.	Environmental education principles outline the effectiveness of educating about values and actions at a young age to facilitate sustainable behavior change as an adult. Facilitate education by maintaining cooperative programs with Cook County Schools.
3.3 Develop and distribute AIS prevention messages targeting to shoreland and riparian landowners who launch watercraft from their own private residential access. Work with lake associations, environmental and conservation organizations, resorts, and realtors to promote and coordinate AIS prevention messages.	Many watercraft enter lakes and rivers from private residential property and are not reached by education and prevention efforts directed at public accesses.

<p>3.4 Collaborate with other counties, watershed groups, and/or jurisdictions whose water bodies connect to Cook County to develop a regional approach to AIS prevention. See Table 2 for a list of agency partners.</p>	<p>Because AIS and the individuals who could transport them do not stay inside county borders, effective coordination is necessary to prevent AIS spread. Cross county coordination (e.g., Lake and St. Louis) will help to leverage resources.</p>
<p>3.5 Staff and/or host a booth or float focused on AIS outreach at area festivals and events.</p>	<p>Locals and tourists attend festivals, events, and farmer’s markets, which provide an effective venue for face-to-face conversations and education. Participate in region-wide events serving Arrowhead residents, including shows in Duluth and Lake County.</p>
<p>3.6 Coordinate partnerships with existing outreach efforts developed by the MNDNR, MAISRC, Wildlife Forever, and the Minnesota Sea Grant Program.</p>	<p>Leveraging existing materials ensures that the public receives accurate messages about rules and best practices related to AIS prevention.</p>
<p>3.7 Complete an AIS prevention outreach campaign with local appeal. Utilize WTIP North Shore Community Radio, Boreal website, Northern Wilds, local papers etc. Also include targeting non-residents in the outreach campaign.</p>	<p>Ensuring that individuals (both residents and non-residents) are aware of AIS prevention measures that they can take during their daily activities will help to reduce the risk of AIS spread.</p>
<p>3.8 Coordinate with the MNDNR, Cook County, and USFS to publicize new infestations at access sites, in lake association newsletters, and other local publications.</p>	<p>Timely and accurate notice of new AIS infestations empowers the public to help prevent the further spread of AIS.</p>
<p>3.9 Develop tailored messages aimed at regional needs. Including lake-related businesses (home builders, developers), buyers and sellers of aquatic plants, animals, boats, docks, and local government staff (e.g. county planners) regarding AIS prevention.</p>	<p>Targeting AIS prevention messages to activities that may present a risk of AIS spread may be more effective than generic public awareness messages. Some regional infestations differ from national or statewide AIS concerns.</p>

<p>3.10 Hire seasonal educators, trained by MNDNR, MAISRC, and/or Minnesota Sea Grant, to distribute educational materials and enlist additional volunteers to support this effort, particularly during peak times (holidays and weekends).</p>	<p>Targeting educational efforts (e.g. Stop Aquatic Hitchhikers!) to the users of a water body may help prevent AIS spread from or into that water body.</p>
<p>3.11 Develop methods and local training sessions to reduce risk of invasive species introduction through government and business operations.</p>	<p>Help prevent AIS spread by developing and sharing new risk-reduction methods and by identifying actions and operations that could contribute to AIS spread.</p>
<p>3.12 Train county and city field staff (e.g., zoning, septic system, land department) on management practices that maintain and/or create diverse, native landscapes resilient to invasive species.</p>	<p>Making the environment more resistant to AIS can help prevent AIS infestation.</p>

Section 4: Partnerships and Resources

Cook County can increase resources available for AIS prevention, education, and management by leveraging partnerships. Many organizations facilitate AIS prevention in the Northeast Region, and it is important to coordinate efforts to reduce duplications. Connected waters in Cook County, especially in the Rainy River Headwaters Watershed along the US-Canada border, necessitate cooperation with many groups. Expanding partnerships increase Cook County’s capacity to implement the AIS Prevention Plan.

Action	Benefit to AIS Prevention
4.1 Assist with funding local outreach and monitoring efforts by entities other than the county including (but not limited to) volunteers, DNR, USFS, lake associations, Minnesota Sea Grant, Grand Portage Trust Lands, Grand Portage National Monument, outfitters, colleges, wilderness camps, commercial fisherman and fishing groups.	Overall AIS prevention efforts can be strengthened by building the capacity of other local organizations (and nearby counties) to conduct AIS outreach and monitoring activities.
4.2 Develop and maintain contacts with other local organizations, businesses, lake associations, environmental and conservation organizations, resorts, realtors, and government entities including Lake, St. Louis, and Itasca Counties.	The participation of local partners is necessary for the AIS Prevention Plan to be effective. Continue to work with private managers to conduct outreach and watercraft inspections.
4.3 Support local organizations, such as CCCoLA, to create partners in implementing the AIS Prevention Plan.	Additional partnerships among local organizations increase the county’s capacity to implement the AIS Prevention Plan.
4.5 Collaborate with other counties, watershed groups, and/or jurisdictions to develop a regional approach to AIS prevention.	AIS and the individuals who could transport them do not stay inside County borders, effective coordination is necessary to prevent AIS spread.
4.6 Establish a grant program to support local efforts to prevent the spread of AIS.	By leveraging other local organizations, the county can maximize the AIS prevention funds.
4.7 Seek additional funds to fulfill unfunded actions in the AIS Prevention Plan. Be conscious of matching funding opportunities.	The effectiveness of AIS prevention actions can be limited by inadequate financial resources.

Section 5: Early Detection and Monitoring

By detecting small infestations early, further spread of other waterbodies may be prevented.



Photos: Spiny waterflea monitoring (J. Carleen); Rusty crayfish monitoring (A. Weberg)

Action	Benefit to AIS Prevention
5.1 Oversee and implement, with partners, an early detection program.	Finding new infestations of AIS early is key to preventing further spread and ensures new infestations are reported with rapid response deployed, if required.
5.2 Encourage county staff, businesses, and individuals to submit samples of suspected AIS to the SWCD.	The County can support early detection and prevention efforts by helping the MNDNR to quickly confirm new infestations of AIS.
5.3 Augment communication and reporting mechanisms for citizen monitoring of lakes and rivers.	Ensuring that local discoveries of AIS are quickly communicated will maximize prevention efforts related to new infestations.
5.4 Cultivate and maintain partnerships with organizations (e.g., lake associations) to support AIS surveys in water bodies (infested and non-infested).	Leveraging the resources of existing organizations will help to find new AIS infestations more efficiently and to prevent further spread of those AIS.
5.5 Approve an early detection and rapid response program with county acting in a resource support agreement with the MNDNR.	This program will ensure that new infestations are properly reported, and rapid response is deployed, if required.

Section 6: Managing Existing Populations and Rapid Response

AIS infestations in Cook County primarily include spiny waterfleas and rusty crayfish, neither of these species have effective management strategies. Lake Superior AIS management is limited at the County level, but should be pursued cooperatively when options are available. Rapid response should be employed for future infestations. Effective management prevents further spread.

Action	Benefit to AIS Prevention
6.1 Respond and communicate efficiently and effectively to reports of new infestations.	Rapid response to AIS findings minimizes additional spread. Keep a reliable database of current infestations and reports. Records should be updated on the online database EDDMaps.
6.2 Develop rapid response protocols in cooperation with regional partners.	A standardized rapid response protocol creates a plan for infestations before they arise and outlines organizational responses preemptively.
6.3 Adopt control plans utilizing safe and cost-effective techniques.	Effective management of existing AIS may help prevent further spread. Coordinate with MNDNR for information on management of AIS.
6.4 Evaluate AIS prevention efforts and cooperative relationships for possible improvements.	Participants at all levels can share input and new ideas to continuously improve the AIS Prevention Plan for the local area.
6.5 Contract with private vendors with equipment and knowledge to facilitate AIS management.	Private vendors may have increased capacity to implement certain management techniques.

UPDATING AND AMENDING THE PLAN

This plan will be reviewed annually by the AIS Advisory Committee and updated as needed.

APPENDICES

Appendix A: Current Aquatic Invasive Species in Cook County

These are the AIS found in the inland waters of Cook County, which can be addressed through the Cook County AIS Prevention Plan. Species appear, generally, in order of priority for AIS prevention, monitoring, and management. These priority AIS are identified because they:

- Harm fish, plants, invertebrates, and fish diseases that are at high risk for spread, are
- Highly populous where they occur, and/or
- They are species that have potential to be controlled through management.

Spiny Waterflea (*Bythotrephes longimanus*)

Means of Spread: Cling to fishing lines, downrigger cables, anchor ropes, fishing nets, and possibly in bilge water, bait buckets, or live wells. Spiny waterflea can spread from Lake Superior to inland waters.

Description: Spiny waterfleas are small (1/4 – 5/8 inches) predacious crustaceans that threaten aquatic ecosystems and fishing by competing with native fish for food. Clumps of spiny waterfleas look and feel like cotton batting with black spots. Spiny waterfleas eat native zooplankton, which are an important food for native fishes. In some lakes, they caused the decline or elimination of species of native zooplankton. Spiny waterfleas are abundant during June-September with warm water temperatures.

Spiny waterfleas arrived in ships' ballast water from Eurasia. Spiny waterfleas were discovered in Lake Ontario in 1982, and then spread to all of the Great Lakes and some inland lakes. Anglers often discover new infestations. Spiny waterfleas collect in masses on fishing lines and downrigger cables. These masses can clog the first eyelet of rods, damage a reel's drag system, and prevent fish from being landed. They can spread to inland waters when fishing gear is contaminated with egg-laden females. While females die out of water, under certain conditions they produce eggs that resist drying, remain viable, and can establish a new population. Eradicating established infestations is impossible, but early detection of isolated populations may help slow or prevent the spread.



The first detections of Spiny waterfleas in Minnesota inland lakes occurred in 1990. As of December 2020, 66 waterbodies in Minnesota are designated as infested with Spiny waterfleas. Of these waterbodies, 16 (24%) are in Cook County.

Regulations: Regulated species, meaning that introduction into another waterbody is prohibited.

Rusty Crayfish (*Orconectes rusticus*)

Means of Spread: Rusty crayfish have likely spread through bait bucket release by anglers, aquarium release by hobbyists, activities of commercial harvesters, and live study specimen release by teachers and students who buy them from biological supply houses. Females can carry fertilized eggs or sperm so the release of a single female could establish a new population.

Description: Adults are generally 3-5 inches long (nose to tail). Claws are larger and smoother than native crayfish and are usually without wart-like white bumps. Claws have an oval gap when closed and do not have a distinct thin slit or notch present. Rusty crayfish usually have an indicative rusty red spot on the side of the carapace, although coloring is not always a reliable means of identification.

Rusty Crayfish are native to the Ohio River Basin and have become invasive crustaceans spreading to lakes, rivers, and streams in other areas of North America. They are more aggressive than native crayfish, better able to avoid fish predation, and can harm native fish populations by eating their eggs and young. They can displace native crayfish, hybridize with them, and graze on and eliminate aquatic plants. Eradicating established infestations is very difficult, if not impossible. Rusty Crayfish were first detected in southwestern Minnesota in the 1960s.

Regulations: Regulated species, which means release into the environment is illegal. Licensed anglers may collect any crayfish for use as bait on the same waterbody. They may harvest up to 25 pounds of any crayfish for personal consumption. Selling live crayfish for bait or aquarium use is illegal.



Chinese Mystery Snails (*Cipangopaludina chinensis*)

Means of Spread: Native to Asia, Chinese mystery snails (CMS) were shipped to California in the late 1800s for Asian seafood markets. CMS were likely released from aquaria into the Niagara River in the 1930s. They continue to spread through aquarium release, aquatic vegetation, and transfer of contaminated water.

Description: CMS have a coiled spiral shell and grow up to three inches tall. The shell opening is on the right when the shell is pointed up. They have an operculum covering the opening, which is missing when the snail is dead and the shell is empty.

CMS form dense populations and outcompete native species for food and habitat in lakes and streams. They are intermediate hosts for parasitic worms and can transmit trematodes that kill waterfowl. Shells often litter shorelines and clog screens of water intakes.

They are called “mystery” snails because in spring they give birth to fully developed snails that suddenly and mysteriously disappear. After reproducing in their fourth year, they die and wash up on shore causing odor and disposal issues. They can survive out of water for days by closing their shells. Eradicating mystery snails is nearly impossible. CMS were first detected in Minnesota in 1944.

Regulations: Regulated species allowed for harvest and use. These species are being reevaluated and may be designated as prohibited invasive species by DNR.



Didymo (*Didymosphenia geminata*)

Means of Spread: Recreational anglers can spread Didymo that gets imbedded in felt soles of boots, waders, and field gear. It can survive for days out of water under moist conditions.

Description: Didymo or “rock snot” is a brownish alga that can form thick mats on river bottoms and shorelines. Mats can reduce bottom dwelling organisms thereby affecting fish diets and reproduction. In its invasive form, Didymo looks like slimy goo, but feels like wet wool or fiberglass insulation. Likely native to Lake Superior and parts of Canada, around 1990 an invasive form spread to some Western rivers and eastward from the Mid-Atlantic to Quebec. It is especially invasive in New Zealand. Eradicating infestations is impossible.

Didymo is found in Lake Superior and in some streams along the North Shore. It is not known if it is native or non-native or if it would become invasive in other parts of Minnesota if it were transported inland. Additional research is ongoing regarding Didymo spread and impacts.

Regulations: Unregulated in Minnesota.



Purple Loosestrife (*Lythrum salicaria*)

Means of Spread: Each mature purple loosestrife plant can produce up to 2.7 million seeds annually, and can thus be easily transported in mud, attached to shoes or pants, on the wheels of ATVs or other equipment, and by connected waters. Seeds can also lay dormant for several years before sprouting.

Description: Purple loosestrife has a recognizable square-shaped stem and lance-like opposite leaves. Flower spikes bloom purple from end of July through September. Plants can grow to 6 feet tall. Purple loosestrife is an invasive perennial plant that spreads rapidly in North American wetlands, shorelines, and roadside ditches. Thick stands of Purple loosestrife crowd out native plants and reduce food, shelter, and nesting sites for wildlife, birds, turtles, and frogs. After multiple introductions in the 1800s for bee keeping, as an ornamental plant, and in discarded soil used as ballast on ships, this European species has invaded nearly every U.S. state and at least six Canadian provinces. Gardeners, waterfowl hunters, and other outdoor enthusiasts should know how to identify Purple Loosestrife - detecting new infestations can prevent the spread of this plant.



Depending upon the size and density of infestation, Purple loosestrife can be effectively controlled using cutting, herbicide treatment or release of biological control agents.

As of December 2020, there are 10 known infestations of Purple Loosestrife in Cook County.

Regulations: Prohibited species including cultivars, which means it cannot be possessed, grown, cultivated, transported, or sold in Minnesota.

Narrowleaf and hybrid cattail (*Typha angustifolia* L., *Typha x glauca*)

Means of Spread: Spread is by wind dispersed seeds, rapidly spreading rhizomes, and mud contaminated with seeds clinging to footwear and equipment.

Description: Narrowleaf Cattail is native to Europe and Asia. It can hybridize with native Broadleaf Cattail. Narrowleaf and hybrid cattail outcompete native plants and form dense stands, reducing native plant diversity. They grow in roadside ditches, disturbed sites, and in areas with moist soil. In open water, dense, floating mats can break away from a stand and establish elsewhere. Narrowleaf Cattail and its hybrid are difficult to manage.

All cattails are recognized to be beneficial in some situations, though dense stands of invasive cattails could interfere with a property owner's ability to recreate, pose navigational hazards especially if a floating cattail mat is formed, and reduce aquatic fish and wildlife habitats. There are a few documented locations of Narrowleaf cattail in Cook County but spread has not grown significantly in any documented stand.



Regulations: Unlisted species in Minnesota. All cattails in public waters are regulated under state aquatic plant management regulations and permits are required for their removal.

Rainbow Smelt (*Osmerus mordax*)

Means of Spread: Great Lakes introductions were due to stocking and escape from Crystal Lake, Michigan. Subsequently, Rainbow smelt spread throughout all the Great Lakes and into many inland waters in Ontario, Minnesota, and Wisconsin. Other means of spread include potential illegal stocking and harvest, use and release of live bait, cleaning of smelt bearing eggs near other waters, and connected waterways. Fertilized eggs can stick to boats, gear, and equipment.

Description: Rainbow smelt is a small soft-rayed silver fish with teeth on both mouth and tongue, and an unusually large mouth for its size. Body is slender and cylindrical. Back is silvery pale green and the sides are iridescent purple, blue, and pink. The underside is white. The body has 26-35 gill rakers, a dorsal fin, an anal fin, pectoral fins, pelvic fins, an adipose fin, and a deeply forked tail fin. It has a pointed snout and large black and silver eyes. The average size when full-grown is 7 – 9 inches and weighs 3 oz.



It is native to the Atlantic drainages from Newfoundland to Delaware. Rainbow smelt were first detected in Lake Michigan in 1923. While harvesting smelt is a rite of spring for some, smelt can cause the decline of popular game fish including Yellow Perch, Walleye, Northern Pike, Lake Whitefish, and Cisco (Tullibee or Lake Herring).

Regulations: Regulated species that can be harvested for human consumption. It is illegal to use smelt, live or frozen, unless it is used on waters from which it was harvested. Only DNR-approved frozen smelt can be used in inland waters to prevent the spread of viral hemorrhagic septicemia (VHS).

Sea Lamprey (*Petromyzon marinus*)

Means of Spread: Sea lamprey are not usually transported by recreationists or anglers, unless intentionally, but all water users should follow clean, drain, dispose, and dry guidelines. If you catch a sea lamprey attached to a fish, it should be killed and properly disposed.



Description: Sea lamprey are an eel-like fish that can grow up to 20 inches long, unlike much shorter, smaller, native Chestnut and Silver lamprey. Sea lamprey do not have a jaw, but a suction-cup mouth with concentrically arranged teeth and a rasping tongue. Originally native to the Atlantic Ocean and Lake Ontario, sea lamprey spread into the Great Lakes via canals that bypassed natural barriers. Sea lamprey introduction in Lake Superior contributed to the 1950s commercial fishing crash, and the species has since been primarily managed through lampricide and barriers preventing access to spawning areas by the USFWS and the Sea Lamprey Control Program, resulting in a reduction of the population by 90%. Sea lamprey kill fish, primarily lake trout, by attaching to them parasitically and feeding on their blood. A single sea lamprey can kill 40lbs of fish in a lifetime.



Regulations: Sea lamprey are classified as a prohibited invasive species in Minnesota. It is illegal to possess, buy, sell, transport, and introduce a prohibited invasive species.

Viral Hemorrhagic Septicemia (VHS)

Means of Spread: VHS can be spread by moving infected fish from one body of water to another, moving infected water and equipment from one waterbody to another, stocking or releasing infected fish or water from infected fish hatcheries or the natural migration and movement of infected fish from one waterbody to another.

Description: At a low level of infection, fish might not display any symptoms. As the infection becomes greater, however, fish will display widespread hemorrhages (bleeding) throughout body surface (eye, skin, and fins) and within the internal organs (swim bladder, intestine, kidney etc.). Because of the bleeding, gills and liver might appear pale. Sick fish will often be listless, swim in circles, and are frequently observed at the surface of the water. Confirming VHS infection requires sophisticated laboratory testing. A diagnosis cannot be made based solely on observation because many different diseases of fish have very similar symptoms.



Photo courtesy of Dr. Mohamed Faisal

Regulations: If you catch a suspected diseased fish place the fish in a plastic bag and keep it in an iced cooler or refrigerator as quickly as possible (do not freeze). Call the local Grand Marais MNDNR fisheries office (218-387-6021) for instructions or if you observe a fish kill.

Appendix B: Cook County Waterbodies: AIS Infestations (2020)

For an updated and complete list of statewide AIS lake infestations visit:

Minnesota Department of Natural Resources Website: dnr.state.mn.us/invasives/ais/infested.html

Minnesota DNR Infested Waters List: eddmaps.org/midwest/tools/infestedwaters/

Table 1. Public Waterbodies: AIS Infestations (2020)

Waterbody Name	AIS Present	Access Type	Year Confirmed	Waterbody ID Number
Alpine Lake (BWCA)	Purple Loosestrife	BWCA	2006	16-0759
Caribou Lake (BWCA-from Pine)	Spiny Waterflea	BWCA	2007	16-0141
Caribou Lake (Lutsen)	Rusty Crayfish	Trailer Launch	2020	16-0360
Chester Lake	Rainbow Smelt	Carry-In	1979	16-0033
Devilfish Lake	Spiny Waterflea	Trailer Launch	2016	16-0290
Devil Track Lake	Spiny Waterflea	Trailer Launch	2008	16-0143
Duncan Lake (BWCA)	Rainbow Smelt, Rusty Crayfish	BWCA	1982, 2017	16-0232
Flour Lake	Spiny Waterflea	Trailer Launch	2005	16-0147
Gillis Lake (BWCA)	Purple Loosestrife	BWCA	2007	16-0753
Gneiss Lake (BWCA)	Rainbow Smelt	BWCA	1979	16-0617
Greenwood Lake	Spiny Waterflea	Trailer Launch	2005	16-0077
Gull Lake	Rusty Crayfish	Trailer Launch	2002	16-0632
Gunflint Lake	Spiny Waterflea, Rainbow Smelt	Trailer Launch	2007, 1979	16-0356
Hungry Jack Lake	Purple Loosestrife, Rainbow Smelt, Rusty Crayfish	Trailer Launch	1992, 1971, 2002	16-0227
Lake Superior	Spiny Waterflea, Rainbow Smelt	Trailer Launch	1995, 1995	16-0001
Little John Lake	Spiny Waterflea, Purple Loosestrife	Trailer Launch	2005, 2009	16-0026

Waterbody Name	AIS Present	Access Type	Year Confirmed	Waterbody ID Number
Magnetic Lake	Rainbow Smelt	N/A	1978	16-0463
McFarland Lake	Spiny Waterflea	Trailer Launch	2005	16-0027
Murmur Creek	Rusty Crayfish	N/A	2020	S-58-2
North Fowl Lake	Spiny Waterflea	Carry-In	2010	16-0036
Pigeon River	Spiny Waterflea, Rusty Crayfish	Trailer Launch	2010	S-88
Pike Lake	Rusty Crayfish	Trailer Launch	1995	16-0252
Pine Lake (BWCA)	Spiny Waterflea	BWCA	2005	16-0041
Red Rock Lake (BWCA)	Rainbow Smelt	BWCA	1992	16-0793
Rose Lake (BWCA)	Rainbow Smelt	BWCA	1987	16-0230
Royal Lake (BWCA)	Spiny Waterflea	BWCA	2010	16-0025
Royal River (BWCA)	Spiny Waterflea	BWCA	2010	S-88-11
Sagananga Lake	Spiny Waterflea, Rainbow Smelt, Rusty Crayfish, Purple Loosestrife	Trailer Launch	2003, 1992, 2005, 2005	16-0633
Sea Gull Lake	Rusty Crayfish	Trailer Launch	2005	16-0629
South Fowl Lake	Spiny Waterflea	Carry-In	2010	16-0034
Swamper Lake	Chinese Mystery Snail	Carry-In	2018	16-1280
Thompson Lake	Chinese Mystery Snail	Carry-In	2010	16-0160
Trout Lake	Spiny Waterflea, Rainbow Smelt	Trailer Launch	2013	16-0049
Vista Lake (BWCA)	Purple Loosestrife	BWCA	2001	16-0224
West Bearskin	Rainbow Smelt, Rusty Crayfish	Trailer Launch	1982, 2009	16-0228

Appendix C: Prevention Plan Participants

Multiple organizations are partnering with Cook SWCD to implement the AIS Prevention Plan. The AIS Prevention Plan update was amended during July 2020-March 2021.

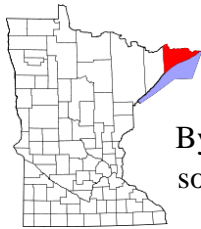
* Members of the AIS Advisory Committee

Table 2. Agency Contacts in Developing the 2021 AIS Prevention Plan Update

Organization	Contact(s)
Federal Government	
U.S. Forest Service	*Amy Wilfahrt amy.wilfahrt@usda.gov
	Jason Butcher jason.butcher@usda.gov
MN State Government	
DNR Grand Marais Fisheries	*Matt Weberg matthew.weberg@state.mn.us
DNR Conservation Officer Grand Marais	Mary Manning mary.e.manning@state.mn.us
DNR Watercraft Inspection Supervisor – NE region	Keri Hull keri.hull@state.mn.us
DNR AIS Prevention Planner – NE region	Phil Hunsicker phillip.hunsicker@state.mn.us
DNR Invasive Species Specialist – NE region	Rich Rezanka richard.rezanka@state.mn.us
DNR Law Enforcement – NE Water Resources	Rob Haberman Robert.haberman@state.mn.us
U of MN Sea Grant Extension	Doug Jenson djenson1@d.umn.edu
MPCA	*Karen Evens karen.evens@state.mn.us
Independent	
1854 Treaty Authority	Tyler Kasper tkasper@1854treatyauthority.org
Grand Portage Monument	Brandon Seitz brandon_seitz@nps.gov
Grand Portage Band of Lake Superior Chippewa	*Krishna Woerheide kwoerheide@grandportage.com

Organization	Contact(s)
Cook County	
SWCD District Manager	Ilena Hansel ilena.hansel@co.cook.mn.us
SWCD AIS Supervisor	*Amanda Weberg amanda.weberg@co.cook.mn.us
SWCD Board Representative	*Stan Tull (District 2) murmurcreekobservatory@gmail.com
AIS Advisory Committee Commissioner Representative	Ginny Storlie ginny.storlie@co.cook.mn.us
Neighboring Counties	
Lake County	Liz Anderson elizabeth.anderson@co.lake.mn.us
N. St. Louis County	Natalya Walker natalya@nslswcd.org
Additional Partners	
Cook County Coalition of Lake Associations (CCCoLA)	*Irene Mullen lmullen001@msn.com
	*Kate Kelnberger kkelnberger@boreal.org

Appendix D: Cook County Profile



Cook County is at the tip of Minnesota's Arrowhead region in the remote northeastern part of the state, stretching from the shores of Lake Superior to the US-Canada border. By land it borders Ontario, Canada to the north, and Lake County, MN to the west. To the south and east across Lake Superior it shares a water boundary with Michigan and Wisconsin.

Total Area: 3,339.72 sq. mi – second largest county in Minnesota by total area

Total Area (Land): 1,450.60 sq. mi (43.43%)

Total Area (Water): 1,889.11 sq. mi (56.56%)

Federal Land Ownership: 662,586 Ac (69.73%)

State Land Ownership: 144,828 Ac (15.24%)

Private Land Ownership: 88,109 Ac (9.27%)

2010 Population: 5,176 (Approx. 3.6 people per square mile; 5th least populated Minnesota County)

County Seat: City of Grand Marais

Cook County Profile

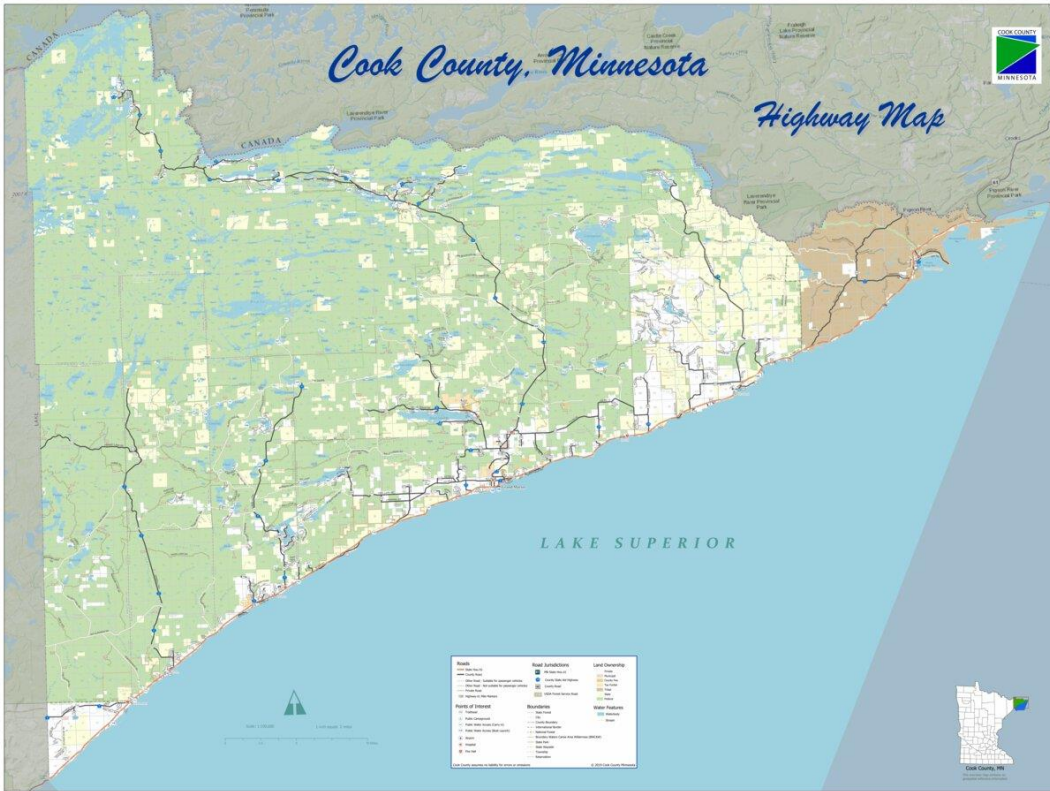


Photo: General purpose map of Cook County MN (Cook County, Minnesota)

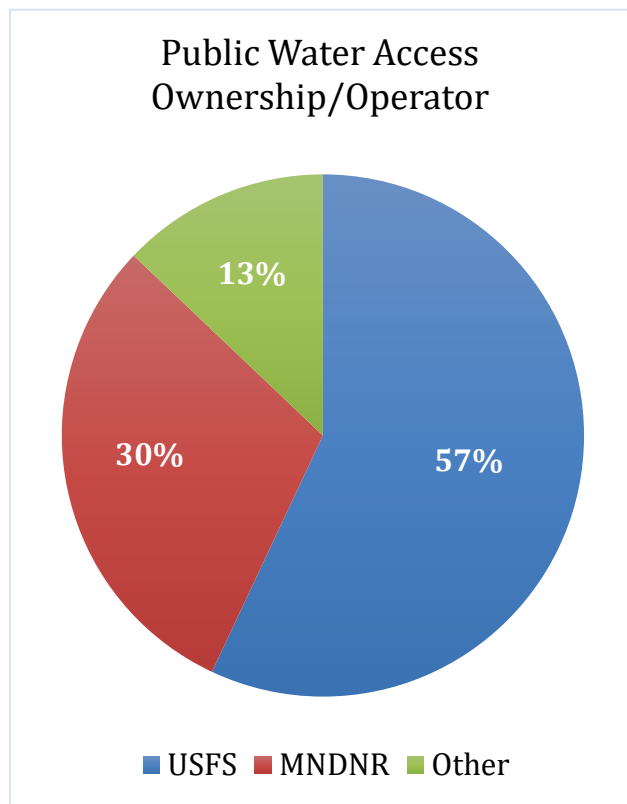
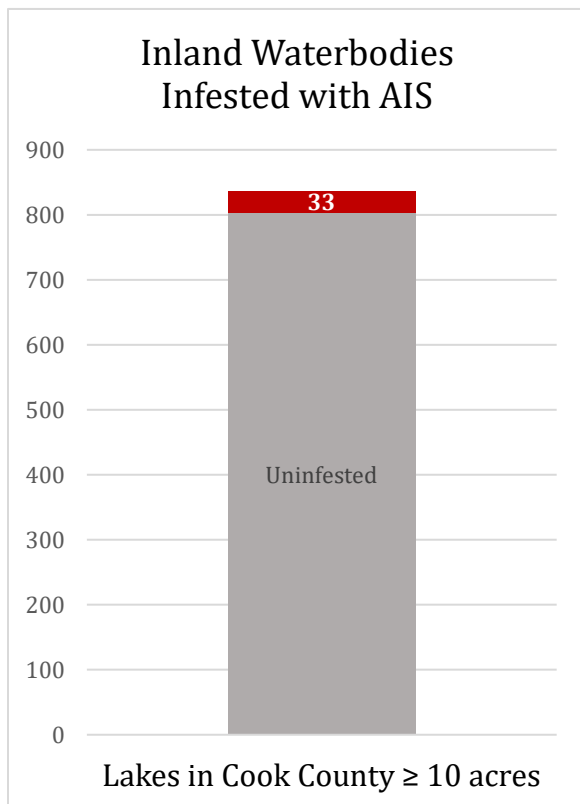
Brown: Tribal land, Yellow: State land, Green: Federal land, White: Private land

One reservation, the Grand Portage Band of Lake Superior Chippewa, is held within Cook County. The Grand Portage Band has off reservation treaty rights in the 1854 Ceded Territory which includes most of Cook County. The 1854 Treaty Authority protects and enhances the off-reservation treaty rights and resources within the 1854 Ceded Territory on behalf of the Grand Portage Band.

Appendix E: Cook County Water Resources

Table 3. Characterization of Cook County Inland Lakes with Public Access

Lakes more than 10 acres in size	836
Inland waterbodies infested with aquatic invasive species	33
Total number of public water accesses (44 Carry-in / 49 Trailer)	93
Public water accesses owned or operated by US Forest Service	53
Public water accesses owned or operated by MNDNR	28
Public water accesses owned or operated by Cook County	6
Public water accesses owned or operated by a township	3
Public water accesses owned or operated by MnDOT	1
Public water accesses owned or operated by a city	1
Public water accesses owned or operated by Grand Portage Band	1



Appendix F: Cook County Lake Service Providers (LSPs): 2020

Table 4. List of DNR permitted Lake Service Providers (2020)

Business Name	Personnel
Big Bear Lodge	Ida Delisi
Gunflint Pines	Shari Baker
Loon Lake Lodge	Thomas Caldwell
Sawtooth Outfitters	Jeff Lynch
Seagull Outfitters	David Truehart
Solbakken Resort	David Howe
Stone Harbor Wilderness	Jack Stone

Appendix G: Glossary of Acronyms

CCCoLA:	<u>Cook County Coalition of Lake Associations</u>
EDDMapS:	<u>Early Detection and Distribution Mapping System</u> (online tool)
GIS:	<u>Geographical Information System</u>
NRRI:	<u>Natural Resources Research Institute</u>
MAISRC:	<u>Minnesota Aquatic Invasive Species Research Center</u>
MNDNR:	<u>Minnesota Department of Natural Resources</u>
MNDOT:	<u>Minnesota Department of Transportation</u>
MPCA:	<u>Minnesota Pollution Control Agency</u>
SWCD:	<u>Soil and Water Conservation District</u>
USFS:	<u>United States Forest Service</u>

Appendix H. State legislation and definitions (2014)

477A.19 AQUATIC INVASIVE SPECIES PREVENTION AID.

Subdivision 1. Definitions. (a) When used in this section, the following terms have the meanings given them in this subdivision.

(b) "Aquatic invasive species" means non-native aquatic organisms that invade water beyond their natural and historic range.

(c) "Watercraft trailer launch" means any public water access site designed for launching watercraft.

(d) "Watercraft trailer parking space" means a parking space designated for a boat trailer at any public water access site designed for launching watercraft.

Subd. 2. Distribution. The money appropriated to aquatic invasive species prevention aid under this section shall be allocated to all counties in the state as follows: 50 percent based on each county's share of watercraft trailer launches and 50 percent based on each county's share of watercraft trailer parking spaces.


Subd. 3. Use of proceeds. A county that receives a distribution under this section must use the proceeds solely to prevent the introduction or limit the spread of aquatic invasive species at all access sites within the county. The county must establish, by resolution or through adoption of a plan, guidelines for the use of the proceeds. The guidelines set by the county board may include, but are not limited to, providing for site-level management, countywide awareness, and other procedures that the county finds necessary to achieve compliance. The county may appropriate the proceeds directly or may use any portion of the proceeds to provide funding for a joint powers board or cooperative agreement with another political subdivision, a soil and water conservation district in the county, a watershed district in the county, or a lake association located in the county. Any money appropriated by the county to a different entity or political subdivision must be used as required under this section. Each county must submit a copy of its guidelines for use of the proceeds to the Department of Natural Resources by December 31 of the year the payments are received.

Subd. 4. Payments. The commissioner of revenue must compute the amount of aquatic invasive species prevention aid payable to each county under this section. On or before August 1 of each year, the commissioner shall certify the amount to be paid to each county in the following year. The commissioner shall pay aquatic invasive species prevention aid to counties annually at the times provided in section 477A.015. For aid payable in 2014 only, the commissioner shall certify the amount to be paid to each county by July 1, 2014, and payment to the counties must be made at the time provided in section 477A.015 for the first installment of local government aid.

Subd. 5. Appropriation. \$4,500,000 in 2014, and \$10,000,000 each year thereafter, is appropriated from the general fund to the commissioner of revenue to make the payments required under this section.


Appendix I: Signatures of Approval

COOK COUNTY

BY:  1/14/21
Board Chair Date

Printed Name: David Mills

COOK COUNTY SOIL & WATER CONSERVATION DISTRICT

BY:  Jan 3/2022
Board Chair Date

Printed Name: JOAN FARNAM