LAKE STURGEON- *(Acipenser fulvescens)*

Common Names: Freshwater sturgeon, rock sturgeon, stone sturgeon, red sturgeon, ruddy sturgeon, shell-back sturgeon, bony sturgeon, smoothback, rock fish, rubbernose, black sturgeon, dogface sturgeon

State Record: 9/22/79; 170 pounds, 10oz.; from Yellow Lake

Wisconsin Department of Natural Resources
Bureau of Fisheries Management

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A giant among Wisconsin's inland fresh water fishes, the bottom-dwelling lake sturgeon is a living fossil—a relic from the Middle Ages of fish evolution. This ancient species made its first appearance about 100,000,000 years ago in the Upper Cretaceous period of the Mesozoic era, just about the time that the dinosaurs made their abrupt exit from Earth's ever-changing stage. Today, the lake sturgeon retains many primitive characteristics that have been lost or modified in other modern-day fish.

Seldom has a fish had such a tenuous relationship to humans as the lake sturgeon. The Winnebago, Ojibwa, Potawatomi, Oneida and Sauk tribes revered the huge fish that can reach weights of several hundred pounds, but by 1860 the lake sturgeon was considered a nuisance by commercial fisherman, who stacked the fish like cordwood on shore and left them to rot. When fish processors realized the value of sturgeon **roe** (eggs) for caviar, discovered sturgeon flesh was delicious fresh or smoked and found that a high-quality gelatin called **isinglass** could be extracted from the sturgeon's swim bladder, the Great Lakes sturgeon fishery exploded. The species was fished so intensively that lake sturgeon populations were reduced to a level from which they have never recovered.

The lake sturgeon is listed as a rare species in the United States. Wisconsin, however, is fortunate to have good, naturally reproducing lake sturgeon populations in several of our river systems. The species has watch status in Wisconsin, and it is under special observation by DNR fisheries managers.

Identification: With its heavy, torpedo-shaped body thick in front and tapering toward the turned-up tail in back, the young lake sturgeon resembles a shark but lacks the overall sleekness of the revered marine dweller. As befits a representative of fishdom's medieval era, the lake sturgeon wears "armor" in the form of bony, shell-shaped plates arranged in five rows—two on each side and one along the back—that run along the length of the body. Each plate comes to a peak with a sharp-pointed spur. As the fish grows older, the rows of spine-tipped, bony plates smooth out; on old, large individuals, the plates are barely visible and the fish appears relatively smooth. The sturgeon has never evolved to the point of replacing the cumbersome plates with the smaller, thinner, flexible scales found on more modern species of fish.

While the lake sturgeon isn't likely to be mistaken for Jaws, it does have a **heterocercal** (sharklike, with the upper lobe being longer than the lower) **caudal** (tail) fin. And instead of a backbone with separate vertebrae, the sturgeon has a continuous, flexible, cartilage-encased rod called a **notochord** that runs the length of the body and ends at the tip of the upper lobe of the caudal fin.

Lake sturgeons have long, tapering snouts that become shorter and blunter with age. Four **barbels**, or feelers, dangle in a row on the lower side of the snout just in front of the mouth. The barbels are important sensory organs that alert the sturgeon to the presence of food as the fish coasts slowly over the bottom. The mouth and lips of the lake sturgeon protrude to suck up food and retract when not in use—and this venerable fish need never fear a trip to the dentist, since it has no teeth. Two **spiracles** (vents) are located on top of the head just forward of the gills.

Lake sturgeons exhibit considerable color variation due to age and difference in locality. Wisconsin's lake sturgeons are generally slate-grey, olive-brown or black over the body with a milky or yellow-white underside. Youngsters are usually lighter in color than the adults and have dark blotches on their sides and snouts.

Young lake sturgeons caught in Wisconsin waters that drain into the Mississippi River are frequently confused with the smaller **shovelnose sturgeon**. This distinct species can be distinguished from the lake sturgeon by the long, rounded, shovel-shaped snout; the bony plates that cover the caudal fin; a long filament that extends from the upper lobe of the caudal fin; and the lack of spiracles.

Distribution: The lake sturgeon occurs in the drainage basins of the Mississippi River, Lake Michigan and Lake Superior. Locations in the Mississippi basin include the Mississippi, St. Croix, Chippewa, and Wisconsin rivers. In the Lake Superior basin, the lake sturgeon is known to spawn in the Bad River, and is found in the shallows of Keweenaw Bay and around the Apostle Islands. In the Lake Michigan basin, lake sturgeon are found in lakes Michigan, Winnebago, Butte des Morts, Poygan and Winneconne, Green Bay, and the Menominee, Fox and Wolf rivers. The lake sturgeon has been introduced in several lakes where it was not originally found, including Big Cedar Lake in Washington County, lakes Mendota, Monona, Wingra and Waubesa in Dane County, Pear Lake in Washburn County, and Chain of Lakes in Waupaca County.

Habits and Habitat: Without teeth, it's hard for the lake sturgeon to put the bite on anything bigger than the occasional crayfish. Because they rely on suction to feed, lake sturgeons are restricted to living on small organisms—snails, insect larvae, leeches, small clams and other invertebrates. To locate these delectable creatures, the lake sturgeon must linger at the bottom of lakes with extensive areas of shallow water (less than 30 feet) and in deep river pools, foraging where food in abundant.

When it is searching for food, a lake sturgeon will drag its barbels lightly over the bottom. As soon as these sensitive feelers touch food, the fish protrudes its tubular mouth and sucks up the food along with silt, gravel and other bottom materials. The debris is expelled through gills and the food items remain.

Lake sturgeon have the curious but spectacular habit of leaping completely out of the water until they appear to be standing on their tails, then landing with a resounding splash. Fish experts theorize that the sturgeons may be trying to shake off lampreys; most adult sturgeons have one or more old lamprey scars and it is not uncommon to see six or more lampreys attached to one fish.

By Maureen Mecozzi, Wisconsin Department of Natural Resources; Madison, Wisconsin

Life cycle: Lake sturgeon migrate to their annual spawning grounds between late April and early June, preferring to spawn in shallow, rocky areas along river banks. During seasons when water flow is high and water temperatures rise slowly, spawning begins when the water temperature reaches 53°F; during seasons of low water flow and more rapid water temperature rise, spawning does not begin until water temperatures reach 58-59°F.

Males arrive at the spawning sites ahead of the females, cruising in groups of eight or more, often so close to the surface that their tails, backs or snouts are out of the water. Spawning begins as soon as a ripe (sexually ready) female enters the group. The males swim alongside the female, usually against the current, vigorously thrashing their tails as they release **milt** (sperm) while the female drops her eggs. The fertilized eggs, each about one-eighth inch in diameter, are sticky and cling to rocks and other solid materials in the water until they hatch. There is considerable variation in the number of eggs produced by females of the same weight—the quantity can range from 50,000 to 700,000 eggs in one season.

The eggs hatch in five to eight days, depending on the water temperature. In 12 to 14 days, the **fry** (newly hatched fish) are one inch long and have fully developed mouths and barbels.

A female sturgeon reaches sexual maturity when she is 24 to 26 years old and about 55 inches long, and will spawn once every four, five, or six years thereafter. Males mature at about 15 years, when they are 45 inches long. Most males spawn every other year, while some do so every year.

Lake sturgeon grow larger and live longer than any other fish in the state. Females live longer than males; 97% of all sturgeon over 30 years old are females. An 82-year-old caught in Lake Winnebago in 1953 is on record as the oldest lake sturgeon in Wisconsin—a mere whippersnapper when compared to the 152-year-old, 215-pound, 81-inch long old-timer hauled up from the bottom of Lake of the Woods in Ontario, Canada that same year.

At first, lake sturgeon grow more rapidly in length than in weight, but this trend is reversed as the fish ages. Growth depends on several factors including water temperature and available food.

Fishing for lake sturgeon: The world record sturgeon taken by hook and line—weighing 170 pounds, 10 ounces—came from Wisconsin's Yellow Lake in Burnett County in 1979. To catch a comparable trophy (or one more modest), use a fairly stiff casting rod and plenty of 40- to 50-pound test line. Bait a 2/0 short-shank hook with night crawlers, dead minnows or other natural food items, and keep the bait on the bottom.

In February, sturgeon can be speared through the ice on Lake Winnebago, and every five years in the smaller, upriver lakes (Poygan, Winneconne and Big Lake Butte des Morts). Spears with wood or metal handles six to nine feet long with three to eight barbed tines are used to catch the sturgeon through holes in the ice about three feet wide and five feet long. The handle detaches when a fish is speared, making it possible to play the fish on a long line. The record lake sturgeon speared in Wisconsin was a 195-pounder taken in 1979 from Pokegama Lake in Vilas County.

Lake sturgeon meat is firm and coarse, and it's delicious baked, smoked, boiled, dried, fried, pickled or barbequed. Sturgeon eggs, freed from the ovarian membranes and pickled in brine, become the much sought-after delicacy called caviar.

It's illegal to sell the flesh or roe of a lake sturgeon in Wisconsin. There are strict bag, size and length-of-season limits to prevent depletion of sturgeon stocks. Unfortunately, commercial sturgeon poaching is a serious problem and the number of illegally killed fish may be as high as the quantity taken in the legal harvest. The slow-growing, late-maturing lake sturgeon populations will suffer for many years and could be eliminated under intensive fishing pressure.

Environmental concerns: Preservation of habitat is the single most important factor in maintaining conditions for the survival of the lake sturgeon. Changes in habitat have seriously reduced the capacity of our waters to produce these fish. Dams prevent the fish from traveling to their spawning grounds, and the change in water flow brought about by hydroelectric

power plants may reduce the number of bottom organisms lake sturgeon feed on and interfere with hatching of sturgeon eggs.

Like may fish, sturgeon require stable, moderate levels of oxygen to survive. Polluted waters have less available oxygen; in winter and midsummer, these oxygen levels may drop too low, resulting in death for the lake sturgeon and other species.

PCBs (polychlorinated biphenyls, a family of cancer-causing chemical products banned in 1972) are a special problem for lake sturgeon and the people who eat them. The concentration of PCBs is greatest in sediments at the bottom of a lake or river, where sturgeon feed. Fat-soluble PCBs are absorbed easily by sturgeon due to their high percentage of body fat. And because the fish live for so many years, they may feed on PCB-contaminated materials for a long time. Anglers should be aware that DNR will issue advisories (notices) for PCB-contaminated sturgeon in Wisconsin lakes and rivers when levels exceed standards set by the U.S. Food and Drug Administration.

For information on bag limits, legal size seasons for sturgeon, pick up a copy of Wisconsin's fishing and spearing regulations at the nearest DNR office.

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