



SUMMARY

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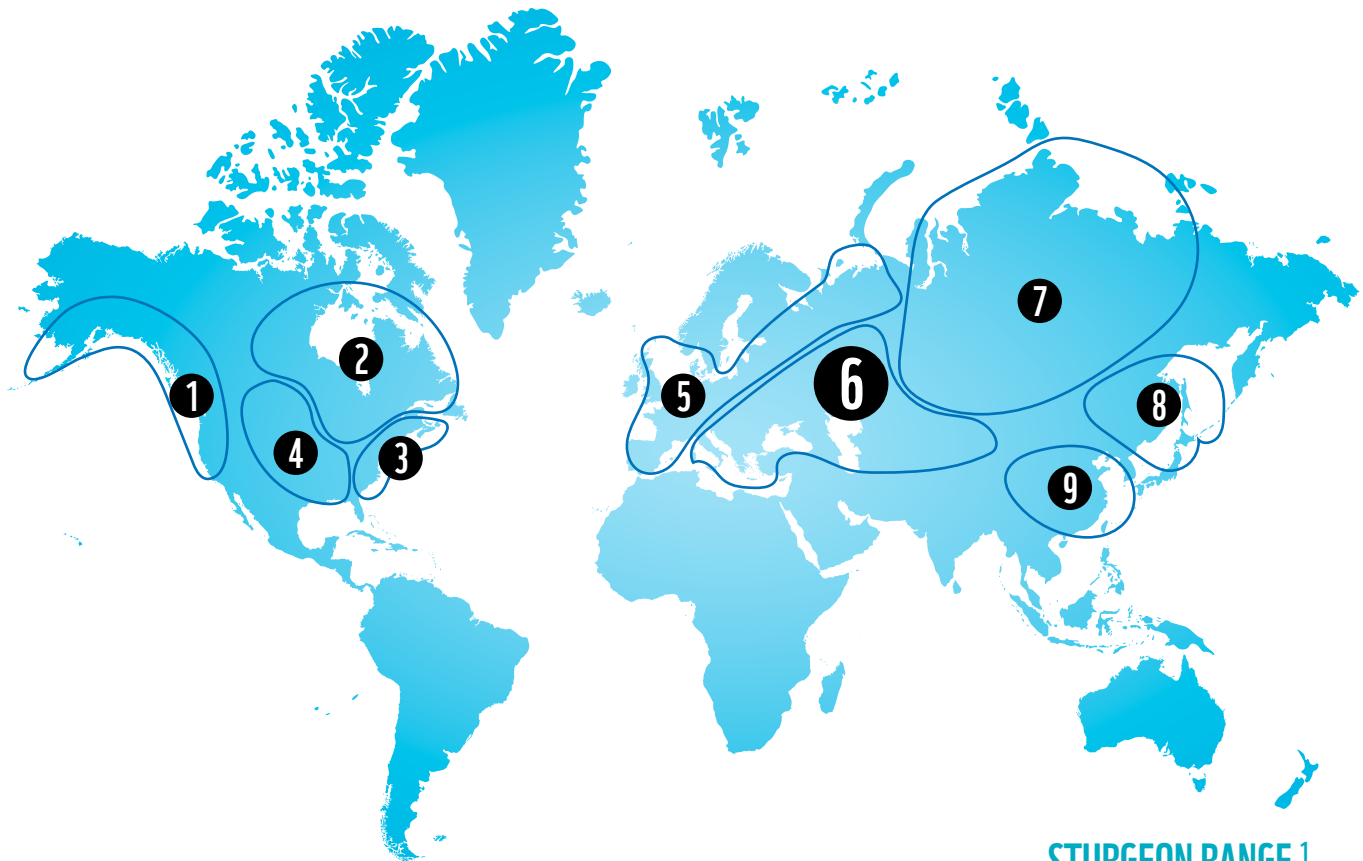
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# SAVING STURGEONS

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# STURGEONS: AN ENDANGERED TREASURE



STURGEON RANGE <sup>1</sup>

Sturgeons, a group of migratory fish, originated over 200 million years ago when dinosaurs still roamed the Earth. Their appearance has changed little since then, which is why scientists often call them living fossils. They can weigh up to 1.5 tons, reach a length of 8m, live over 100 years, and travel up to 3,000km to spawn. Nowadays, these archaic giants mostly inhabit the great rivers, lakes and inner seas of the Northern Hemisphere and – not surprisingly – may have inspired some Loch Ness stories.

Although they survived the dinosaurs, today sturgeons are on the brink of extinction. The main reason is our increasing demand for caviar, their unfertilized roe that

has become the epitome of luxury food, coupled with habitat loss and migration barriers caused by human activities. The most dramatic declines occurred within the past three decades only when populations crashed, as documented by a drop in catches of over 99%. According to the International Union for Conservation of Nature (IUCN), the 25 sturgeon and two paddlefish species are now the most endangered group of species on the planet – up to 23 are on the brink of extinction. In 1997, they were placed under the species protection system of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

1. THE NORTHEASTERN PACIFIC 2. THE GREAT LAKES, HUDSON BAY & ST. LAWRENCE RIVER 3. THE NORTHWESTERN ATLANTIC 4. THE MISSISSIPPI RIVER & THE GULF OF MEXICO 5. THE NORTHEASTERN ATLANTIC, INCLUDING THE WHITE, BALTIC AND NORTH SEAS 6. THE PONTO-CASPIAN REGION, INCLUDING THE MEDITERRANEAN, AEGEAN, BLACK, AZOV, CASPIAN & ARAL SEAS 7. SIBERIA & THE ARCTIC OCEAN 8. AMUR RIVER, THE SEA OF OKHOTSK & THE SEA OF JAPAN 9. CHINA

<sup>1</sup> According to William Bemis and Boyd Kynard

# STURGEONS:

**1.5 T**

are among the largest freshwater fish on Earth: they can reach 8 metres in length and weigh up to 1.5 tons



**8M**

**23 of 27**

are the most endangered group of species on Earth, according to the IUCN: up to 23 of 27 species are on the brink of extinction and four species are possibly extinct



**200 MLN**

are among the oldest freshwater fish on the planet. They originated more than 200 million years ago when dinosaurs still roamed the Earth and have remained almost unchanged since then



sturgeon caviar is one of the most expensive wildlife products



**100 YRS**

can live over 100 years and take up to 15 years to mature



occur mostly in the Ponto-Caspian region; a third are in North America and the rest – in Western Europe and Asia



are very sensitive to environmental and human pressures, which makes them good indicators of healthy ecosystems



**3,000 KM**

can migrate up to 3,000 kilometres to spawn



# WHY DO WE NEED TO PROTECT STURGEONS?

## COMMERCIAL VALUE

Communities in sturgeon range states have depended on sturgeon fishing for centuries. Along the Lower Danube, you can still meet people for whom catching a single sturgeon with roe helped turn their fortune, buy an apartment or fund a university education. Historically, the countries of the Caspian and Black seas and beyond have long relied on significant revenues from the sturgeon industry. From 1976 to 1991, for example, caviar exports generated average annual revenues of some €21 million for Iran and €17 million for the Soviet Union. In 2011, caviar worth an estimated €28 million was imported into the EU.

## CULTURAL VALUE

Sturgeons have had a special place in culture and history as early as ancient Persia, Greece and Rome. They were depicted on coins in 600 BC Carthage, appeared in texts by Aristotle praising their medicinal values and in poems by Ovid and Longfellow, were greeted by trumpets at

feasts commemorating historic battles, and had a special place on the tables of historical figures like the Roman Emperor Severus, the grandson of Genghis Khan, Batu Khan, King Edward II of England and Galileo Galilei. They were also used to make Victorian jewellery. And this is only a short list.

## ECOLOGICAL VALUE

Because of sturgeons' long life-cycles, late maturity and long intervals between spawning, they take very long to recover from declines caused by environmental and human pressures. This makes them valuable indicators of river health, as well as of the alteration of specific habitat types, the continuity of riverine and habitat ecology, and the changes in hydrology.





# WHAT ARE THE MAIN THREATS TO STURGEONS?

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It is difficult to relate the dire status of sturgeons to a single cause. Yet, overfishing and habitat loss stand out as the chief cause for their decline.

## OVEREXPLOITATION

- Due to the high price of sturgeon products and their rarity, sturgeons are often caught and traded illegally
- Since males and females look similar in most sturgeon species, both are caught for caviar
- Immature individuals are also caught or end up as bycatch in other fisheries
- Predictable, seasonal migrations make sturgeons easy to catch
- Fisheries often do not distinguish between the species of different conservation status within one water system
- It is hard for sturgeons to recover from overfishing because of their long life cycles, late maturity and big intervals between spawning migrations (up to seven years).

## LOSS OF MIGRATION ROUTES AND HABITAT

- Physical barriers like dams severely affect sturgeons. They disrupt spawning migrations and confine them to remnants of the original distribution area
- Habitat alterations like channelization, river

straightening and dike building, can immediately impact sturgeon spawning, wintering, and feeding

- Human changes to water flow regimes or water abstraction also affect spawning. Periods of high flow trigger the spawning migration of many species, but sustained high flow, e.g. through hydropower dam operation, can preclude or greatly reduce spawning success. Therefore, natural hydrological conditions are very important for sturgeons
- Water pollution and siltation can negatively impact spawning sites, the physiology and fertility of spawning fish, the development of embryos and the abundance of sturgeon food
- Navigation in rivers with high traffic is also a threat due to the impact of propellers

## GENETIC CHANGES

- The introduction of exotic species and genotypes from other watersheds can greatly reduce reproductive success
- Breeding between related individuals, which can occur when sturgeons are confined to small areas due to habitat loss, as well as genetic bottlenecks (sharp reductions in numbers) and the Allee effect (the reduced probability that the late maturing fish will find reproductive partners), can also reduce natural reproduction



# WHAT DOES WWF CALL FOR?

Urgent, coordinated, global actions are needed to help the species recover. We must work together to address overexploitation, restore key habitats and do conservation stocking where needed. All our efforts must be accompanied by campaigns to raise awareness of the urgent need to protect sturgeons among both key actors and the public.

WWF has identified four main strategies for working toward these goals:

## 1 Fighting overexploitation

Global sturgeon catches have dropped by 99% in the past three decades, documenting severe population declines. To reverse this trend, we must:

- Build institutional capacity and increase domestic and international cooperation to decrease illegal national and international trade
- Secure alternative income sources for local fishing communities
- Transform markets by introducing a traceability system also for domestic markets, in order to prevent the false labelling of poached products as farmed
- Introduce ACS certification for sturgeon farms to improve operation quality

## 2 Protecting and restoring key habitats

A sturgeon's life cycle can span decades, spread out over the entire length of a river, and include adjacent marine areas. Sturgeons also depend on healthy, distinct habitats for spawning, feeding, wintering and nursery. Thus, it is crucial to:

- Identify and protect key sturgeon habitats
- Ensure migration across key blockages like dams

- Prevent new, unsustainable river infrastructure by advocating for the inclusion of migratory fish protection measures into international finance institution investment policies and public infrastructure financial programmes

## 3 Conservation stocking

Introducing individuals from a captive environment into wild populations, or conservation stocking, can save time for the successful implementation of measures to protect and restore key habitats. However, it can alter the gene pool and have detrimental effects on the natural population. It is therefore important to:

- Ensure that introduced sturgeons are genetically identical to those occurring naturally and can survive in the wild
- Raise the political will to finance such programmes and the long-term monitoring of their impact
- Increase transboundary cooperation on the issue in order to ensure best practice sharing

## 4 Raising public awareness

We must work together to open the hearts and minds of people in sturgeon range states and consumer countries to the need for sturgeon protection. We have to also reach out to decision makers in governments and the private sector so they can understand the actions required for saving these water giants from extinction. To that end, we need to:

- Communicate the cultural and ecological value of the species
- Communicate the long-term economic value of sturgeons in order to commit key actors to their protection



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