Walleye Rehabilitation in Golden Lake – A Pilot Project

Our focus species will be on walleye, as they were abundant in Golden Lake for many years. We will look at other species and methodologies as they present themselves and create a metric to assess their value.

Something that I have known because of my background is that when one species wins another loses. This is the balance of nature and apples to all living things. The scales were tipped against walleye 30 years ago and we will be working to tip them back.

Survival of deposited walleye eggs in the wild has been documented as being highly variable. Serns (1982) found **survival from potential egg deposition to the fall of the first year to be 0.0088% in 1979, 0.0026% in 1980, and 0.0714% in 1981**. Forney (1976) also calculated rough estimates of potential egg deposition and found that walleyes in Oneida Lake, New York, produced 12-18 billion eggs each year, of which **only 0.05 to 0.07% lived to attain 8 mm** in length. Survival of summer fingerlings has also been reported by Jennings et al. (2005), where over four years, using marked summer fingerlings (1.2-1.8"), stocked in 23 lakes in Wisconsin, they found that the **mean survival of stocked fingerlings from June until October was 3.4%.** In another study on survival from Walleye fall fingerlings to adults (3 years old), Kempinger and Carline (1977) found that **survival of fall fingerlings to age 3 averaged 12% annually**.

Over the last 40 years, it has been shown that walleye fry stocking has produced highly variable results (Kerr, 2011). In fact, about 85% of fry stockings result in no measurable year class (WDNR, 1999). Partly, because of this, from 2013 to 2015, the Wisconsin Department of Natural Resources transitioned the majority of its walleye stocking from June-stocked “small fingerlings” (about 1.5” fish) to September-October stocked “fall fingerling” walleye (> 6”), through a program known as the Wisconsin Walleye Initiative (WDNR, 2022).

Our initial goal is to try to find a way to rehabilitate the walleye population in Golden Lake. It is based on evidence that the survival rate of stocked fish will be much better if we can go from summer fingerling stage (~1.5 ") to fall fingerling stage (~ 6"). In this way, instead of the stocked walleye potentially being food for the abundant Golden Lake Rainbow Smelt, the larger stocked walleye will be a serious competitor with the smelt, and hopefully have a higher survival rate. There is a large amount of scientific evidence in support of this (Santucci and Wahl, 1993; Seip, 1995; Harder and Summerfelt, 1996; Kerr, 1999; Kampa and Hatzebeler, 2009; Grausgruber and Weber, 2020; Weber and Weber, 2020).

Our methodology to do this will be to obtain summer fingerling walleye that have been trained to eat granular feed and place them into transitional small floating fish cages at strategic locations on Golden Lake. We are also investigating the use of floating raceways to culture walleye, as this has been a very successful approach conducted by Izumi Aquaculture with Rainbow Trout (https://www.aquaculturenorthamerica.com/how-a-rainbow-trout-farm-is-turning-rock-into-green/?custnum=&CUSTNUM;&title=&*URLENCODE(&TITLE;)&utm_source=&PUB_CODE;&utm_medium=email&utm_campaign=&*URLENCODE(%7b%7b*JobID%7d%7d)&oly_en

c_id=3792G9337367D6W). This will allow the fry to grow protected with high value feed from June until November, when due to lower water temperatures their metabolism decreases as they prepare for over wintering. At this point they will be fin clipped and released. While this approach may seem unique, the Lake Ontario Net Pen Program has precisely done this with Chinook Salmon since 2003, having such great success, that in 2016 it represented 42% of the total Chinook stocking load to the Canadian side of Lake Ontario, ~225,000 fish (Todd, 2017). Lake cage culture has also been conducted experimentally in Illinois with feed-trained Walleye having an average survival of 86% over 79 days (Harder and Summerfelt, 1996). In addition, the states of Iowa, Vermont and Wisconsin are leaders in walleye intensive culture practise, and we have already been gathering the research and contacts of their experience.

I want to make it very clear that this is a process, and we have a lot to do before we get a whole plan in place. Our initial focus will be proof of concept and to find ways to make the process work with the proper methodology and equipment.

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