

Mille Lacs Lake Low Walleye Numbers and How it Has Affected the Local Community in Recent Years

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Abstract

Walleye fishing on Mille Lacs Lake is very important to the history of Minnesota. Anglers and resorts around the lake helps bring in a large amount of tourism each year. In 2012, the Minnesota Department of Natural Resources (DNR) found that the walleye population in Mille Lacs has declined, resulting in an increase in fishing regulations on what anglers can harvest each year. The central questions of this research are the causes of the decrease in the walleye population and the effects it is having on the communities around the lake. To address these questions, I looked at angler and resort responses to the increased regulations and how it has affected their lives and relationship with the DNR. Economic impacts around Mille Lacs Lake include a drop of roughly \$26 million in property value and almost a 50% decrease in resort tourism. Factors that may have helped decrease walleye populations include hooking mortality, invasive species contributions, and effects of climate change on the lake. According to the DNR, the younger walleye are not reaching mature ages and thus not contributing to the overall population in the lake. I think that this information could be used to inform anglers that are not fully aware with the problem on Mille Lacs and what changes in the environment we should see either as natural or ones that we can fix.

Methods

To give an overview of the problem, I first started off by giving a history of the past 6 years since the walleye populations first decreased and the fishing regulations that followed. The regulations went from anglers being able to keep 4 walleye that were 17 inches and under in 2012 to strictly catch-and-release regulations in the summer season in 2018. From there, I looked at some of the possible reasons that may have caused the decrease that include stress from hooking mortality, accidental introduction of invasive species, overfishing, and an increase in lake water temperature from climate change.

Many resorts on Mille Lacs have either hurt financially or went out of business from the increase in fishing regulations so I interviewed a couple resorts around the lake to find out about how it has impacted their business. A couple of questions that I asked them was what tourism has been recently, how they are trying to bring tourism back, and what the fishing report has been of anglers passing through. I talked with Eric Jensen, a Minnesota DNR worker at the Aitkin fisheries office, for the DNR's perspective of the situation and what they know.

Figure 1. A picture of the highly-coveted walleye, or *Sander vitreus*, that many anglers look to catch in Mille Lacs Lake. Walleye can be identified by the white spot on their tail and their glossy colored eyes.

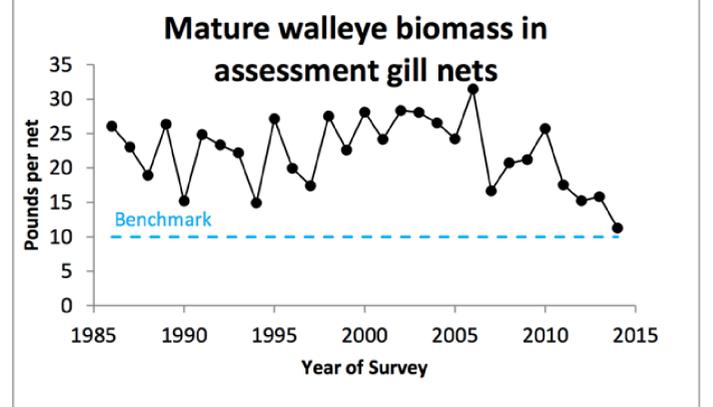


Figure 2. From Bruesewitz, a look at the average recordings each year by Minnesota DNR of mature walleye collected in gill nets based on pounds per net.

Figure 3. A fiberglass statue in Garrison, MN of a walleye shows the popularity of walleye fishing on Mille Lacs. This statue is roughly 24 feet long and 15 feet high. Mille Lacs is well known around the country to be a "walleye factory" and putting up a large statue of it helps promote tourism



Figure 4. Pictures of zebra mussels (left) and a spiny waterflea (right)



Sources for pictures: <http://kscj.com/2017/10/05/zebra-mussels-found-big-spirit-lake/> <http://wamc.org/post/spiny-waterflea-confirmed-indian-lake>
<http://www.roadarch.com/critters/fish2.html> <https://www.mprnews.com/story/2017/05/26/could-bass-be-next-boon-for-mille-lacs>
 Bruesewitz, Rick. "Hooked on Mille Lacs Lake—Special Regulations Edition." April 2, 2015.

Results

I found that there are roughly two leading reasons for the decrease in walleye populations in Mille Lacs. One is the impact that invasive species, such as zebra mussels and spiny waterflea, are having on the food chain in the lake, and are causing young walleye to die because of a lack of food source, according to Eric Jensen from the MN DNR. The other is the stress a walleye encounters from a combination of both hooking mortality and increasing water temperatures. Red Lake (in Minnesota) experienced a similar drop in walleye population and eventually brought back to normal levels. Red Lake's restoration practices, however, could not be used on Mille Lacs.

Last year in 2017, anglers noticed a great bite from walleye during the catch-and-release season, symbolizing a higher walleye population. However, this can somewhat be explained by a lack of food source in the lake for the walleye and making more hungry walleye looking at angler's bait as potential food.

A couple resorts around the lake witnessed up to a 50% decrease in tourism due to the lack of angler visits after the regulations were changed in 2012. Most resorts are using advertisement in bass fishing, four-wheeler rides, craft sales, and other advertisements.

Possible Solutions

- Promote bass (or other fish species) fishing over walleye
- Promote to ATV riders for nearby ATV trails
- Keep current regulations in place until walleye population is sustainable
- Slow-down or stop climate change effects
- Use Red Lake restoration practices on Mille Lacs
- Removal of invasive species in entire lake

Conclusion

With the recent update that the 2018 summer season will be catch-and-release only, it is not good news for anglers or local resorts to hear that the DNR does not believe the prized walleye population is not back up to a sustainable level. This leads to the question of when the angling and Mille Lacs Lake society should change their expectations that the lake may be going through a permanent change. People never want to experience huge changes in their lives, such as losing a lake's popular fish, but we are always experiencing change everyday and we need to evaluate whether the walleye population can still be saved or whether we need to transition as a society.