Sturgeons of the Caspian Sea and Ural River

A Unique and Precious Resource

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What are Sturgeon?

With bony plates called scutes on their bodies and ancestors that date to the time of dinosaurs, sturgeons are unusual fish. Unlike other types of fish, sturgeons have scutes instead of scales.

There are 25 different kinds, or species, of sturgeons in the world. Sturgeons live throughout the Northern Hemisphere, including in the Black Sea, Sea of Azov, Lake Baikal, and the Mississippi River, USA. Six species of sturgeon can be found in the Caspian Sea. The beluga (scientific name *Huso huso*) is the largest and most valuable species. All six species use the Ural River, and five of the six species are captured for meat and caviar (sturgeon eggs). One species, the ship sturgeon (*Acipenser nudiventris*), is protected.

The River-Sea Connection

All sturgeons on earth depend upon freshwater for their survival. Sturgeons reproduce in freshwater. In addition to the Ural River, other rivers off the Caspian Sea are used by sturgeons for reproduction, including the Volga River in Russia and the Kura River in Azerbaijan. However, dams on the Volga and Kura have blocked sturgeons from being able to migrate upriver, and have changed the quality of the rivers so they are no longer able to support sturgeon reproduction.

Reproduction: For sturgeon, the process of mixing female eggs and male sperm to create a fertilized egg that hatches into a baby sturgeon. Caviar is unfertilized sturgeon eggs.

Migration: Movement from one area to another area for a purpose such as feeding or reproduction. For example, sturgeon migrate up the Ural River to reproduce.

In addition to blocking migration, dams cause changes in river shape and qualities. Some of these changes affect the sturgeons’ ability to know where and when to reproduce. The cues or signals that sturgeons rely upon to tell them that the conditions are right for reproduction include river temperature, speed of the flow of the river, and river bottom characteristics.

For species like beluga sturgeon, 90% of the natural spawning grounds have disappeared. The Ural River is now the only river off the Caspian Sea that does not have a dam that blocks the migration of beluga and other sturgeons. Therefore, the Ural River is very important, being one of the last great places for Caspian Sea sturgeons and the best hope for the future.
These are the main steps in the life cycle of a sturgeon in the Ural River.

1. Adult sturgeon first must find the right place in the Ural River for reproduction. Baby sturgeon will begin their lives here as eggs.

2. The eggs settle to the bottom where they hatch into very small sturgeon after a few days.

3. Within a few months, the tiny sturgeon develop into “fingerlings,” drifting and swimming downstream towards the river mouth.

4. The young sturgeon gather in the mouth or delta of the Ural River to eat and grow larger. As they develop into adults, they move offshore into coastal waters. After many years in the sea, the adults migrate far up the Ural River to have their young.

The Sturgeon Life Cycle

There are several stages in the life of a typical sturgeon. Taken as a whole, this process is called the sturgeon life cycle.
Compared with other fish, sturgeons can live a long time and grow to an impressive size. The beluga is considered one of the largest freshwater fish on earth, with the biggest individual fish recorded at over 6 meters in length, nearly 1,300 kg and 118 years old! Beluga need to be at least 12 years old before they are able to reproduce, and they do not have young every year.

Sturgeons are valued around the world for their meat and eggs. Caviar is the unfertilized eggs of sturgeon. Individual female fish must be killed for their caviar.

When females are taken for their caviar or males are removed as they enter the Ural River, these fish have not yet had a chance to reproduce. If many sturgeons are harvested over a short time, eventually there will be fewer older sturgeon and fewer young.

Sturgeon fishing has a long history. Some historians trace the origin of caviar to Batu Khan, the grandson of

A Unique Natural Wonder

The group of fishes including the sturgeons has a long history. These fishes first appeared over 150 million years ago in the Jurassic geologic period during the time of the dinosaurs.

The Uses of Sturgeon

In addition to caviar and meat, many parts of sturgeon have uses. Glue, also known as isinglass, is made from sturgeon. Sturgeon skin can be dried for leather products such as belts and handbags. Parts of sturgeon are thought to have medical properties in treating arthritis and cancer.

Sturgeons are unusual fish for many reasons, not just because they are ancient fish that need both river and sea environments to grow and reproduce.
Ghengis Kahn, in 1240 AD. Through history, fishing for sturgeon occurred in the Caspian and Black Sea regions, western Europe and North America. In the late 1800s to early 1900s, the east coast of North America was an important center of sturgeon fishing and caviar production. In this case, too much fishing caused there to be few sturgeon left to support fishermen. Fishing eventually stopped and the species were protected. The focus then shifted to the Caspian Sea, which had the highest concentration of sturgeon ever recorded for any body of water.

The sturgeon plays a central role in Kazakhstani society and culture, with meat and caviar served at special events and celebrations. In addition, caviar can be an important part of the diet, thought to be very nutritious especially for young children.

**Saving Sturgeons**

In many parts of the world, there are so few sturgeon left that they may be close to extinction. This is because of pollution, river dams, legal and illegal fishing, and the trade in caviar. In some areas of the world, sturgeon fishing is no longer allowed. Illegal fishing is still a problem in many areas. Better control of fishing and international trade can ensure that sturgeons survive into the future.

In the Caspian Sea and Ural River, scientists and fishermen have noticed that there are not as many sturgeon as there once were. There are currently efforts to control fishing and protect important sturgeon habitat. Sturgeons are being raised in special places called hatcheries to be released into the Ural River and Caspian Sea. While hatcheries can help, they cannot be the only place where sturgeons reproduce. Reproduction in the natural habitat of the Ural River is still very important.

**Habitat:** The place that contains the food, water, shelter and space necessary for an animal to survive.
Where do sturgeons go to reproduce within the Ural River? By tracking the movements of fish in the river, we can find and protect the habitats used for reproduction.

Do individual sturgeon return to the river where they were born to reproduce? It is not known whether sturgeons born in the Ural River return to reproduce or if they travel to other rivers such as the Volga or Kura.

How many of the adult fish in the wild were born in hatcheries? This question is being studied using very small tags that are inserted into the young sturgeon and stay in the animal for its life.

It is important that we all help preserve sturgeon, Kazakhstan’s unique and precious resource. Please do your part in learning what role you can play in saving sturgeons.