



# RESEARCHING THE Great Sacandaga Lake WALLEYE POPULATION



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According to the New York State Department of Environmental Conservation (DEC) fisheries database, the average size of a five-year-old walleye in New York State is over 18 inches long. But the average size of a walleye the same age in the Great Sacandaga Lake is only 15 inches. The shorter-than-average walleye appears to be more of the norm than the exception. Students in the science research course at Broadalbin-Perth Jr./Sr. High School are using scientific data to determine why.

The students are researching possible reasons why the walleye are not growing very fast and why many anglers are not necessarily catching legal walleye, defined by New York State as a minimum of 15 inches in length. Their hypotheses include overfishing, environmental factors, a deficient trophic state (biological condition), limited biomass, and sparse forage resources. The class has access to two pontoon boats, *Patriot 1* and *Patriot 2*, which the school district obtained through grants and fundraising to collect data on the lake.

“The science research course offers our students an opportunity to engage in real science, collect real data, and work with professional agencies such as DEC,” explained Brian Henry, the teacher who developed the course. “To be able to do this kind of work on a ‘floating classroom’ on the Great Sacandaga Lake is providing the students with an experience like no other.”

According to Henry, walleye populations in the Great Sacandaga Lake are influenced by various factors including available forage, habitat, interspecies competition, sport fishing,

→ Broadalbin-Perth High School Science Research student holds a walleye caught during a recent data collection trip; by Marshall Gottung



↑ Students prepare walleye tissue samples for genetic analysis; by Brian Henry

and stocking. These variables have both positive and negative impacts on walleye success rates in the Great Sacandaga Lake. Because of its proximity to Broadalbin-Perth High School, the lake is an ideal place to create unique educational experiences for the students.

As part of the course, students have engaged in the numerous methodologies and protocols associated with research design, data collection, analysis, and report writing. They have ongoing discussions with members of the Great Sacandaga Lake Fisheries Federation, the Great Sacandaga Lake Advisory Council, and DEC, which all support scientific studies of the lake to help understand various components of the lake's ecosystem.

In 2023, the class was granted a permit to tag 1,000 hatchery-raised walleye before they were released into the Sacandaga. The tagging took place in November 2023. Students used a program called Visible Implant Elastomer to tag the walleye behind their left eye. It uses a harmless latex dye injected into juvenile





← Close-up view of the head of a recently caught walleye on the Great Sacandaga Lake; by Brian Henry



← Juvenile walleye tagged with pink-colored Visible Implant Elastomer (VIE) behind its left eye; by Brian Henry

walleye, which allows for tracking of their growth when they are caught. The plan is to use different colored dyes to indicate the year the fish were tagged; this year, the class used pink dye.

Now, the students are hoping local anglers will help their research by reporting the lengths of marked fish they catch. Collecting this data will allow the students to see how quickly or slowly the walleye are growing in the Great Sacandaga Lake.

Anglers can submit the data from their catch by scanning a QR code located at local bait shops or by contacting Brian Henry at [henryb@bpsd.org](mailto:henryb@bpsd.org).

In 2022, the Great Sacandaga Lake Fisheries Federation tasked the high school's science research class with determining whether the Federation's stocking efforts were contributing to the lake's walleye population. Since 2012, the Federation stocks the lake annually with approximately 6,000 hatchery-reared juvenile walleye. According to Henry, stocking can enhance recreational fishing, improve fishing populations, and keep bodies of water environmentally balanced. Understanding whether the stocking program is making a difference in the lake's walleye population would allow the Federation to modify or enhance its stocking efforts.

To help the Federation better understand the effects of its stocking program, students in the science research class designed a study to answer two key questions: What is the genetic contribution of stocked versus wild fish in the

adult (harvestable) population? And: Are the stocked walleye reproducing in the lake, or are they experiencing a lower reproductive capability than the natural population?

The students worked with DEC fisheries biologists to collect tissue samples of adult walleye caught on the Great Sacandaga Lake. They submitted the samples to a genetics lab at West Virginia University to conduct a genetic analysis of the caught walleye compared with the hatchery-raised stocked walleye. The data the students collected for this study is currently in review for publication in an international scientific journal.

The data shows that the hatchery-raised walleye are contributing to the overall population of the lake, with an average of 7.6 percent ancestry from the hatchery population in the wild population. Hatchery ancestry of the walleye in the genetic study ranged from 0.7 percent to 68.0 percent. The broad range of inheritance suggests that both walleye populations (wild and hatchery) have been interbreeding for multiple generations. Some of the genetic markers stayed in the gene pool while others have disappeared over time.

Henry says that Broadalbin-Perth's Science Research class allows students to acquire the necessary skills, responsibilities, and knowledge to be good stewards of freshwater environments. Graduates who have taken the class have gone on to pursue college science degrees.

"This course has been a game-changer for our kids," Henry said. "There is no better way for students to learn science than by doing science. I am very proud to say that my students are making a difference and it's something that should be celebrated." 🐟



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