

Genetic tests show Trout Lake fish unique

BOULDER JUNCTION, Wis. – Genetic tests have confirmed that lake trout from Trout and Black Oak lakes in northern Wisconsin are unique not only in Wisconsin but in North America and have maintained their purity despite a century of mingling with different strains stocked into their home waters.

That finding will guide state efforts, particularly stocking strategies, aimed at helping the Trout Lake lake trout population recover from a decline caused by limited natural reproduction and stocking problems through the 1990s.

“The test results have given us important information to help us with our long-term restoration plan,” says Wes Jahns, the Department of Natural Resources fisheries technician leading the recovery effort. “They’ve confirmed our belief that these fish are unique to Trout Lake, so to preserve this unique strain, all future stockings in Trout Lake will be of the Trout Lake strain only.”

As part of that plan, DNR crews earlier this spring stocked Trout Lake with 39,120 year-old lake trout known as “yearlings” and Clear Lake in Oneida County with 4,349 yearlings and 114,000 fingerlings. The stockings are intended to help restore the Trout Lake population in its home water and to establish the strain in another lake as back up and to provide new fishing opportunities, Jahns says.

The importance of achieving these goals is brought home by genetic sleuthing by researchers from DNR, the University of Wisconsin and the Ontario Ministry of Natural Resources. Prior Canadian research involving fish from 60 U.S. and Canadian waters has shown that there are four distinctive lineages of lake trout in North America. This most recent study took that insight one step further by looking for genetic markers that are capable of identifying distinct populations and subpopulations, according to Kyle Piller, a DNR and UW researcher and lead scientist on the project.

Researchers looked at native strains from the two lakes and all populations that served as stocking sources for the lakes over the last 100 years, including strains origination from Lake Michigan and Lake Superior.

“Based on all of the populations that we analyzed, lake trout in Trout and Black Oak lakes represent unique strains of lake trout,” Piller says. “They are unique not only in Wisconsin, but in North America. These two lakes harbor the only two populations of lake trout indigenous to the Upper Mississippi River Basin.”

Piller, a research associate at UW-Madison’s Center for Limnology, said the lake trout’s genetic distinctiveness is most likely due to their long period of isolation from other lake trout populations. “The lack of connectivity between systems leads to a lack of gene flow, which, in turn, has resulted in local adaptation and genetic distinctiveness for these populations.”

Interestingly, Piller says, the study showed that the genetic integrity of the native lake trout was maintained despite many years of artificial stocking of Great Lakes strains. That’s contrary to scientific literature that clearly shows that the most common outcome resulting

from nonnative fish introductions is the mixing of native and nonnative gene pools, which can lead to lower fitness and survivability, and population declines.

Trout Lake has been stocked off and on since 1900 with either a Lake Superior strain or a Trout Lake strain of fish. That stopped between 1988 and 1997 when the state hatchery that raised yearling lake trout became infected with a viral disease and the lake trout strain was not allowed back in. Stocking resumed in 1998, when the Art Oehmcke Hatchery in Woodruff started producing lake trout fingerlings.

“Most likely, the lake trout in Trout and Black Oak lakes are each better adapted to their respective lakes than the introduced Great Lakes populations are to these systems,” Piller says.

The challenge now for fisheries biologists is to protect that genetic purity at a time when the Trout Lake population is struggling. DNR population surveys have shown that natural reproduction was declining for reasons biologists haven’t been able to identify, and that the population is aging.

Those disturbing trends spurred the state to close the ice fishing season in 1990 to protect the lake trout population, and in 1996 to establish a 30-inch minimum length, one daily bag limit during the open season, which runs from the first Saturday in May through Sept. 30. It also spurred development of the restoration plan that includes, in addition to the regulations, research to help better understand and address the reproduction problems, and a careful stocking plan.

The stocking that occurred this spring on Trout Lake and Clear Lake will be another important step in the recovery plan because it marks the first of three years of planned stockings of yearlings, which stand a better chance of survival than the fingerlings that have been stocked in the last few years.

“Because we don’t know the degree of natural reproduction taking place in Trout Lake, survival of these yearlings will play a critical role in sustaining the population in years to come,” Jahns says. “If the lake trout become established in Clear Lake it will provide another population of the Trout Lake Strain.”

Black Oak Lake is not stocked because its population is naturally reproducing and stocking could actually harm the natural reproduction, Jahns says. But that population itself is in need of a higher degree of protection. Recent sampling on Black Oak lake reveals a self-sustaining population at average to below average densities, he says.

As a result, DNR will hope to propose changing regulations from a minimum size of 26 inches to 30 inches with a bag limit of one to provide additional protection and uniformity with Trout Lake.

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