

Minnesota Statewide AIS Advisory Committee (SAISAC)

November 3, 2022 Meeting Minutes

Sauk Rapids In-Person + Online Teams Option

Members Present:

- In-Person: Kate Hagsten, Mike Sorensen, Beto Garcia, Shelly Binsfeld
- Online: Pat Brown, Michaela Kofoed, Ryan Wersal, Will Bement, Chris Magnotto, Bruce Babcock

Members Absent: Chris DuBose, Holly (Kalbus) Bushman, Charlie Brandt, Maggie Stahley, KoriiRay Northrup

Ex-officio Members Present: In-Person: Meg Duhr

Ex-officio Members Absent: Nicole Lalum, Amy McGovern

DNR Staff Present: Heidi Wolf, Tina Fitzgerald, Jake Walsh

Guests (Online): Wendy Crowell, Shane McBride, Grace Lopnow

Chair M. Kofoed called the meeting to order at 10:07AM

Motion to approve agenda: First by W. Bement, second by M. Kofoed.

Motion to approve Meeting Minutes from September 22, 2022: First by B. Garcia, second by M. Sorensen.

Meeting Summary:

- The Committee learned about the DNR's Invasive Aquatic Plant Management (IAPM) & Aquatic Plant Management (APM) Programs' goals, activities, regulations and coordination. The Committee discussed the complexities of the permitting process, discussed the importance of protecting wild rice and coordinating with tribal entities, and gained a better understanding about how appropriately applied herbicides provide selective control of target plant species while limiting non-target impacts.
- The Committee learned about Modified Unified Method for Invasive Carp Removal on the Mississippi River.
- Committee members Pat Brown (Red Lake Nation DNR) and Kate Hagsten (Leech Lake Band of Ojibwe Division of Resource Management) presented on how their tribal governments conduct AIS management and prevention for their resources and communities. The Committee discussed how tribal governments and the DNR can better communicate, coordinate and collaborate on AIS issues.

Member Updates:

- **K. Hagsten:** Reports for BIA. Now planning time, thinking about applications and efforts for next year.
- **M. Sorensen:** Public speaking circuit. Something he tells people often, storm drains are not treated, they go straight to the lake.
- **B. Garcia:** Lake Owasso recently infested with zebra mussels, but didn't see any when taking out the dock this year. NALMS – will be attending for BioBase mapping group.

- **B. Babcock:** Opportunity to clean up boat ramps and repair docks. Montana and North Dakota fishing – interesting to see how their AIS stuff works with out-of-state boaters. Very knowledgeable inspectors. Different than Minnesota.
- **C. Magnotto:** Spent the weekend in the water paddling. Saw increasing numbers of zebra mussels in docks and lifts.
- **M. Kofoed:** 3 weeks away from baby's due date! Working with marine dealerships to give away weed sticks to people purchasing boats.
- **P. Brown:** Wrapped up field season. Plankton samples being analyzed by the state. Purchased and installed 2 CD3 stations.
- **R. Wersal:** Close to end of semester. Landing research and field projects for next field season.
- **W. Bement:** Wrapping up field season. Tribal netting season kicked off. For lakes with zebra mussels, requires special use permit for netting, with dedicated equipment. A lot of education and outreach. Wrapping up walleye season. Newly listed lake with zebra mussels and the downstream lake has wild rice. They will start doing stem counts next year, to see if there are any impacts, since little data exists about AIS impacts on wild rice. Parks and recreation staff removed docks and lifts, checked for zebra mussels.
- **M. Duhr:** Wrapped up meeting stage of the Research Needs Assessment. Thank you to this Committee for your input. Just finished two half day sessions winnowing down the list of research questions by category. Fine tuning before RFP is released. MAISRC busy with conferences (e.g. UMISC). Heard great feedback. Tribal water resources conference. Working on updating new tools like the plant database and AIS Explorer.

DNR Updates:

- **H. Wolf:** Gary Montz is retiring, aquatic invertebrate biologist with 40% time with invasives. Just interviewed 6 people. Gary has been a rock for 30 years. A bunch of us were at the Upper Midwest Invasive Species Conference (UMISC) last week. Kelsey Taylor's talk about invasive species control through utilization was very interesting. On invasive carp, Dr. Sorensen and Barr Engineering are proposing an invasive carp deterrent at Lock and Dam #5. Many meetings. Next is a meeting with all the potential project partners for basic feedback – first time getting their input. USGS structured decision making process for invasive carp issue essentially to talk about all options and cost-benefit analysis. Includes stakeholders, public, legislators, etc. Jan Shaw-Wolff is retiring on January 3rd. Annual Report for our program, Wendy Crowell wrangles a lot of authors and getting the graphic design done. Managing 14 federal grants and reporting, including amendments for extensions and modifications. A couple new invasives likely from water garden dumps: European water clover in Carlos Avery Wildlife Management Area (WMA) – first in the state – and java water dropwort in Wirth Lake – second known occurrence in the state. Communications and potential response. Coming up with press release. **M. Duhr** asks, how were they detected? **H. Wolf** says in the WMA it was a DNR employee. Submitted report to the USFWS showing 404 of areas of non-native Phragmites were treated. We have 2 imbedded CCMI (Conservation Corps of Minnesota and Iowa) positions. They are on the ground staff trained by Julia Bohnen checking on treated populations, identifying and mapping new populations, etc. We have potential winter work for them too. State contractor does the treatments. Staff go out to do assessments afterwards and identify new areas. DNR had agreed to provide support to CCMI which was typically a 5 member crew doing on the ground work, but instead we hired fewer people so we can have them longer for training and implementation.

Invasive Aquatic Plant Management (IAPM) Program

Wendy Crowell, AIS Management Consultant, DNR Ecological and Water Resources Division

- Provide statewide leadership and coordination to plan, direct, and implement AIS management activities.
- Has 29 years with the DNR.
- DNR IAPM goals: minimize harmful effects caused by invasive plants while also protecting native plants and their use in the state.
- A variety of laws that govern aquatic plants management, because of the value of native plant communities.
- IAPM is a special type of aquatic plant management permit which allows for selective control of invasive aquatic plants to cause a significant reduction in the invasive plant.
- Rules distinguish between chemical and mechanical controls. Chemical control cannot exceed 15% of the littoral area of a lake (near shore area 15ft deep or less). Mechanical allows for small areas without a permit with a lakewide 50% littoral limit.
- Allows for more control of invasive aquatic plants at the individual property scale and expanded control of invasive aquatic plants at the lakewide scale through the variance process.
- Justification: not necessary to afford invasive aquatic plants the same protections and natives. However, the presence of invasive aquatic plants should not be considered the sole criterion in determining whether not to allow the maximum amount of control. In some cases, like in highly eutrophic lakes with limited vegetation it can cause more problems. For example algal blooms, higher turbidity, and loss of plants.
- Criteria for variance –may require monitoring.
 - Potential for increase or protection of natives, improve water quality, or ecological benefits.
 - Potential to prevent the spread.
 - Further research or evaluation.
 - To provide access or recreational use are more restrictive.
- DNR is committed to work with partners to manage invasive aquatic plants.
- DNR Goals of IAPM
 - Prevent the spread of invasive aquatic plants
 - Early detection of invasive aquatic plant infestations and appropriate response
 - Reduce negative ecological, recreational, and economic impacts of infestations by:
 - Providing technical assistance and education
 - Providing grants to help fund control
 - Permitting chemical and mechanical treatments
 - Supporting and using research that leads to improved control techniques
- Potential management goals: prevent spread, lake access, recreation, long term control, ecological benefits, or combination thereof.
- Management methods – mechanical, chemical, biological.
- Chemical – most widely used in Minnesota. Several different chemicals. Only a small number are allowed for use in Minnesota waters. The choice of the chemical, timing, and rate will impact efficacy and selectivity of the treatment. Choice will depend on what the goals are.
 - A lot of legal oversight for the use of chemical herbicides in the US. Only a few are allowed. Those that are allowed go through a significant amount of review. First through the EPA, who reviews for

potential harm to humans, fish, shellfish, irrigation, swimming and drinking water. Result is the registration and label, which contains instruction for proper use to prevent negative effects. Herbicide labels are legally enforceable, they must be used in accordance with the label. It is against federal law to use it against the label. Minnesota state registration is done by the Minnesota Department of Agriculture.

- Pros: long season control; selective; large areas— as long as the right chemical is used at the right time at the right rate according to the label. However, the right chemical might not exist or the presence of natives may increase non-target impacts.
- Cons: only a few products; non-target damage may occur; failures occur (e.g. water movement); takes between 7-14 days; plants and nutrients are left in the lake.

IAPM Continued

- Mechanical— ranges from harvesters to scuba divers.
 - Pros: immediate results; failure does not occur; plants and nutrients are removed; no water use restrictions.
 - Cons: noisy; takes longer for large areas; usually not selective (except scuba divers).
- Biological— used in Minnesota for purple loosestrife control using beetles. Biocontrol is the use of non-native natural enemies to reduce populations of a non-native pest. There are some possibility for biological control for other species, e.g. just being developed for non-native Phragmites. Finding the agent is a difficult and long process.
- Adaptive Management— striving to determine the most effective ways to manage AIS in order to minimize the harm while at the same time making sure not to do more harm than good.
 - Eurasian watermilfoil – history of management. When first discovered, the 2,4-D chemical label application rate allowed was not effective in deep water. Also experimented with fluridone – selectivity is dependent on rate of application and is allowed up to 100ppb. Eventually lowered to low-dose 2ppb was found to be effective and selective. Eurasian watermilfoil biocontrol (non-traditional biocontrol because using a native weevil to control the non-native species) wasn't very effective at reducing population, likely due to high predation rate (fish eating weevils). Still trying. New products like ProcettaCOR is especially effective against hybrid milfoil.
 - Purple loosestrife – history of management. Started with largescale spraying, cutting, hand pulling and burning. Targeted chemical control using backpack sprayers in small areas and experiments with biocontrol agents. Biocontrol research produced a very effective control agent, two species of leaf eating beetles. Enlisted help to spread them widely throughout the state rolling out new efforts to move them around the state. The amount of beetles declined as purple loosestrife declined. But now there is more purple loosestrife and a need for more beetles. Workshops coming up in the spring!
 - Other species too: flowering rush, curly-leaf pondweed, starry stonewort.
- Summary
 - Many products and method have been attempted and are well understood.
 - New methods and new ways of using old products in new ways.
 - Evaluation is ongoing.
 - New challenges, new opportunities and room for improvement.

Discussion

- **M. Sorensen:** Does DNR have stance on using mechanical controls on new infestations? For example, a small population of flowering rush? The machines can collect most, but not everything. That type of approach might spread it more. **W. Crowell** agrees, would never suggest mechanical for that case. The risk to the natives is small for a small population, so would suggest use of chemical control or hand management. Flowering rush has bulbils that can be disturbed and spread, you have to be super careful about those. Bulbils are sturdier than plant fragments.
- **M. Duhr:** 15% littoral zone, is that based on static depth contours? We know littoral zones change for instance deeper growth in zebra mussel lakes. **W. Crowell** says it is a legal definition for a legal limit. That is why there is a variance process. Not required to allow up to 15%.
- **M. Duhr:** should loosestrife populations be maintained for beetle rearing? **W. Crowell** says we don't really need to. The new program to get people beetles and get them spread out is the plan. Region 3 has a list of sites that are legally accessible to collect beetles – make those lists available and provide proper permits to support this work. The beetles are out there, they just need to spread around.
- **M. Sorensen:** Should you go all in on beetles or all in on chemical? **W. Crowell:** don't spray chemicals in a site where you are trying to get beetles established. If it is a really small population, don't use biocontrol. You could clip the seed heads. Materials online with suggestions on methods depending on the size of the population.
- **M. Kofoed:** For Eurasian watermilfoil treatments, do you check afterwards? **W. Crowell** says in some cases yes, but not all. Last year we issued 404 permits. If there is a requirement for monitoring, we review those results. Lots of things in-between. For instance, Chris Jurek (DNR Invasive Species Specialist) is doing a lot of monitoring on start stonewort control methods on Lake Koronis. **M. Kofoed** says she sees treatment and it is more than 15% of the weeds effected. Do you monitor year to year? Does 15% turn in 100% eventually? **W. Crowell** says we look at effects. What you are seeing may be an illegal treatment, or a treatment failure, etc. Long term reduction might be due to control, but it might be due to eutrophication or increased turbidity that is causing decreased plant growth over time.

Aquatic Plant Management (APM) Program

Shane McBride, Aquatic Plant Management Consultant, DNR Fish and Wildlife Division

- Been with the DNR for 31 years.
- Balance native plant conservation with the rights of the lake shore property owners.
- Permits managed through MPARS (MN DNR Permitting and Reporting System).
- Justifications for control: providing lake shore owner access, enhancing recreation use, managing water levels, improving habitats, and controlling invasives.
- APM in rule covers both invasive plant management and native plant management, so there can be a little confusion.
- Largescale offshore treatments go through EWR's IAPM program (**W. Crowell** just covered this).
- APM works at the property level – for access and recreation. Manages multi-party permits as well.
- Same rules apply – 6280 – pesticide, mechanical, weed rollers – threshold by size, control type, and target plant.

- APM Specialists conduct inspections for new permits.
- Where and what do we permit? Over 4,000 permits representing 7,000 properties. Of those permits, 50% are chemical, 28% are mechanical, and 21% are weed rollers. Region 3 has the most, due to many lakes and high population areas.
- Control is done by commercial company and landowners.
- Fish habitat impacted – 875 acres destroyed with 776 acres using pesticides. So statewide the number isn't very high and most happens in the metro. Typically size is 50x100ft. State rule limits control of individual properties. If you have less than 70ft of shoreline, your max is 35ft wide and 150ft out. 70-100ft of shoreline can have half. 100ft is the max width of treatment. This is for submerged plants. Floating leaf plant control is more restrictive – same width, but max 50ft out. This also allows for a channel. Emergent plants are also more restricted, especially cattails – only a 15ft channel. If the bottom is very firm, allow 35ft wide.
- Trends have bounced around over time. Number of permitted properties dropped in 2006 likely tied to economic drivers. Bounced back in 2019. Backdown in 2020/21.
- Weed rollers are permitted for 3 years under 2,500sft.
- What does this mean for fish habitat? Killing plants = habitat loss. Not as large as it may seem on a statewide level, but may appear to be at a lakewide level. But we have protections in place: APM staff are reviewing permits, talking to people, doing inspections, etc.; we are more restrictive for floating and emergent plants; and the 15% and 50% littoral limits. The homeowner is limited to the 15% and it is included in any IAPM percentages.
- APM and IPAM programs are similar. Parallel. Large-scale offshore (fluridone, ProcellaCOR) treatments don't work nearshore, so APM doesn't permit those.

Discussion

- **T. Fitzgerald:** How do these two programs coordinate and communicate with one another? **S. McBride** says we always have an end of season annual meeting together. He and **W. Crowell** are on a lot of the same committees and are regularly in contact with one another. IAPM and APM are housed in the same offices in many cases, which means simply walking down the hall and talking to one another. **W. Crowell** adds that the limits include both types of permits and that is coordinated through the MPARS system – it tells them what is already permitted.
- **M. Sorensen:** He works for the city and oversees clearing of recreational channels in lakes. If 10% of lake homeowners treat curly-leaf pondweed, but then there is a need for clearing channels later in the year – worried about going over. What is the best way to make sure? Email DNR and ask about percentages? **W. Crowell** says you wouldn't be issued a permit if it was over, or a variance would be issued. All permits are in the system and everyone can see it. **S. McBride** adds many of the APM permits have been around for quite a while. Specialists could see what nearshore permit has been in the past, then tell the lake association how much needs to be left for nearshore or offshore.
- **B. Garcia:** Are there public input opportunities for permits and whether permits should be issued? There can be competing interests on a lake, e.g. shoreland owners vs. fishers. **W. Crowell** says if a variance is issued, there is a process of public comment. Anyone denied can appeal to the Commissioner's office. We have received public observations, for instance, someone saw control was more than permit, which is then forwarded to enforcement. But another example, a lakeshore owner complains that a neighbor destroyed

plants and they didn't like that. The neighbor was legally allowed to do that. Always contact the DNR if you feel like there is something we should know about. We don't / can't look at every treatment. All those things will inform future management and are possibly actionable. **S. McBride**: No public comments for specific permits. It's like you have one neighbor that does meticulous lawn care and another that does nothing. Minnesota has uniquely extended property rights out into lakes – docks, trampolines, etc., therefore, we allow to control for access. **B. Garcia** summarizes saying beyond individual enforcement, e.g. someone did something wrong, changes would need to be made via rulemaking and statute changes.

- **M. Duhr** for the APM permit structure, wild rice considered what type of plant? How do specialists balance aesthetic shoreland and tribal needs; work with tribal on ceded territory and reservations? **S. McBride** says wild rice is considered emergent. It gets complicated on reservations. In ceded territory, we issue APM permits. For Leech and White Earth, the DNR only issues non-band members permits and members go through their government for plant control. DNR issues permits and sends notifications to tribal staff members. Typically 15ft wide channel. Internal discussion recently on permitting in reservations at the Division Director level and Commissioner's Office. It impacts APM/IAPM and any type of work in public waters.
- **K. Hagsten**: The number of permits issued in the pandemic doesn't jive with the number of people retreating to their lake areas because they can work remotely. Are they illegally doing it and not getting the permit? **W. Crowell** says in the first year of the pandemic, the people that do the work commercially were not available. **S. McBride** adds a lot of people that did not go to their properties. They have to submit an annual survey via MPARS and DNR received a lot of replies saying they didn't go to their property. Acknowledges there are illegal activities, but if there are signs out, they are following their permit. Also the DNR was really restricted too, e.g. working from home, can't work together in a boat, etc. Not a lot of eyes out there. In 2021 the DNR did not have a pesticide enforcement specialist – now aquatic habitat specialist. Part of their job to monitor commercial and lake association treatments. Have a new person starting in January. Rely on public reports, if we get them fast enough, we can sample and prove it.
- **W. Bement** is glad the wild rice and APM topic came up. We've been having quarterly meetings with the DNR. We have oppositions to removal of wild rice. You will see more resistant for removal. We do issue our own permit, but don't allow removal of wild rice. **S. McBride** adds White Earth recently gave wild rice manoomin (wild rice) personhood, correct? **W. Bement** says yes, the Rights of Manoomin. **S. McBride** adds what prompted this is the EPA recently gave Leech Lake the authority implement rules. White Earth is in the process. Clean Water Authority. Fond du Lac and Grand Portage have that already. That runs into how we interpret state rule, how that effects tribal sovereignty, etc. **W. Bement** says it does go through their leadership too. Quarterly meeting helped move things along. Glad this is a topic that will continued to be addressed.
- **S. McBride** answers a question saying yes, swimmers itch permits are covered under APM.

Modified Unified Method (MUM) for Capturing Invasive Carps

Grace Loppnow, DNR Invasive Fish Coordinator

- Brief introduction—Invasive Fish Coordinator at DNR for past year. Working on MUM for about two years and have done four events so far. Presentation will go over what we've done and provide time for questions.

MUM Continued

- What is the MUM?
 - Herding and capture technique for invasive carp USGS developed from traditional Chinese fishing methods. Uses nets to herd fish from a large area to a small area for capture.
 - Often used in high density closed systems, like backwater and oxbow systems in MO, IL, and KY.
 - Using it here in a low density, more open water system, so we adapt as we learn for this new approach and learn how to execute the MUM in the area.
- How are we adapting MUM for Minnesota?
 - Challenges: Fewer invasive carp to capture, larger open areas, boat traffic and safety concerns in busy areas.
 - Try to narrow locations as much as possible to capture carp in locations they're most likely to be found: Tag and track, eDNA detection, bathymetry, and agency and commercial fishing expertise to find areas of high captures of fish in general.
 - Use faster herding than traditional technique and fewer block nets to cover more area in less time: Typically take 1 week, we do 3 sites/day.
 - Looking at ways to maximize capture using gill nets to entangle jumping carp—with low densities, we want to capture every fish we can, including those that jump the block nets.
 - Push fish into areas using a stimulus.
 - Station staff at either end of site to guide boat traffic for safety.
 - 3 of 4 MUMs in Pool 8, most recent MUM in Pool 8 to Pool 5a.
- MUM Site example
 - “Playbook image” of how to approach a site, lines show block nets to divide river area into cells, arrows show direction of boat movement for herding, squiggles identify areas where they use a stimulus to dig carp out of holes.
- Large capture of carp in 2020 (39 silver, 12 grass carp), largest single capture of carp in Minnesota waters to date, prompted MUM response.
- Goals of the MUM:
 - Capture invasive carp for tagging or removal.
 - Gather info on carp distribution in river, also collect data on detections.
 - Continuing to adapt and streamline technique, takes a lot of partnerships, would like to continue to speed up process and reduce burden on partners.
- Planning
 - Partner with USGS, NPS, USFWS, Wild Rivers Conservancy, led by Minnesota DNR.
 - Declare seining sites, get permission, plan and execute playbook.
- Spring 2021 MUM (April 5-9, Pool 8)
 - 6 sites in Pool 8 in one week.
 - Removed 31 silver carp at Bluff Slough/“Condo Site.”
 - Learned basics of MUM and coordination with partners and expanded sites for next MUM.
- Fall 2021 MUM (Oct 25-29, Pool 8)
 - Nine sites during lower temperature to minimize jumping behavior.

- Did not capture carp, but did capture thousands of pounds of native fish (released quickly to minimize stress).
- Need to continue looking at distribution among sites by season.
- Low temps may mean fish are sluggish, remaining in deeper holes—adding nets to an area is enough to get them out, but may increase to strobe lights or sound.
- Spring 2022 MUM (April 4-7, Pool 8)
 - 4 of the most productive sites, sampled twice.
 - Focus on places carp are most often seen.
 - April 5: 6 silver carp, 5 at one site, 2 observed jumping nets.
 - April 1: 1 silver carp, 1 seen jumping nets.
 - Learned: Use larger nets, designed to have fish get tangled during escape.
 - Was also a colder week, but still observed jumping. Need a way to capture them when they jump.
 - Better to target more sites, caught fewer fish in second sampling.
- Fall 2022 MUM (Sept 26-30, Pools 5A-9)
 - 11 sites in pools 5a-8.
 - No invasive carp captured, but saw 8 jump at the “Condo Site.”
 - Moved upstream because they saw movement of tagged carp upstream and observed jumping upstream.
 - Learned: It may be better to sample sites just below dams in spring since fish may be looking to move upstream then, then target sites just above dams in fall where carp aggregate getting ready for winter. Pay close attention to temperature and behavior to select more favorable sites.
- Future plans
 - 1-2 MUMs/year as funding allows (have funding for 2023 from USFWS).
 - Adapt and streamline MUM to reduce burden on partners.
 - Implement additional surveillance to locate areas of aggregation, including winter surveillance if ice conditions allow. Tagging and tracking + commercial fishing.
- USGS Developments on MUM
 - Proposed trying “wall of sound” remote-controlled kayaks: 4 in a line to drive down river, pushing invasive carp that respond more strongly to sound than native fish.
 - Could avoid some jumping behavior if nets are positioned as funnels rather than walls, directing escape behavior.
 - Want to bring together data sources to identify priority sites, including eDNA, capture, telemetry and sighting data.

Discussion

- **C. Magnotto:** Super informative, thanks Grace, nice work!
- **G. Loppnow:** We have more information online (mndnr.gov/invasivecarp).
- **B. Garcia:** This program looks like it’s primarily invasive rather than common carp? **G. Loppnow** says, correct, we lump bighead, silver, grass and black carp as “invasive carp” which are the targets here. Common carp are also invasive, so it is confusing. **B. Garcia** adds they are now called Copi.

- **S. Binsfeld:** How many fish do you have tagged? **G. Loppnow** says three present in the state, others have died or moved on. Tagged bighead carp in the St. Croix which has led us to 7 additional fish. Tagged Silver carp in pool 5A. Tagged silver carp in pool 9.
- **B. Garcia:** Was it 2020 when the first commercial fisherman found invasive carp in MN? **G. Loppnow** says no, they've been captured here for quite some time now. Silver carp have been here since 2008 and grass carp much earlier, but have to pull up data to be exact. All been here for over a decade, 2020 was just the largest capture at one time. Captures were 10 or fewer per year, 2020 was much higher. A high water year in 2019 had dams be in an open state for a longer period to allow water, and carp, to pass. **H. Wolf** says the first infestation for bighead and silver was 2012, for grass carp was 2015 according to infested waters list. **G. Loppnow** clarifies the first capture was a grass carp in 1991, first bighead carp in 1996, first silver in 2008.
- **B. Garcia:** What's the furthest north pool that there's been evidence of invasive carp? **G. Loppnow** says we've seen them in pool 2 in the Mississippi, Granite Falls dam in the Minnesota and in the St. Croix. Highest numbers tend to be in lower portion of Mississippi. Also, a little portion of the Missouri basin in Minnesota, there are invasive carp there, but a study in 2014 identified some back door opportunities for fish to pass into Minnesota rivers and lakes and barriers and deterrents were put in place. We saw a large number of carp at one of these barrier sites (impassable structure) just across the barrier in Iowa (140 invasive carp carcasses from a die-off).
- **M. Duhr:** Heard that carp are intelligent animals – do you think there are any elements of that going on with these smaller groups of fish that seem to be evading nets, have they gotten wise to the MUM? **G. Loppnow** says we do think about this. We try to stay out of the area as much as possible prior to the MUM to not tip them off. We also think about changing the type of sound we use. Right now it is a recording of banging a boat with rebar, may change to a boat motor noise or frequencies specifically designed to deter invasive carp. We also wanted to try different pools, which may be separate groups of invasive carps. We do try to adapt to learning though.

AIS Prevention and Management by Tribal Governments

Red Lake Nation

Pat Brown, Red Lake Nation DNR Fisheries Biologist

- Overview of what we're doing to monitor, control and educate membership about invasive species.
- Been at Red Lake for 26 years managing the fishery, but haven't had many problems with AIS to this point.
- Red Lakes are located in northern Minnesota and are the largest set of lakes in Minnesota, each lake is 10x20 miles in size, connected by a mile wide channel and are essentially one lake. Relatively shallow lakes for how large they are: 14ft in Upper, 30ft in Lower, but 22ft mean depth. Extremely fertile and walleye factory lakes.
- Reservation boundary encompasses all of Lower and 2/3 of Upper Red Lake. Manage 227,000 acres of Red Lake. Also lots of small < 200 acre lakes south of Lower Red Lake, often bluegill and bass lakes. Only members can fish on Red Lake within tribal boundaries. Area as large as Rhode Island.
- Picture of 1889 Delegation—individuals that set up Red Lake Reservation.
 - Only one of two closed reservations in the US, all of the land is held in common by tribal members without individual membership. Many other reservations are "checkerboard" membership where members and nonmembers live side-by-side.

- Don't fall under Public Law 280, State of Minnesota has no jurisdiction within tribal boundaries.
 - We can make decisions quickly and don't have to go through other governments.
 - Limits funding and rely heavily on outside funding to complete mission. **P. Brown** focuses on walleye fishery, but wears many hats to get the job done.

Red Lake Nation Continued

- AIS of focus on the reservation are starry stonewort, spiny waterflea and zebra mussels. Terrestrial are wild parsnip, spotted knapweed, and common tansy. Don't look at a lot of the aquatic plant species on reservation.
- Why are we concerned?
 - Life revolves around Red Lakes. We are natural resource rich, but economically challenged due to remote location (small casinos for jobs, not really for generating revenue).
 - Lake is a food store for the reservation, "If you take care of the lake, you will never go hungry."
- Aquatic Plan includes coordination, prevention (training and education, decontamination), and implementation (monitoring and research). AIS management is still new with recent detections of starry stonewort and zebra mussels.
- Coordination with partners is critical. **P. Brown** sits on many committees and teams: Beltrami County AIS Board, Red Lake Fisheries Technical Committee (State, feds, UMN, Band), Red Lake AIS Prevention Team (recently received funding from state legislature for AIS prevention in watershed), and MNDNR AIS Advisory Committee Meeting (communication goes two ways to commissioner and back to board).
- Training and education includes staying up to date on detection and control techniques and using multimedia outlets like geo-fencing. Boat landing postings working with the State, got signage out to all public landings to let tribal members know how they can protect their resource better. Kids are the best messengers. Teach kids how to protect watershed, learning about invasive species and prevention, and even had them create a 3D model of a spiny waterflea. Educating kids at a young age allows them to share info/discuss with parents to make change.
- Decontamination. In 2017, passed Resolution 62-17 which says only boats registered to band members are allowed on tribal waters. In 2018, zebra mussel veligers were detected. Installed 2 CD3 units on the reservation and finalizing plans for a permanent decontamination station in Waskish for 2023.
- Early detection of zebra mussels.
 - Starting plankton sampling in 1999 looking for spiny waterflea, have good baseline data on zooplankton. Veligers were first found in Upper Red in 2018, both in 2019. Tribe collects from 5 stations in each lake and the State processes samples. No adults have been found to date.
 - Diet analysis for early detection of adult zebra mussels included 175 freshwater drum (second most abundant commercial species in lakes) stomachs sampled from June-October, fish ranging from 270-560mm. Can get a large number of stomachs from commercial fish processing. Want to keep drum population healthy to help manage zebra mussels. Still haven't found any shells, but still early in invasion.
- Terrestrial control through Wildlife and Forestry programs. Many invasive plants have gotten more abundant since COVID. Control includes mowing, controlled burns, and some herbicides.

Discussion

- **H. Wolf:** We will continue the partnership with the zooplankton/invertebrate lab at the DNR. We're just wrapping up interviews for Gary's position, one more round of interviews. We're hoping for no gap. Kylie Cattoor is still available as the zooplankton specialist, now her permanent position.
- **M. Duhr:** Tell me more about geo-fencing. We're working with folks in South Dakota in remote areas with few resources for boots on the ground. **P. Brown** says talk to Bruce from Beltrami County. If an individual comes into an area, they receive messages on their phones about AIS or other message. **T. Fitzgerald** adds some other counties are doing this as well. You do have to enter into a certain zone and you need something up on your phone that would show you an advertisement (not like an Amber Alert).
- **C. Magnotto:** Is there anything else you can tell us about yellow perch about their propensity to eat zebra mussels? **P. Brown** says talk to Tony Kennedy (DNR). I know the infestation in Cass Lake has some evidence of yellow perch eating zebra mussels. This may have been how they found zebra mussels in Bemidji as well.
- **W. Bement:** We do similar youth education at White Earth. We started at head start, all the way up to K-12, they retain info so much better than parents. We've been doing this for a long time and have a math and science program. We offer curricula in summer time about fishery stuff, which includes AIS. We've seen good AIS behaviors since (e.g. cleaning boats). **P. Brown:** You can get ahold of kids and teach them things, they will remember and tell you later.

Leech Lake Band of Ojibwe

Kate Hagsten, Plant Resources Director, Leech Lake Band of Ojibwe Division of Resources Management

- **K. Hagsten** has been at Leech Lake for about 5 years. We're responsible for all plants, native, invasive, endangered and some entomology—we hop around a lot, which does make it a challenge to develop in-depth expertise. The aquatics program hasn't historically been this in-depth. Steve Mortenson who has been with us for 30 years runs the fish and aquatic plant sampling. Hasn't been much opportunity to expand on that. We are new to AIS and in-depth AIS work. **K. Hagsten's** background is in wilderness management, civilization, anthropology—a holistic, "non-traditional" route for education.
- Goals:
 - Citizens' hearts are within the Ceded Territories, our community expands out beyond reservation boundaries, and we want to be stewards of that broader area.
 - Create more meaningful employment opportunities. For example, one of our staff had a passion for aquatic species and we have taken that and run with it.
- Program Approach
 - Approach is consistent with core Anishinaabe beliefs: Resources are individuals and family members and deserve respect to be treated accordingly. Presents some challenges for managing invasive species: It's not the plants decision to be introduced, it was done through human activity, and it puts us in a position where our approach is to be in tune with the environment and make observations, making decisions at a broad level to be good stewards of the land for the long-term.
 - Need to prioritize with limited staff, e.g. prevention vs containment? Have one watercraft inspector who we hope will come back next year, did great outreach with fisher community. What is possible for what we have?

- Leech Lake is a “checkerboard” reservation, 869,324 acres, 247,000 is water-based—a lot for a team of four people.
- Community Engagement: We want to get the message out whenever we can. One of the best ways to talk about invasive species is to talk to children about it, the message will then get home to parents. Empower children with tools through partnership (e.g., apps, teaching materials about AIS, plants, etc.), then going back to making observations about our environment and species in the community. Allows community voices to be heard (e.g., this Committee) to talk to those responsible for making policy decisions and empowers citizens.

Leech Lake Band of Ojibwe Continued

- Message
 - Leave a shoreline buffer (avoid erosion, promote pollinators, control swimmer’s itch). Less intrusive and beneficial to the whole ecosystem.
 - A lot of the messaging gets to ongoing conversations I’ve had recently, more folks reaching out to understand how traditional ecological knowledge (TEK) has a role with some of these practices (e.g., what is TEK?). Traditional implies it’s a thing of the past that no one practices any more, you could rather think of it as something you learn from your family members that is then passed down. Make observations about the world around you. Anyone can have TEK, not just native groups, we all have the ability to be good stewards and spend more time outdoors to learn about our environment and the things we care about. Practitioners are always very passionate and engaged.
 - Adaptive learning—Try to encourage with the checkerboard of agencies and private land owners.
 - Climate change and trying to create a healthy forest and clean water activities, at the heart of Anishinaabe values (e.g., healthy soil provides the foundation for a web of life and a tiered system, need to keep this intact and do your duty to sustain these things for a good life).
 - Especially important for our citizens who have been here for thousands of years harvesting wild rice and netting on sacred sites (traditional cultural property) where practices and stories are passed down through generations and need to be protected over time.
- The Future
 - Work with counties, state, and federal governments. Lots of fun coordination that provides many innovative opportunities. For example, they learned about and purchased a DASH unit for starry stonewort, which is deeply embedded in one of the largest wild rice beds Leech Lake has, and is partnering with MAISRC about potential impacts and management.
 - Policy—usually decision-making with agencies is in line with what citizens want to see. There’s a willingness to have these conversations and to work with other agencies while maintaining sovereignty.
 - Frustration with use of chemical applications. We don’t actually know how a new “invasion” is going to interact with an environment. There’s a purpose for this new being, we just have to understand it. It may come with some detriment. We have to be willing to accept it for what it is. We need to take the time to meet with managers who have expertise and be prepared for impacts and effects.
- Contact info: Kate.Hagsten@llojibwe.net and Raining White (Program Manager) raining.white@llojibwe.net

Discussion

- **H. Wolf:** Do you ever use herbicides? **K. Hagsten** says since she has been there, has never heard of using herbicides. There has been hand-pulling of things like garlic mustard. We have a torch for stems, buckthorn baggies, etc. We are looking into, after talks with Red Lake and Beltrami County Highway Department, to use hot water to treat terrestrial invasives. But since this could bring in thermal pollution, still an ongoing conversation. **M. Duhr** adds there are trade-offs with non-chemical methods as well (e.g., heat killing things off that wouldn't be susceptible to chemicals). **K. Hagsten** says these things are hopefully short lived that don't linger in sediments.
- **P. Brown:** One thing that wasn't brought up is that reservations are what's left of tribal homeland, members can't move so conservation is critical. Being on a closed reservation, we can control a lot, but checkerboard reservations don't have that level of control.
- **K. Hagsten:** Grateful for Shane and Wendy's presentation, but no one has ever consulted with her on a plant removal permit. With starry stonewort, we got involved with MPARS and got a permit ourselves. **H. Wolf** says you are encouraged to reach out with a paper trail so that we are forced to answer this question. We know of at least one APM treatment recently that happened without tribal knowledge (Fond du Lac). **K. Hagsten** asks, how can it be that I've never received a request for something happening on our land? **H. Wolf** says she does want to follow up on this. It is challenging when permitting follows one process and formal consultation between tribal leadership and regional managers follows another. **T. Fitzgerald** adds that recently tribal boundaries were added to MPARS so specialists know when to contact a tribe. We can investigate this further.
- **S. Binsfeld:** Tribal members see plants as a family member that deserves respect, could you expand on this? **K. Hagsten** says that's how White Earth gave Wild Rice status as a living being that should be treated separately. What often gets overlooked is some of the less iconic species. Each one of these is also known by those out in the woods who have learned from their relatives about plants and other beings. There's an amount of respect involved, when you collect something, you take from its natural environment and use it, so you offer gratitude for that sacrifice. **S. Binsfeld** asks, so it's where you aren't grateful or respectful is that where we cross the line? How would that apply to invasives? **K. Hagsten** says invasive species do serve a purpose of becoming compost, in fairness to acknowledging them.
- **T. Fitzgerald:** Since this is DNR advisory committee, is there other ways the invasive species program can support your work and vice versa?
- **K. Hagsten:** Very much appreciates Nicole Kovar, who's always working with her. Also grateful for Itasca County (Chris Evans) for purple loosestrife beetle release and DNR for training for watercraft inspectors and scheduling. Everybody has been really helpful.
- **M. Duhr:** There was a feature about invasive worms with Kate and Raining's recent news article, which made me think of jumping and earth worm spread through ATVs and stuff like that. Since the DNR is expanding ATV trails significantly, does EWR have a seat at the table for these invasive species concerns? **T. Fitzgerald** says Op Order 113 is required for DNR staff and any hired contractor to prevent the spread of invasive species. **H. Wolf** adds each Division has to have a plan to address invasive species. Laura Van Riper gets some terrestrial funding each year to give grants to other DNR programs. There is also an Op Order 113 committee where people can bring up an issue regarding risk mitigation. L. Van Riper, our terrestrial invasive person, has been leading the Op Order 113 committee. We'd have to ask the Parks and

Trails Division about ATV trail expansion and invasive species prevention specifically. **M. Duhr** asks, is there equipment to clean ATVs? **H. Wolf** says we do have specific information about how to clean different vehicles using a stiff boot brush, avoiding mud and areas with seeds. **T. Fitzgerald** adds there is also the Play-Clean-Go campaign with resources. **K. Hagsten** adds we just had a presentation with the Forest Service climate change committee who presented on jumping worms. She did not know that earthworms laid eggs in fall, which is prime time for hunting and ATV activity. Another opportunity to make some more concerted efforts to present the spread of invasive earthworms might be through the forestry program. **H. Wolf** says Forestry also has a couple invasive species folks, Sasha and someone else. Trail expansion would fall under Parks and Trails. **K. Hagsten** adds we are trying to prioritize invasive earth worm management more and hard wood stand protection as well.

- **B. Garcia:** It could be like the lake service provider training – everything you put in a lake can and should be inspected and decontaminated for AIS. If you have new trails going down to lakes, ponds, rivers, etc. maybe there should be signage talking about that. **H. Wolf** says there are good best practices through Play-Clean-Go for specific activities, for instance ATVs. Another concern of invasive earth worm spread is as bait and bait release.
- **H. Wolf:** The DNR is in the middle of public comment for rule-making regarding jumping worms. There are ways to mitigate the spread of jumping worms. People get concerned about getting regulated. For instance, with non-native Phragmites and wastewater treatment plants where it's expensive to reconfigure wastewater treatment plants, we've been working with MDA, MPCA and wastewater treatment plants to permit until the plant needs to be replaced with some mitigation criteria to prevent spread. Also looking into replacement plants with Dan Larkin and Julia Bohnen with MAISRC. We can't have treatment plants continue to seed spread. **S. Binsfeld** adds she heard Julia's presentation and finished her restoration class. She heard these wastewater plants were told that non-native Phragmites was the best thing to do and now suddenly it's not okay after just two decades—the investment hasn't played/paid out. **H. Wolf** says it was one specific company and salesman presented this as the way of the future. Now 15/180 plants need to replace it. We're working hard to help the transition and risk mitigation.

Future Meeting Topics

- **T. Fitzgerald:** started gathering topics for next meeting from the topics of interest document. Also started summarizing what was covered this year and outcomes of those meetings. She will share the document and discussions can continue for 2023 topics.
- **T. Fitzgerald:** Based on that document, for the next meeting on December 1st, we could discuss starry stonewort. This covers multiple topics of interest. Could include Chris Jurek, Kate Hagsten, Dan Larkin and others – could be a half-day session. We could also discuss the results of the behavior change pilot projects. We'll also need to elect new vice chair and chair. **W. Bement** could present about White Earth Nation's AIS work to continue conversations from today.
- **S. Binsfeld:** What are the ways that the DNR is using education to spread this information? Survey all the places we're working, all the generations we're hitting, are there spots that aren't being taken care of? Does there need to be more focus and funding for particular ages? **T. Fitzgerald** says, on the topic of youth education, it is great to teach kids to potentially pass information to adults, but more importantly it teaches the kids good habits now and for life. We don't have a formal curriculum or education pieces. **H. Wolf** adds there are things like "Project Wet" and traveling AIS trunks for classrooms. **S. Binsfeld** asks, is there a strong

connection with the 4th grade state/national parks for free? **T. Fitzgerald** says we do set up booths at water festivals. Check out our annual report for all of our education activities. A discussion to identify gaps/new areas of focus would be valuable. You could peruse [past annual reports](#) as well.

- **B. Garcia:** I had mentioned NALMS, on 11/14 there is a field trip to MAISRC (\$45 and only five registrants).
M. Duhr says I'll give a tour for free. SAISAC summer field trip?

Adjournment at 2:55PM

Next Meeting to be held at the DNR Sauk Rapids Office with Teams option at 10AM on December 1, 2022. On the agenda for the next meeting is starry stonewort management, behavior change pilot projects, AIS prevention and management by tribal governments continued, and voting for Chair and Vice Chair.