

Highlights of AIS Sessions
at
2016 State of Water Conference

I attended the State of Water Conference, sponsored by Conservation Minnesota, the U of M Extension and the Freshwater Society April 14 - 15 in Alexandria. There were four parallel "tracks" or topics: AIS, Local Impacts, Water Health and Species Habitat; I attended the AIS sessions.

Thursday morning's topic was AIS Prevention Aid and Lessons Learned i.e., what are the counties doing with the states' \$10M / year? Highlights of the session:

- 83 of Minnesota's 87 counties are receiving state AIS \$\$ ranging from \$2.3K to St. Louis county's \$680K. Cass receives the third most.
- One county has AIS education in 11 high schools. A theater group named CLIMB is putting on AIS educational plays for elementary schools.
- Some counties are having a difficult time getting started, and the DNR will be hosting a workshop.
- Several counties are doing public awareness events, including AIS "costumes" at a local parade.
- Counties with existing AIS infestations are finding it difficult to balance prevention vs. AIS management.
- Some counties are using their \$\$ for early detection and rapid response planning.
- ~ 344K watercraft inspections in 2015 by ~100 DNR and ~700 LGU inspectors (2X 2014 level).
- Interesting fact: inspectors can require an infested boat be decon'd, but not how or where. Boater could use a garden hose and claim success. DNR says this is being changed.

What Happens After AIS Treatment

Two professors at the U of M's AIS Research Center gave presentations. Prof. Ray Newman spoke on Promoting Development of Native Submerged Vegetation after Invasives Control. The bottom line is that even when an AIS species can be mostly eliminated (e.g., curly leaf pondweed) it has proven very difficult to restore the area with native vegetation; in fact, another AIS species like Eurasian Water Milfoil is often seen instead. Bummer.

Modeling the Spread of AIS

Prof. Nick Phelps spoke about computer modeling the spread of AIS. His goal is to determine the risk of future AIS infestation and the most likely pathways including boaters and streams. The modeling takes into account the environmental characteristics of the uninfested lakes as to which are likely more suitable for specific AIS types. While still a work in progress, this will be a useful tool when completed.

AIS Detectors

Eleanor Burkett (U of M Extension Water Resources Educator) gave a presentation entitled "AIS Detectors: WANTED!" The Extension in cooperation with the AIS Research Center is putting together a program to train volunteers to accurately identify the various AIS species in the field and report the finding to the DNR. At present, the DNR is fielding many calls from citizens reporting possible AIS, but

they don't have the staff to quickly respond (and often the calls are false alarms), so the plan is that the AIS Detectors will leverage the DNR's resources. More info is available at maisrc.umn.edu/ais-detector.

Early AIS Detection

Joe Shneider (President of the Christmas Lake Assoc. and MN COLA Secretary) gave a very interesting talk entitled "Does Early Detection Really Matter?". Some of you may remember hearing about Christmas Lake's battles against AIS. The lake is near Lake Minnetonka, and is infested with Eurasian Water Milfoil and Curly Leaf Pondweed, but was battling to keep zebra mussels out. In 2014, a small number of ZM were discovered near the boat launch. The Christmas Lake Assoc. worked with the DNR to contain the area and treat the water with Zequinox, a chemical developed to kill ZM in localized situations such as water inlets. When that was not 100% effective, the Association received permits to inject potash under the ice a winter ago. Unfortunately, a few ZM survived and have now spread through the lake.

Joe's message was that even in Christmas Lake's limited infestation and (fairly) rapid response, the ZM could not be stopped. He emphasized that stopping the spread of AIS will require 100% inspection of boats leaving "super spreader" lakes (e.g., Minnetonka and Mille Lacs), more inspection overall and large increases in fines for AIS violations. (I personally agree with him.) Joe deplors the apparent lack of political will in St. Paul to make these changes happen.

In the discussion after Mr. Shneider's talk, Mike Hoff from the US Fish and Wildlife Service made an interesting comment: he believes that the same genetic modification techniques proposed to combat the zika virus could be used "in 10 or 15 years" to eradicate zebra mussels - I hope we have that much time.

Managing AIS

The DNR's Chip Welling gave a presentation on Managing Aquatic Invasive Plants that essentially said that it's almost impossible presently to eradicate AIS once it gets established. (There are a couple of exceptions out of hundreds of infested lakes.) The DNR's current approach is to allow treatment (where possible) to "improve usability" of the lake.

Starry Stonewort

Starry Stonewort was a big topic at the conference, given its discovery last year in Lake Koronis, near Paynesville. Despite its introduction in New York state over a decade ago and the fact that it's in ~ 128 lakes in Michigan, very little is known about this grass-like algae, except that you definitely don't want it in your lake. Dan Larkin from the MAISRC discussed what is known:

- It favors clear, low nutrient lakes with alkaline water and high levels of calcium carbonate.
- It concentrates near boat launches and in high use areas.
- It produces very dense mats of vegetation then suddenly dies often resulting in blue-green algae that is a health risk
- It returns strongly the following year.
- There is no known control method.

The MAISRC is beginning growth and herbicide experiments at this time, and will be convening a working group in June to consult with natural resource people from Michigan and New York.

Possible Future Invasive Species

Mike Hoff (USFWS) offered a fascinating and somewhat scary look at possible future AIS threats from abroad, including the Stone Moroko, Golden Mussel and Zander. He is developing a risk assessment tool looking at the likelihood that these species would find suitable habitat and climate in Minnesota lakes and rivers.

Ecological and Genetic Studies on the Spread of Zebra Mussels

Finally, Mike McCarthy (MAISRC) described the work that he has been doing to (1) understand how far down a small stream adult and veliger zebra mussels can travel, and (2) look at the ZM genetics in several Minnesota lakes. On the first topic, his findings are:

- Adult ZM establish themselves only a relatively short distance (< 1 km) downstream, based on studies of several locations in MN, including the Pine River.
- ZM veligers, on the other hand, are detected many miles downstream from an infested lake, showing that streams are a viable means for infesting an entire chain of lakes.

While those findings are not particularly surprising, the genetic studies were (to me, at least). The study determined that the ZM in several of the lakes studied had distinct genetics. With this information, Prof. McCarthy and his team looked at the ZM genetics in infested lakes near one of Minnesota's presumed "super spreader" lakes, like Minnetonka and Mille Lacs. What they found was that many times the ZM in the nearby lakes had *different* genetics than the "super spreader" lake, making it likely that there were many independent introductions of ZM. What this means to combating the future spread of and possible control of ZM is TBD.

Bottom Line

All-in-all, I think the conference showed:

- More counties are taking useful steps to control the spread of AIS, especially inspections using the state's AIS funding.
- Researchers at the U of M's AISRC are *starting* to better understand the biology and genetics of key AIS, with a goal of using this to discover control methods.
- There's still lots to learn and do.