

**Synonyms**

*Acipenser rubicundus*

**Introduction**

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**

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.

### **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.

### **Conservation Efforts**

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.

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).

These and many other studies have shown that Lake sturgeon are vulnerable to targeting angling pressure. Information received from concerned anglers and conservation officers indicate that fishing pressure for this species has increased significantly in recent years. Because little information is available on the biology, habitat, and abundance of lake sturgeon in the Lower St. Croix River, the Wisconsin and Minnesota DNR's share a common concern for this species long-term welfare. A regulation change, recently proposed and implemented by both states, limits harvest of Lake sturgeon to fish larger than 60" in length and will reduce the harvest season from 6 weeks to 4 weeks in length. The purpose of the regulation is to prevent over-harvest of lake sturgeon and protect this unique species until further information on the overall health of its population in the Lower St. Croix River can be determined.