

proliferation of dams throughout North America also prevented fish from reaching former spawning grounds. Spawning habitats and food resources (i.e. mussels and gastropods) were also destroyed by siltation, pollution, channelization and drainage of streams and lakes. The lake sturgeon is also subject to direct loss by impact with large boats, such as was documented by a fish collected in Pool 15, Upper Mississippi River in the mid 1980's (see photo at right).



**Lake sturgeon killed by propellor impact in Pool 15, Upper Mississippi River in the mid 1980's.**

**Artificial Propagation:** Several State agencies are currently rearing and stocking lake sturgeon fingerlings in an attempt to recover once thriving populations. Young lake sturgeon, however, are expensive to produce because they will not eat commercial diets and are fed live or frozen bloodworms or brine shrimp.

**Human Uses:** As noted earlier, lake sturgeon supported an important commercial fishery in the upper Mississippi River and the Great Lakes region during the late 1800's and early 1900's. Most were processed as smoked sturgeon, caviar, isinglass, and fish oil. Today, important sport fisheries occur where lake sturgeon habitats support thriving populations. Also a recent increase in demand for lake sturgeon eggs as caviar has been spurred by the virtual collapse of eastern European sturgeon populations brought on by over-fishing in the aftermath of the dissolution of the Soviet Union.

**What is being done to protect lake sturgeon?**

Although lake sturgeon populations have declined over much of their range, there is evidence that populations

can recover when sufficient numbers of mature fish and adequate habitat are maintained. For example, the lake sturgeon population in Wisconsin's



**Shoreline riprapping applied to enhance sturgeon spawning habitat.**

Lake Winnebago system was stable during the 1930's and 1940's, but the population increased after property owners began riprapping riverbanks with large rock in the 1950's to reduce erosion. The riprapped shorelines greatly increase the area suitable for successful spawning. Also, a group of volunteers in Wisconsin called the "Sturgeon Patrol" has actively protected sturgeon from poaching during their vulnerable spawning period.

**What can you do?** Always purchase appropriate state fishing licenses, and carefully inspect any sturgeon caught for identification to species. Purchase habitat and special program stamps for riverine management and protection when offered by local, state and federal authorities. Become informed about pollution and river management issues in your area by consulting with state and federal agencies, conservation groups and the media. Become active in conservation groups and inform appropriate decision makers of your support for issues related to the protection and management of rivers for the maintenance of healthy ecosystems and fish populations. If we all work together we can help to ensure that our ancient sturgeon species can live alongside of thriving economies and human populations!

For More Information Contact:

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Revised 16 May 2001

# Lake Sturgeon

## *Acipenser fulvescens*



**Description:** The lake sturgeon is a primitive, heavy-bodied, torpedo-shaped fish, partially covered with bony plates rather than scales. The body is angular (5-sided) in young individuals, but more cylindrical in adults. The snout is short, rounded and conical and the tail is sharklike in profile (i.e. the upper lobe is longer than the lower lobe). The mouth is located on the underside of the head, and the lower lip has a lobe at each corner. Four smooth barbels are located in front of the mouth. Young lake sturgeon are gray or brown dorsally with dusky dorsal and lateral blotches. Adults are gray to yellowish green dorsally and white ventrally. Adults can reach lengths of 8 ft and weigh up to 310 lbs, but this large size is rare, and more commonly, large specimens range in length over 60 in.

**Biology:** Unlike some other large sturgeon species, lake sturgeon spend their entire life in freshwater, but in eastern Canada they are occasionally found in brackish waters. Lake sturgeon require large open water areas that are less than 30 ft deep where they can feed primarily on benthic organisms such as crayfishes, mollusks, and insect larvae, especially midges. Within these large lake and riverine habitats, they prefer the deeper, mid-water areas and pools, but are seldom

found in waters exceeding 20 ft deep. Aquarium observations indicate that when lake sturgeon search for food, they swim close to the bottom with the ends of the sensitive barbels or feelers dragging lightly over the substrate. As soon as a barbel touches food, there is an instantaneous reaction: the tubular mouth is rapidly protruded and the food is sucked in along with silt, gravel or other bottom materials. The food items



are rapidly strained and retained, while the soft bottom materials are puffed out through the gills. Insect larvae found in the forward portion of their stomachs are usually undamaged and still alive. Stomachs of larger fish have been found to contain a water-displaced volume of up to 66 oz of midge larvae, estimated to number about 60,000 individuals. Lake sturgeon feed throughout the winter at water temperatures ranging down to 34 °F. Adults typically migrate up rivers to spawn in the spring, moving as much as 120 mi. Large, adhesive eggs are deposited on gravel and rock riffles of streams and rivers. Spawning typically occurs from April through June in Wisconsin, at water temperatures ranging from 54-65 °F. Groups of a dozen or more males aggregate in near shore, shallow water areas, often with the upper parts of their bodies exposed.



*Typical lake sturgeon spawning habitat.*

When a receptive female joins the group, she is flanked by one or two males. During spawning, the eggs are extruded in short bursts lasting about 5 seconds each, and fertilized by males whose vibrating caudal fin may be exposed and produce an audible noise, not unlike the sound of a drumming grouse. After these short

spawning bursts, the group drifts either downstream or out into deeper water, only to return, usually to the same site, to spawn again. The spawning activity of one female may last from 5 to 8 hrs or more, but may extend over a period of 1 or more days until she is spent. Spawning may occur in waters 1-15 ft deep. Lake sturgeon eggs are black in color, very glutinous, and about 3 mm in diameter. Extremely large females may produce as many as 3 million eggs per spawning, but the average female produces between 50,000 to 700,000 eggs. After spawning, adults typically return to their home area. Adults do not spawn every year, with the interval between spawning being 4-9 yrs for females and 1-2 years for males. Hatching time for eggs (5-8 days) is a function of water temperature (60-55°F, respectively). Lake sturgeon are less than 0.5 in long at hatching and after about two weeks reach lengths of about 1.0 in. After that they are very slow growing, and 4-5 years is usually required to reach a length of 20 in and a weight of 1 lb. Females do not reach sexual maturity until ages 24-26, while males may mature in 15-17 yrs.



*“Young lake sturgeon”*

Individuals 40 yrs of age are not uncommon. The maximum reported age is 154 yrs, and the largest lake sturgeon ever verified (8 ft. long) was captured in 1943 in Lake Michigan and weighed 310 lbs.

**Historic and Present Range:** Lake sturgeon are widely distributed in North America, being found in three major drainages: the Mississippi River, the Great Lakes, and Hudson Bay (see map). While they occur in the greatest abundance in the large lakes and rivers of the Great Lakes region of the U.S. and Canada, most of the lake sturgeon natural range in the U.S. is in the Mississippi River Basin from the upper Mississippi River and its major tributaries to the southern border of Arkansas. Formerly abundant throughout much of this area, the lake sturgeon has been drastically reduced or



*Historic Range and Distribution of Lake Sturgeon.*

eliminated throughout most of its southern range. Southern populations are thus justifiably considered to be endangered, and the species is threatened or rare in many other areas. However, lake sturgeon populations in Wisconsin still support an important hook and line and spear fishery, and the species is not listed on the Federal List of Threatened and Endangered Wildlife.

**Reasons for Decline:** Until 1870 lake sturgeon were considered a nuisance by commercial fishermen. Lake sturgeon were destroyed in great numbers by fishermen who threw them on the shore to rot. Later the species became important, and in Missouri alone, commercial fishermen are reported to have captured 50,000 lbs in 1894. After 1900 numbers decreased dramatically, in part due to habitat alteration and construction of dams, but also due to over-exploitation. Over-fishing was a major problem because each individual was subject to about 20 years of fishing pressure before reaching maturity and gaining its first opportunity to spawn or reproduce itself. The



*Dams occurring on many large Mississippi River Basin rivers hinder upstream lake sturgeon movements.*