

## Lake Sturgeon Studies in the Cheboygan River Watershed

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### *Background*

Lake Sturgeon is the largest fish found in the Great Lakes. Prior to extensive European settlement of the Great Lakes region, Lake Sturgeon was one of the most abundant species of fish in the Great Lakes and many of the large river systems connected to the Great Lakes. Sturgeon populations were reduced globally by overharvest, habitat destruction and pollution to remnant populations by 1920 and Lake Sturgeon are currently listed as a threatened species in Michigan. The Cheboygan River system, which includes Burt, Mullett, and Black lakes, is home to one of the few remaining Lake Sturgeon populations in Michigan. Black Lake supports a popular winter spear harvest fishery for Lake Sturgeon but harvest is prohibited in Burt and Mullett lakes due to low numbers. A collaborative research effort between Fisheries Division and Michigan State University has been studying Lake Sturgeon in the Cheboygan River watershed lakes since 2001 with research focused on learning more about Lake Sturgeon biology as well as development of Lake Sturgeon rehabilitation actions that can be applied statewide to other remnant populations.

Research on the Black Lake Sturgeon population in recent years has focused specifically on improving stocking practices for population restoration. There are multiple Great Lakes tributaries that are currently being stocked with Lake Sturgeon as part of efforts to restore self-sustaining Lake Sturgeon where they historically existed but are currently absent. Stocking targets, including the appropriate number and size of fish to stock, were initially set based on best professional judgement of fishery managers because there were no data available to guide these decisions. To provide better guidance of stocking decisions the Michigan DNR and Michigan State University began stocking Lake Sturgeon in Black Lake in 2001 and over the course of several years have varied the number and size of fish stocked. In 2013, a gill-net survey was conducted in Black Lake to evaluate the stocking program and attempt to determine the relationship between fish size at stocking and subsequent survival. This relationship is important to know because it will help guide decisions on numbers of fish to stock to achieve management targets.

The objectives of the study are 1) to determine abundance of stocked year classes in Black Lake and 2) to examine the relationship between stocked year class abundance and the number and size of fish stocked by year.

### *Key results*

There were 283 individual Lake Sturgeon captured during the survey and most of the fish were juveniles (Photo 1). The smallest fish captured was 22” and the largest fish



Photo 1. Juvenile Lake Sturgeon captured during gill-net survey in Black Lake.

was 71". Fin ray samples and fin tissue were collected from the fish to allow for age determination and genetic analysis. The analysis indicates that the stocked fish are surviving and doing well. The analysis also indicates that size of the fish at stocking does influence survival and is an important consideration when planning for a Lake Sturgeon rehabilitation stocking program. There is an apparent threshold at about 6" where post-stocking survival increases rapidly and fish that are at least that size when stocked have very high survival (Figure 1).

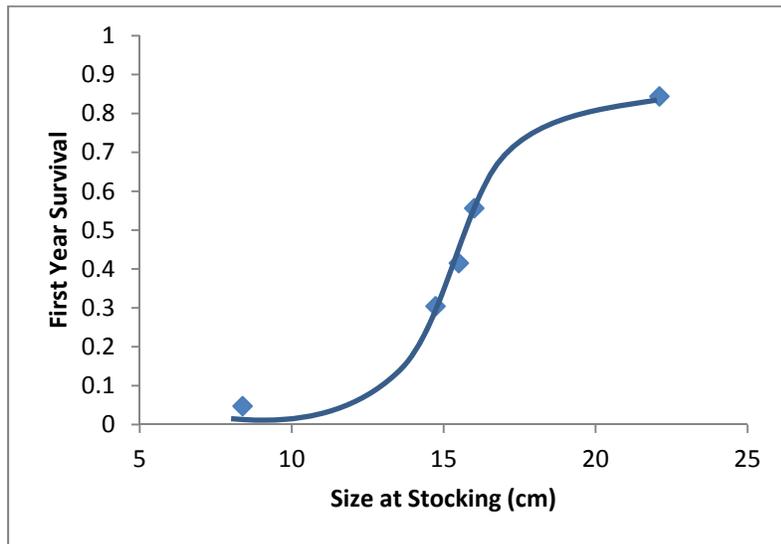


Figure 1. Relationship between Lake Sturgeon size at stocking and first year survival.

Based on the results of the gill-net survey survival of stocked Lake Sturgeon is considerably higher than assumed. Because survival is higher, particularly for larger stocked fish, the stocking target for Black Lake has been reduced from 3,250 fish to 500 fish annually with a target size at stocking of at least 6" (15 cm). The survey results are also being used to set realistic stocking targets for other Lake Sturgeon rehabilitation efforts around the Great Lakes.

#### *Additional Information*

Detailed project information is available at [http://www.michigan.gov/dnr/0,4570,7-153-10364\\_52259\\_19056-333302--,00.html](http://www.michigan.gov/dnr/0,4570,7-153-10364_52259_19056-333302--,00.html).