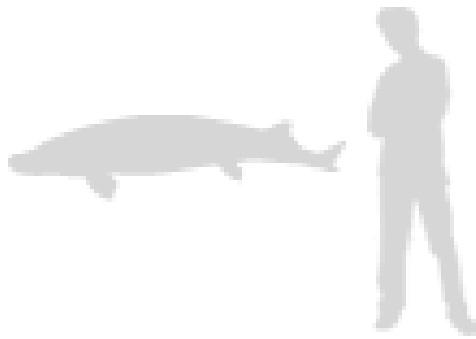




The lake sturgeon is often called a "living fossil," part of a family of fish that has existed for more than 135 million years.



Lake Sturgeon *Acipenser fulvescens*, inhabit large river and lake systems primarily in the Mississippi River, Hudson Bay and Great Lakes basins. It has and continues to represent an important biological component of the Great Lakes fish community. By the early 1900's many populations of lake sturgeon throughout their range had been greatly reduced or extirpated as a result of overfishing, habitat loss, the construction of dams, and pollution. Lake sturgeon are listed as either threatened or endangered by 19 of the 20 states within its original range in the United States. This ancient family of fishes has been recognized since the Upper Cretaceous period (136 million years ago), at a time when dinosaurs were at the height of their development

Lake sturgeon are the only sturgeon species endemic to the Great Lakes basin and are the largest freshwater fish indigenous to that system. Lake sturgeon can be considered a nearshore, warmwater species with water temperature and depth preferences of low 50s to mid-60°F and 15-30 feet, respectively. Lake sturgeon are benthivores, feeding on small invertebrates such as insect larvae, crayfish, snails, clams, and leeches.

As a consequence of interrupted spawning cycles, only 10-20% of adult lake sturgeon within a population are sexually active and spawn during a given season. Little is known about seasonal movements of lake sturgeon. Some adult lake sturgeon have been found to remain in a small territory during the summer months. While others have been observed long distances from their original capture site one year later. Adult sturgeon habitually return to spawn in streams where they were born (homing behavior), often migrating long distances up rivers in the spring. After hatching, some young lake sturgeon have been observed to remain in their natal rivers for their first summer of life.

- sexual maturity in females is reached between 14 and 33 years, most often from 24-26 years; and, 8 to 12 years for males (but may take up to 22 years);
- female lake sturgeon spawn once every 4 to 9 years while males spawn every 2 to 7 years;
- spawning occurs on clean, gravel shoals and stream rapids from April to June in preferred water temperatures of 55-64°F;
- female lake sturgeon lay 4,000 to 7,000 eggs per pound of fish;
- growth rates are quite variable throughout its range and depend on temperature, food availability, and water quality; and,
- the typical life-span of lake sturgeon is 55 years for males and 80-150 years for females.

Factors affecting the decline in lake sturgeon populations include commercial overexploitation, followed by some degree of habitat loss and degradation. Also, the reproductive cycle further complicates recruitment; hence, catalyzing their dramatic decline.

Habitat loss is sure to be a contributing factor to the demise of lake sturgeon. For example, in all the Great Lakes, damming of tributaries prevented access to historical spawning grounds, destruction of spawning areas occurred via siltation from deforestation, agriculture, and dredging, and pollution from nutrient and contaminant loads further hindered reproductive success.

It has been called a relic from the age of dinosaurs. A member of the cartilaginous (non-bony) fishes, the lake sturgeon can indeed be considered the elder statesman of Michigan's fish species. It is difficult to confuse the lake sturgeon with any other Michigan species. The sturgeon has no scales but is covered with five rows of bone like plates on its back, sides, and stomach.

Sturgeon are the longest lived of Minnesota's fish species and can attain ages of up to 100 years old. They can grow to over 8 feet in length and weigh up to 800 pounds. Male lake sturgeon reach sexual readiness at 15-20 years of age, and then spawn only every other year. Once females mature at about 20-25 years of age, they spawn on average every four years. These characteristics have prevented the recovery of the lake sturgeon, which has been designated as a threatened species.

Initially, low commercial value of lake sturgeon, coupled with the tendency of fish to destroy fishing nets, prompted most fishermen to regard lake sturgeon as a nuisance that should be removed and eliminated (Scott and Crossman 1973; Brousseau 1987). However, by 1860, lake sturgeon began to command high prices and fishermen targeted the species, hastening their decline. The construction of dams blocking access to traditional spawning grounds, log drives in large rivers and streams causing scouring of the bottom or littering of substrates with bark, shoreline development, dredging of river channels for shipping purposes, and the effects of pollution also impacted lake sturgeon populations.

Acipenser fulvescens

Rafinesque, 1817

Lake Sturgeon

MN Status:

special concern
Federal Status:

none

CITES:

yes

USFS:

yes

Group:

fish

Class:

Actinopterygii

Order:

Acipenseriformes

Family:

Acipenseridae

Habitats:

[Large Rivers](#), [Littoral Zone of Lake](#), [Deep Water Zone of Lake](#)



Synonyms

Acipenser rubicundus

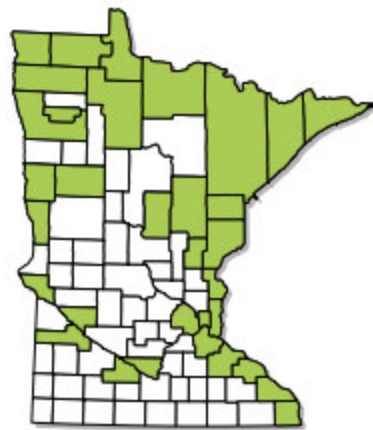
Basis for Listing

Once very common throughout the state, overfishing and pollution in Lake of the Woods and the St. Louis River estuary in the Lake Superior drainage nearly extirpated this species. The lake sturgeon is a long-lived, slow-growing, late-maturing fish species that does not do well under heavy exploitation. Catch estimates since the early 1890s have declined 99.4%. Siltation, some agricultural practices, and dam construction also reduced habitat availability for the species, resulting in the extirpation or reduction of populations throughout its range. For these reasons, the lake sturgeon was listed as a special concern species in Minnesota in 1984.

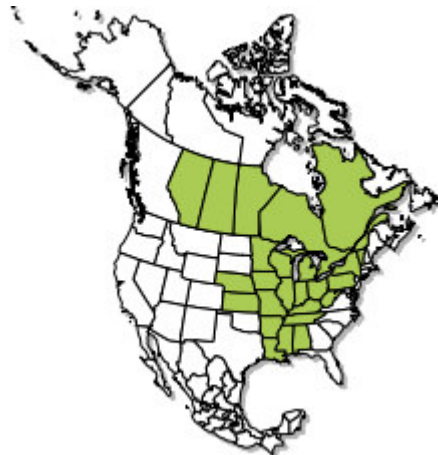
Description

The lake sturgeon is a primitive fish with a cartilaginous skeleton. It has 5 rows of large, prominent bony plates or scutes on its body. A small aperture, the spiracle, is present between the eye and upper corner of the gill cover. The region from the anus to the tail fin is thick and not entirely covered with bony plates. Lake sturgeon have a flattened snout with large, fleshy barbels and a protractile mouth located under the head. The lower lip has 2 slightly papillose lobes. The lake sturgeon is Minnesota's largest fish and can reach a total length of 2 m (78 in.) and weigh over 45 kg (99 lbs.).

Habitat



[Map Interpretation](#)



[Map Interpretation](#)

Lake sturgeon prefer moderately clear, large rivers and lakes. They are most often found over firm sand, gravel, or rubble bottoms. The lake sturgeon is a migratory species present in all drainages in Minnesota except the Missouri. It was recently found after a long absence in the Minnesota River downstream of Granite Falls. Lake sturgeon are also present in limited numbers in the Mississippi, St. Croix, Red, and Rainy rivers, as well as Lake Superior, Lake of the Woods, and some lakes in the Boundary Waters Canoe Area.

Biology / Life History

Found in Minnesota waterways year-round, lake sturgeon travel widely in loose aggregations within their range. They require extensive areas of shallow water to find food, lightly dragging their barbels along the bottom in search of prey. Their diet includes insect larvae and other invertebrates, snails, leeches, small mussels, and small fish. Spawning occurs between April and early June, and aggregations can be seen in shallow water (0.3-4.6 m; 1-15 ft.) near shorelines (Becker 1983). Lake sturgeon are thought to return to natal areas to spawn and individuals migrate long distances (as far as 201 km (125 miles)) upstream to spawning grounds. Males arrive at spawning sites before females, often cruising the shallows in groups of 8 or more. Spawning begins as soon as a ripe female enters the group, and several males attend 1 female. Fertilized eggs are adhesive and attach to gravel or rocks until hatching. Females may spawn for 5-8 hours over one or more days. Lake sturgeon are slow-growing and late-maturing, and they only spawn intermittently. Females spawn once every 4-6 years and typically reach sexual maturity at 24-26 years old, when they are about 140 cm (55 in.) long (Becker 1983). Males spawn every 2 to 3 years and typically reach sexual maturity at 8-17 years, when they are around 114 cm (44 in.) long. Only 10-20% of adults within a population are sexually active and spawn during a given season (U.S. Fish and Wildlife Service 2008). The largest lake sturgeon specimen documented in Minnesota's official angling records was caught in the Kettle River and weighed 42.7 kg (94 lbs. 4 oz.). It measured 178 cm (70 in.) long and 67 cm (26.5 in.) in girth. The largest historical record was from 1903 and measured 457.2 cm (180 in.) long and weighed 181.4 kg (400 lbs.). The maximum life span of lake sturgeon is typically 55 years for males and may be more than 150 years for females.

Conservation / Management

Dam construction has restricted migration of lake sturgeon, resulting in limited access to spawning grounds and destruction or degradation of available feeding and spawning grounds. Siltation, pollution, deforestation, and some agricultural practices have also contaminated aquatic habitats, reducing available habitat. Removing barriers to fish passage and re-connecting river habitats offer the greatest opportunity for restoring lake sturgeon populations. Efforts to reduce point and non-point pollution should also be encouraged to improve water quality and the condition of spawning grounds. Research needs for the lake sturgeon in Minnesota include identification of habitat guilds and spawning areas, and further studies into limiting factors and opportunities for fish passage around dams.

Other common names used for lake sturgeon include dogface sturgeon, rock sturgeon, freshwater sturgeon, Great Lakes sturgeon, stone sturgeon, red sturgeon, ruddy sturgeon, common sturgeon, shellback sturgeon, bony sturgeon, rubber nose, smoothback, and rock fish.

Conservation Efforts in Minnesota

The commercial harvest of lake sturgeon in Minnesota was closed in the 1930s.

Today, sport fishing harvest requires a special tag and is limited to one fish each year from the St. Croix River or Canada-Minnesota border waters. The Minnesota DNR and various partners, including the U.S. Fish and Wildlife Service and local and tribal governments, have been working since 1990 to reintroduce or restore lake sturgeon populations in four Minnesota watersheds: Red River, Lake of the Woods/Rainy River, St. Louis River estuary/western Lake Superior, and St. Croix River. Lake sturgeon are often tagged to allow an estimate of exploitation and to determine population status, movement patterns, habitat components, growth rate, and spawning chronology. Efforts are also being made to determine and protect the genetic identity of Minnesota's lake sturgeon populations.

In 2002, the Minnesota DNR began implementing a 20-year stocking plan in the Red River basin with a goal of re-establishing a sexually mature, naturally reproducing population over the next 20 to 30 years. About 20,000 fingerlings have been stocked annually into basin lakes and tributaries (Minnesota DNR 2002). Since 1994, 5 of the 8 U.S. dams on the main stem of the Red River have been modified to allow fish passage. Another 19 dams on tributaries have been modified or removed. (Kallok 2008).

The spawning success of the Rainy River lake sturgeon population rebounded in the 1970s as a direct result of the Clean Water Act (Kallok 2008). Results of a 2004 population study, which also included portions of Lake of the Woods, revealed an expanding population with consistent recruitment over the last 30 years. Given the large proportion of immature fish however, this population is still considered to be below recovery goals (Stewig 2005).

The Minnesota DNR stocked 16 lake sturgeon year-classes in the St. Louis River estuary between 1983 and 2000. In 2003, the Great Lakes Fishery Commission completed a lake sturgeon rehabilitation plan for Lake Superior (Auer 2003). In the spring of 2007, DNR Fisheries staff observed mature sturgeon returning to historical spawning grounds from Lake Superior. Presently, 9 Lake Superior tributaries are known to support self-sustaining lake sturgeon populations (Auer 2003). A DNR project slated for completion in 2009 is intended improve roughly 800 feet of suitable spawning habitat below the Fond du Lac Dam (Kallok 2008).

The Minnesota DNR conducted a 3-year study of lake sturgeon in the Kettle and St. Croix rivers in the mid-1990s, and these populations appear to be stable. In 1995, the Sandstone Dam was removed on the Kettle River restoring spawning habitat and reconnecting a historically important tributary on the upper river (Kallok 2008).

The Upper Midwest Environmental Sciences Center of the U.S. Geological Survey in collaboration with the U.S. Fish and Wildlife Service tagged and conducted radio telemetry studies of 31 lake sturgeon in the Upper Mississippi River in 1997 and 1998. Lake sturgeon in the study exhibited complex movement behaviors and heavily used small, core habitat areas. Dams appeared to pose intermittent barriers to their upstream passage, with an apparent restriction during low to moderate flow conditions. Given the lake sturgeon's extensive use of main channel and channel border areas in the Mississippi River, there is a high potential for encounters between sturgeon and commercial barge traffic (Knights et al. 2002). Additional research to determine if this is a limiting factor for recovery of Mississippi River lake sturgeon populations may be warranted.

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