

Fisheries Research Summary

Division of Inland Fisheries

N.C. Wildlife Resources Commission



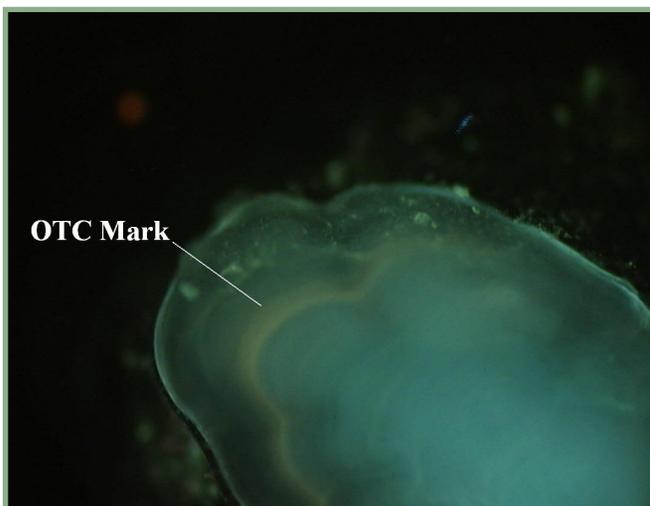
Contribution of Stocked Walleye Fingerlings in Hiwassee Reservoir

Hiwassee Reservoir's walleye fishery has been popular with anglers since the N.C. Wildlife Resources Commission first stocked the species in the 1950s. For many years, the walleye population was self-sustaining and required no additional stockings. That changed in the late 1990s when blueback herring appeared in the reservoir and walleye numbers began to decline. Blueback herring, a popular bait fish, were first collected upstream of Hiwassee Reservoir in 1996 in Chatuge Reservoir, where they were probably introduced in anglers' bait wells. River herrings like blueback can easily survive downstream passage through dams and invade downstream rivers and reservoirs. By 1999, the Commission had confirmed their establishment in Hiwassee Reservoir. Each year after blueback herring appeared, the estimated number of walleye surviving to adulthood decreased by 60 percent.



By 2004 it was clear that fingerling walleye stockings would be required to maintain Hiwassee Reservoir's walleye population. Because of the time and expense of such stocking programs, it was important for the Commission to evaluate the success of walleye fingerling stocking. Biologists accomplished this by marking all 30,000 fingerlings stocked each year from 2004 to 2006, and monitoring their survival and contribution to the population.

Prior to being stocked, fingerling walleyes were marked by immersion in a solution of oxytetracycline hydrochloride (OTC), a common antibiotic that is incorporated into the bony structures of fish. As a regular part of Commission walleye surveys, ear bones called otoliths are removed to determine the age of fish caught. When these otoliths are microscopically viewed under a special epifluorescent light, a mark appears (see picture below) on the fish that were immersed in OTC, identifying them as hatchery-raised fish.



OTC-marked walleye otolith

Commission personnel sampled Hiwassee Reservoir during October of 2005–2007, and checked otoliths for OTC marks to determine the percent contribution of stocked fingerlings to the population of 1-year-old fish. Otoliths were examined from 31 1-year-old walleyes captured in 2005, 70 from 2006 collections, and 123 from 2007 collections. Of those 1-year-olds, 52 percent bore an OTC mark in 2005, 56 percent in 2006, and 77 percent in 2007. Therefore, during each year greater than 50 percent of the 1-year-old walleyes Commission personnel collected were from hatchery origins, proving that stocked fish contributed significantly to the walleye population in Hiwassee Reservoir. Because of the results of this study, the agency will continue to stock walleye fingerlings and monitor the fishery to make sure that adequate numbers of walleye are available to be caught by Hiwassee anglers.

