

MICHIGAN DEPARTMENT OF CONSERVATION
Lansing 26, Michigan

Fish Division Pamphlet No. 35

1M

June 1962

Michigan's Largest Fish

THE LAKE STURGEON



By

John E. Williams and Henry J. Vondett

The lake sturgeon (*Acipenser fulvescens*), one of six species of sturgeon of North America, is found throughout southern Canada and north-central United States. With the exception of the lake sturgeon and the little shovelnose sturgeon, all American sturgeons are marine in nature, ascending coastal streams to spawn. Various aliases have been given to the lake sturgeon such as rock, red, rubber-nose, Ohio, and stone sturgeon. The sturgeon is a primitive fish, and evidence indicates that it existed fifty million years ago.



To a person unacquainted with the sturgeon, the first sight of this fish is apt to be quite a shock, for the large, shark-like tail, bony body, and long, rubbery snout with the feelers suspended beneath, all add up to a strange sight. The four feelers or barbels behind the snout drag along the bottom and serve to locate food. When food objects are sensed by the feelers, the long, tube-shaped mouth, located behind the feelers, is let down and it sucks up food like a vacuum cleaner. The body is partially covered with rows of hard bony plates, two rows running along each side and one down the back. In young sturgeon these plates are conspicuous, but when the fish reaches a larger size they are scarcely noticeable. The head is also covered with bony plates, but the rest of the sturgeon's skeleton is made of cartilage instead of bone.

In general, sturgeon prefer to live in large lakes and rivers. Most of the springtime is spent in fairly shallow water, while summer finds them in deeper water. In winter the sturgeon exhibit a tendency to group up in schools in the deeper holes, now and then going out to cruise the more productive shoal areas for food.

Sturgeon seem to prefer to spawn in the larger streams tributary to the lakes in which they live, but they have been observed spawning in shallow waters of lakes. Spawning takes place in the spring when the water temperature reaches 60° to 70° and is an impressive sight as a great deal of rolling, splashing, and even jumping above the surface occurs. Each female is accompanied by several males, and the eggs and milt are emitted simultaneously at short intervals. The eggs sink to the bottom and stick to vegetation and stones, and the adults then leave the spawning area quickly. Whether male fish spawn every year is not known, but it is believed that females do not. Sexual maturity is not reached by the sturgeon until 15 to 25 years of age; fish in northern waters mature later than those farther south. A single large female may produce up to half a million eggs. Sturgeon eggs will hatch in about one week at 65° and the newly hatched fish, with their large yolk sacs, resemble young sharks. The young sturgeon has a small suction plate on its snout which enables it to cling to vegetation and rest.

Young sturgeon from one to seven or eight inches in length feed almost entirely on small crustacea; the adults seem to prefer immature or larval midges, caddisflies, dragonflies, and mayflies, and they also consume large numbers of clams, snails, and crayfish. Small fish are sometimes sucked up by the mouth and even large suckers have been found in sturgeon stomachs. Fish, however, are not their staple items of diet and, contrary to popular opinion, neither are sturgeon extensive fish-spawn destroyers.

Although it is known that the sea lamprey will attack sturgeon, the population of sturgeon in the Great Lakes had been depleted before the advent of the lamprey on the scene. It is evident from the sturgeons' commercial history that its chief predator has been man himself.

The lake sturgeon was formerly very abundant throughout the Great Lakes region but, unfortunately, this is no longer the case. Previous to 1870 no use was made of sturgeon except as fertilizer; and commercial fishermen, getting thousands of them in their nets, were wont to pile them on shore and burn them in order to

reduce their numbers and protect their nets. By 1880, however, several industries were in full swing, smoking the flesh, manufacturing caviar from the eggs, isinglass from the air bladders, and leather from the skins. Heavy commercial netting then resulted in a reduction in the catch in the Michigan waters of the Great Lakes; the catch was over 1 1/2 million pounds in 1885 and less than 2 thousand pounds in 1928. Michigan completely closed all sturgeon fishing in 1929, both sport and commercial, in order to allow the big fish to increase their numbers.

By 1948 there were fair numbers of sturgeon in some waters, and starting with that year Michigan has allowed a short winter spearing season under fairly restrictive regulations. At the start, sturgeon spearing was legal during January and February, with a 36-inch minimum size limit and a season limit of two fish. Beginning in 1952 the legal size was raised to 42 inches, and in 1958 the spearing season was shortened to February only. In 1959 the sturgeon was placed on the game-fish list and, therefore, those taken from inland waters now cannot be bought or sold. Prior to 1959 there was a quick market for sturgeon at about \$1 per pound for the fish plus up to \$3 per pound for eggs in good condition for caviar.

Since 1951 it has been legal for Michigan commercial fishermen in the Great Lakes to sell sturgeon taken in their nets.

Other states and Canada also now have varying restrictions on this fish. In Wisconsin, where the season limit is only one fish, sturgeon spearers themselves requested that the cost of seals, with which they must tag their fish, be increased from five cents to \$1 each!

Sturgeon spearing in Michigan since 1948 has been confined almost entirely to the Cheboygan and Indian River chain of lakes, namely Black, Burt, and Mullett lakes in Cheboygan County. In 1948 approximately 75 sturgeon were speared, ranging up to 134 pounds in weight, all fish coming from Black Lake. In 1949 and 1950 Black and Mullett lakes shared the spotlight; and in 1951 Burt Lake was also represented, contributing six fish, each over 100 pounds.

A questionnaire census of the winter sturgeon fishery in Burt, Mullett, and Black lakes was conducted from 1956 to 1958. A count of the shanties on the spearing grounds during the three years revealed 156 shanties present in 1956, 142 in 1957, and 124 in 1958. Questionnaires were sent to all shanty owners at the beginning of the spearing season each year, and approximately 44 percent of the forms were returned. Estimates of the total hours spent spearing and the number of sturgeon taken each year are given in the table. The reduction in fishing pressure from 1957 to 1958 was probably related directly to the shortening of the season.

Century-old sturgeon are probably not uncommon, as they are among the longest-lived fishes known. There are records for the lake sturgeon of over 300 pounds and nearly eight feet in length in Lake Michigan. The White or Oregon sturgeon of the Pacific Coast has been taken as large as 1,900 pounds, and there is a reliable report of a specimen of the Great Russian sturgeon weighing over 3,000 pounds.

Estimated total hours of sturgeon spearing,
number of sturgeon taken, and hours of fishing
per sturgeon speared in Black, Burt, and
Mullett lakes, 1956-1958

Lake	Year	<u>Estimated total</u> <u>Hours Sturgeon</u>		Approximate average hours per sturgeon
Black	1956	5,076	55	90
	1957	5,177	12	430
	1958	3,700	21	180
	Total or average	13,953	88	160
Burt	1956	1,347	4	340
	1957	2,133	2	1,100
	1958	1,036	0	-
	Total or average	4,516	6	750
Mullett	1956	3,207	11	290
	1957	3,318	3	1,100
	1958	1,742	4	440
	Total or average	8,267	18	460
All 3 lakes	1956	9,630	70	140
	1957	10,628	17	620
	1958	6,478	25	260
	Total or average	26,736	112	240

Pectoral fins were collected from 26 sturgeon from Cheboygan County lakes for age determinations (Figures 1 and 2), and the lengths and weights of 68 sturgeon were obtained (Figure 3). Ages ranged from 19 to 70 years, and projection of the limited data suggests that sturgeon reach the legal length of 42 inches at an age of about 15 years. The record sturgeon speared thus far in Michigan was from Mullett Lake during the 1955 season; it weighed 175 pounds and measured 86 inches in length.

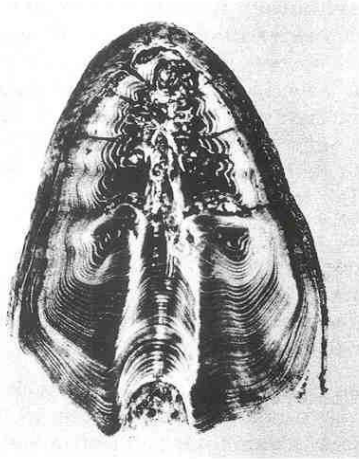


Figure 1.--Photo of a fin-ray section from a 79-inch, 114-pound, male sturgeon speared in Mullett Lake, Cheboygan County, in 1952. A count of the "rings" gave 46 years as the estimate of the age of this fish.

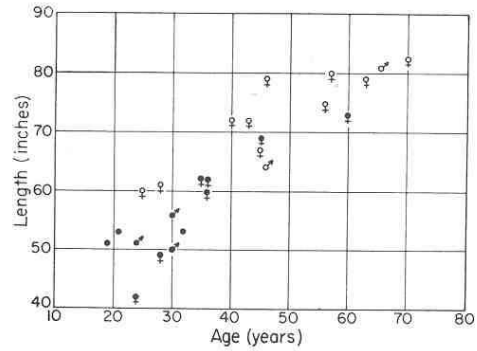
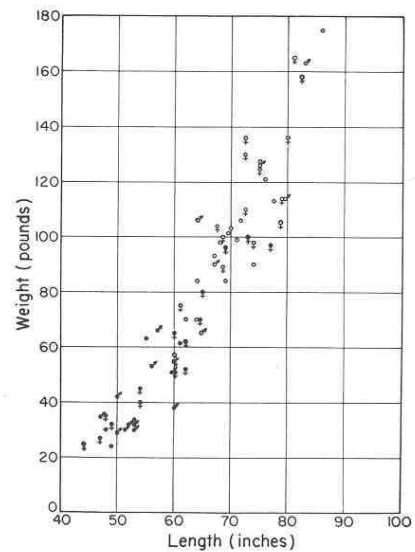


Figure 2.--Age-length relationship of 25 sturgeon speared in Black Lake (solid circles) or Burt and Mullett lakes (open circles), 1955-1960. Sex is indicated by ♂ for males and ♀ for females.

Figure 3.--The length and weight of 68 sturgeon speared in Black Lake (solid circles) or Burt and Mullett lakes (open circles), 1952-1960. Sex, when known, is indicated by ♂ for males and ♀ for females.



Spearing is done from a shanty over a marl bottom in water 10 to 20 feet in depth, the depth depending on light conditions, water clarity and individual opinions as to where the sturgeon are located. The spear has very strong tines and is weighted with about 15 pounds of lead. A rope is fastened to it to enable the spearer to hold and play large fish, but even then neophytes have been known to get panicky when a really large fish comes along. Slow-moving decoys, of metal or wood, are often used to attract the sturgeon, and some devotees feel that bright objects on the bottom will lure the fish to within striking distance.

Artificial propagation of sturgeon has been accomplished by several different agencies, but the chief difficulty has been getting ripe males and females at the same time and place. The Michigan Conservation Department hatched and planted 580,000 young sturgeon in the Detroit River during 1893-1894, but since then little effort has been expended on propagating this fish.

The construction of dams and the progress of agriculture in the Black and Cheboygan river drainage systems undoubtedly have had marked effects on the sturgeon populations in the three lakes. Impassable dams have cut off access to some of the preferred spawning streams, and young sturgeon appear to be rare in both Burt and Mullett lakes.

Further restrictions to fishing for this species may be necessary in the future, because of the length of time it takes the fish to reach maturity, the number of years between spawnings, and the progressive curtailment of its preferred spawning sites.