

Sturgeon Vignette – Lake Sturgeon Age and Growth Project

The earliest reported efforts to estimate age of sturgeon species dates back to the early 1900s. Typically age estimation procedures involve cutting thin cross section of a bone structure and counting the number of annuli (growth rings) under a microscope, similar to estimating the age of a tree. Through time many structures have been used to estimate age of sturgeon, but pectoral fin rays have been the most commonly used structure. Even here on the Winnebago System, the majority of past aging has been done through collection and processing of pectoral fin rays. It's well documented that pectoral fin rays yield fairly accurate age estimates for younger fish (<15 years of age). However, age estimates from fin rays typically underestimate the actual fish age as fish reach older ages and growth rates slow.

Otoliths (ear bones) have been documented to yield the most accurate age estimates for most fish species. In fact, my graduate research project involved evaluating the accuracy of walleye age estimates derived from otoliths and dorsal spines, concluding that otoliths were the preferred structure. One of the drawbacks of collecting otoliths is that the fish needs to be sacrificed to remove the bones, where other structures can be collected non-lethally. So for sturgeon species there really has not been extensive research on use of otoliths because most populations are in recovery and sacrifice of fish for research is not a preferred option. Our annual spear fishery provides a unique opportunity to collect otoliths from a large sample size as hundreds of fish are harvested by spearers each season. Our DNR fisheries staff in Oshkosh has experimented with lake sturgeon otoliths in the past, but have yet to embark on a large scale study to evaluate the best methodology for estimating age and growth.

So that brings me to the DNR's request for spearers to donate their sturgeon head this season. We will be removing the otoliths from the donated heads and compare age estimates from pectoral fin rays to those from otoliths to guide future aging techniques for sturgeon management. As part of the project, we will also explore a potential correction factor to correct the errors in underestimating age of older fish with pectoral fin rays. We also will evaluate mark recapture growth data as an alternative to estimating growth rates. It's too early to tell what the results of the project will be, but we will be sure to keep people informed.

Through the first 6 days we have had great cooperation from spearers and have been able to collect more than 350 heads from harvested fish. Just today on Thursday February 16 a crew of 5 current and retired DNR employees removed otoliths from 177 sturgeon heads. I've provided a few photos of the process below:

More to come on this project in future reports!



Left to right: Aaron O'Connell, Joe Dax, Doug Weber, Ryan Koenigs, Ron Bruch



Example cuts made in the skull to remove the skull cap.



After carving away cartilage, otoliths are present in saccules at the point of the forceps. One otolith on each side of the head.



Otoliths teased out of the sacculle