Background information for agenda topic #10:

Wake boats and their effects on Oneida County lakes

CUW Committee Meeting August 15, 2022

- compiled by Michele Sadauskas, Oneida County Conservationist

This document has been prepared to familiarize CUW Committee members about concerns that natural resource managers, scientists, and citizens have on wake boat usage on Northern Wisconsin lakes. The document was created to facilitate discussion at the Committee level.

A few facts about Oneida County lakes:

- Oneida County has 1129 lakes
- Eighty-eight percent of Oneida County lakes are less than 25' deep, 445 of them are less than 10' deep
- Eighty-two percent are less than 50 acres

Top concerns about wake boats:

- They create large waves (4' high) that erode shorelines
- The large waves create safety issues with smaller boats, canoeists/kayakers, swimmers, paddle boarders, and people on their docks
- Motors and props are scouring lake bottoms, causing damage to vegetation and spawning areas, and stirring up sediment
- They can spread AIS through their ballast system, which holds residual water

Links to studies:

- Wake surfing and fish habitat loss on Mid Lake, Oneida County, WI https://static1.squarespace.com/static/60cbf64f0c7c872f03a0a897/t/610c4588bfd7234375b24d0d/1628194232722/WakeMidLake.pdf
- Phase I. North Lake, Waukesha County. Carroll University, funded by DNR grant. YouTube video: https://www.youtube.com/watch?v=Gw7xsPU-S40
- Phase II. North Lake, Waukesha County. Carroll University, funded by DNR grant YouTube video: https://nwwislakesconference.org/2022-nwlc-breakout-2a/

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Testimonials:

Stephanie Boismenue, Oneida County AIS Coordinator writes:

In the world of AIS, wake boats are an extremely concerning vector for transporting AIS. This is because they have huge ballast systems that can hold well over 1,000 pounds of lake water. Even though the water is pumped out of the ballast system, it is impossible to drain it all resulting in large volumes of residual water transported in the ballast from one waterbody to another. Every new waterbody the boat is operated on has new lake water added and mixed into the entire ballast system. The residual water creates the perfect habitat and pathway for spreading AIS such as zebra mussel veligers, spiny waterfleas, VHS, algae, bacteria, etc.

During Jeff Meessmann's presentation (at the 6-county lake group meeting on July 15, 2022 in Rhinelander), he discussed a study conducted by U of W 'Volume and Contents of Residual Water in Recreational Watercraft Ballast Systems.' The study measured water left in ballast systems in 13 boats. The average residual water was 8 gallons. Two boats retained over 20 gallons each. Nine of the 13 sampled boats contained live invertebrates after more than a week. They were unable to collect residual water in 5 other boats that had permanent ballast compartments. He also noted that some boat ballast systems fill up to 5000 pounds (600 gallons) of lake water, and while surfing, tanks may be filled and emptied rapidly, and multiple times to adjust for different surfers or activities. The bigger the ballast, the better the wake.

Dan Bukus, Board of Director for the Northern Region, Wisconsin Lakes writes:

I need to caution you and your Committee. When the presenters talk about increased phosphorous in the water column after wake boat passage due to sediment being stirred up in the phase 2 study (YouTube video), this can be misleading. The DNR and Wisconsin Lakes agree that the water chemistry of phosphorous is not that straightforward. Phosphorous resides in the sediment bound to iron, and that iron is in the +2 oxidative state. In this situation, the phosphorous is not bioavailable because it is insoluble. When it is mixed into the relatively oxygen-rich water column, some but not all of the iron may oxidize further to the +3 oxidative state, which does release the bound phosphorous to make it bioavailable. We expect the other studies to quantify how much of the bound phosphorous is converted to bioavailable phosphorous. Of course, any increase in bioavailable phosphorous would impact algae growth. However, what is clear is that lake sediment is reintroduced into the water column and redeposited on native aquatic plants. You can see the effect in the videos.

Michele Sadauskas, Oneida County Conservationist notes:

Although Oneida County cannot impose regulations on enhanced wakes, our department may be able to create a framework that would help identify lakes sensitive to enhanced wakes. This framework could then help towns decide what lakes they may want to afford additional protection. With Committee support, I would like to explore the development of this framework to be used as a deliverable within the larger DNR Surface Water Grant that I am currently developing.