

# PROTECTION

Shortnose **sturgeon** were listed as **endangered** throughout their range in 1967 under the **Endangered Species Preservation Act** and later under the **Endangered Species Act (ESA)** when it was started in 1973. They are still listed as **endangered** under the ESA, which means that they are protected by law from fishing and other threats.

In 1998, the Atlantic States Marine **Fisheries Commission (ASMFC)** recognized the need to put protections in place for Atlantic **sturgeon**. They started a ban which stopped fishing for Atlantic **sturgeon** for 20 to 40 years or until the populations could be restored to a level where 20 years of age classes were protected. Also, no one is allowed to keep any Atlantic **sturgeon** that are accidentally caught.

NOAA **Fisheries (NMFS)** then listed Atlantic **sturgeon** as a “**Species of Concern (SOC)**” in 2004. A SOC listing does not provide protections like a listing under the ESA. Listing a **species** as a SOC is meant to

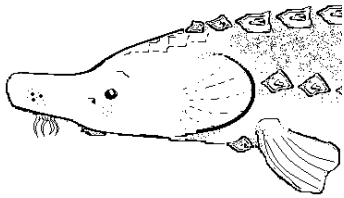
promote efforts to conserve the **species** about which NMFS is concerned. It is also meant for the **species** that have little information available to determine whether listing under the **ESA** is necessary.



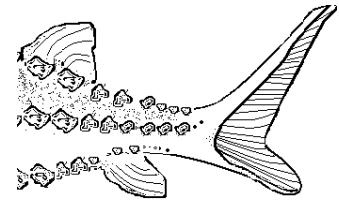
Atlantic **sturgeon** were listed as a “Candidate **Species**” as well, because NMFS was reviewing the status of the **species** to determine if listing under the ESA was necessary. In 2007, the **status review** of Atlantic **sturgeon** was completed. Based upon the best available scientific and **commercial** information, NMFS determined that listing all of the Atlantic **sturgeon** populations off the East **coast** of the United States as either **endangered** or **threatened** under the ESA is warranted. In 2012, four of the five populations (sturgeon born in rivers which flow into southern Massachusetts to Florida) have been listed as **endangered** while Atlantic sturgeon who were born in rivers that flow into the Gulf of Maine have been listed as **threatened**.

## Summary of Protection

- Shortnose **sturgeon** have been listed as **endangered** throughout their range since 1967.
- There is a ban on fishing for and keeping Atlantic **sturgeon** for up to 40 years.
- Atlantic **sturgeon** were previously a NMFS **Species of Concern** and Candidate **Species**.
- In 2012, NMFS listed the Gulf of Maine population of Atlantic **sturgeon** as **threatened** and the other four populations as **endangered** throughout the rest of the U.S. range.



# All Stirred Up!



These words and definitions have gotten all stirred up!

Unscramble the words and then draw a line to match them to the correct definition.

LUSDAUBT

○ \_\_\_\_\_

SLGISSNIA

\_\_\_\_\_ ○ \_\_\_\_\_

LERPTUSBORI

\_\_\_\_\_ ○ \_\_\_\_\_

AVARLE

\_\_\_\_\_ ○ \_\_\_\_\_

FHGOSGVREIIN

\_\_\_\_\_ ○ \_\_\_\_\_

GERAOF

\_\_\_\_\_ ○ \_\_\_\_\_

SMOUDRAAN

\_\_\_\_\_ ○ \_\_\_\_\_

FBTOOTMDREEE

\_\_\_\_\_ ○ \_\_\_\_\_

AVICRA

\_\_\_\_\_ ○ \_\_\_\_\_

YSTEUAR

\_\_\_\_\_ ○ \_\_\_\_\_

ARBLESB

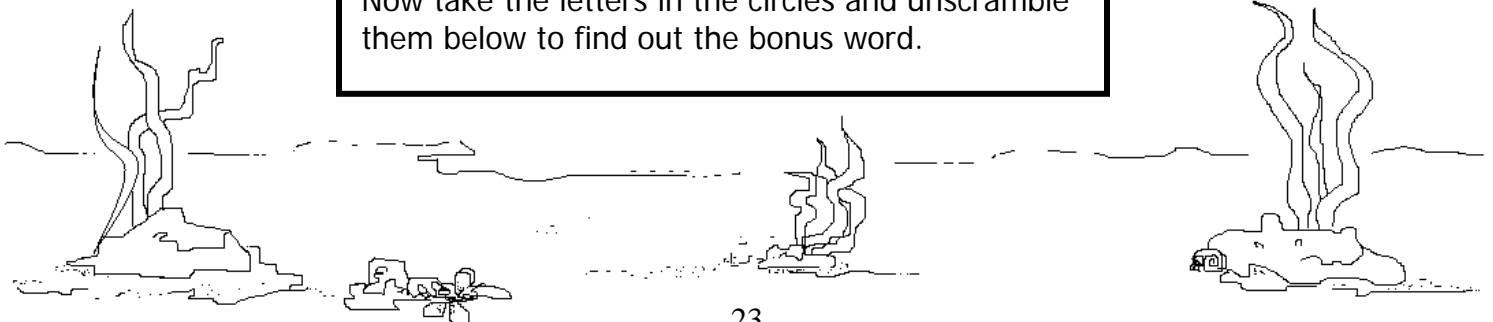
\_\_\_\_\_ ○ \_\_\_\_\_

KYOSLCA

\_\_\_\_\_ ○ \_\_\_\_\_

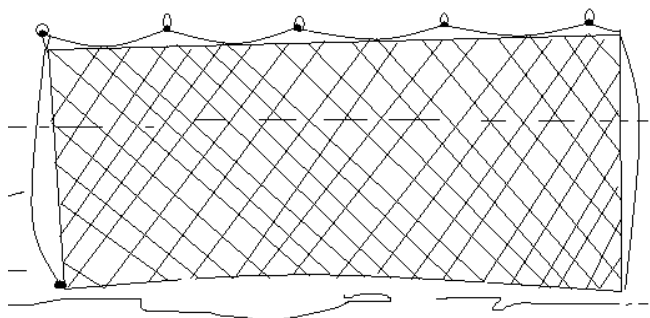
- A. The first mobile life stage of **sturgeon** after hatching from an **egg**
- B. This occurs when the number of fish taken from an ecosystem and population is greater than the population's ability to grow and reproduce
- C. Referring to a mouth/jaw which is capable of being extended outward in order to suck up **prey** items
- D. Searching for food or **prey**
- E. Made from the **swim bladder** of **sturgeon**; used as a binding agent for paint, an adhesive, and also a clarifying agent for wine
- F. Fish that spend some of their life cycle in salt water and **migrate** to fresh water rivers and streams to spawn
- G. Whisker-like sensors near the mouth used to find **prey**
- H. A fish that feeds on the benthos or bottom of the water column
- I. Processed **roe** or **eggs** of **sturgeon**
- J. Near the mouth of a river where the ocean saltwater meets and mixes with the freshwater of the river
- K. A sac attached to the **embryo** that provides nourishment
- L. An animal that has not matured to an age where it can reproduce, but exhibits ALL external traits of the adult

Now take the letters in the circles and unscramble them below to find out the bonus word.



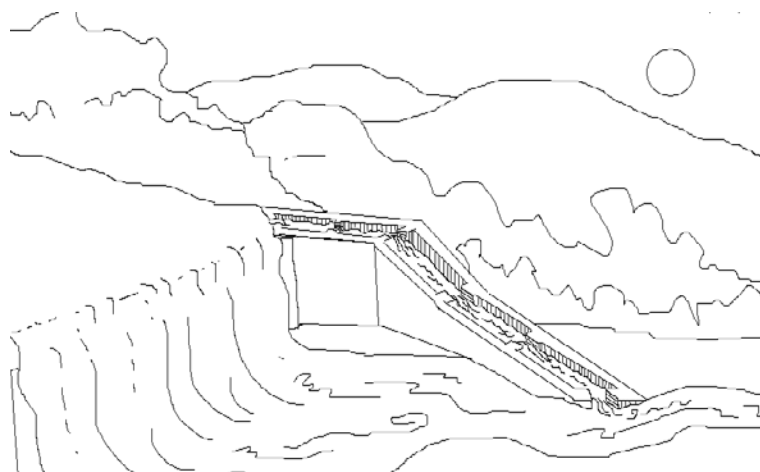
# THREATS

Although it is no longer legal to fish for or keep Atlantic and shortnose **sturgeons**, they are still caught accidentally as **incidental catch** in some **fisheries**. They are caught by **recreational** fishermen on lures and hooks, often accidentally snagging the sturgeon on the side or tail. **Sturgeon** are



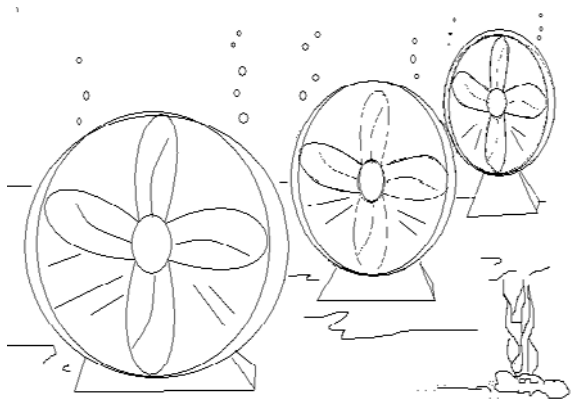
vulnerable to **commercial fisheries** that fish with **gill nets**. The way fishermen fish with **gill nets** usually is by setting and leaving nets for long periods of time, anywhere from several hours to days. **Sturgeon** swim into these nets and can get stuck. If their **gills** get closed shut by the nets, they can suffocate and die.

Another threat posed by nets is what happens when nets are lost. Due to weather, storms, and rough waters, nets can break free and get lost in the ocean. These are called "ghost nets" and can float around the ocean and rivers entangling **sturgeon** as well as other fish **species**, marine mammals, and sea turtles.



**Dams** on rivers pose another threat to Atlantic and shortnose **sturgeons**. **Dams** were

constructed on many rivers along the East **Coast**. They were made for many reasons including production of electricity through hydropower (using flowing water to make electricity) and for sending water where it needs to go for growing plants for food. **Dams** can be harmful to **sturgeon** by blocking the way



to their **spawning** grounds. If they are unable to reach their **spawning** grounds, they may choose to not spawn at all or end up **spawning** in an area that is not suitable for the development of **embryos**. Many **dams** have special fish ladders or fishways that are made to allow fish to swim upstream of the **dam**. Other dams install fish lifts or elevators to move fish up and over a dam. However, **sturgeon** do not use these

fishways to pass the **dams**, and even if they did, engineers have not yet developed ways to pass the large fish back downstream of the dam.

**Sturgeon** can also be harmed by tidal **turbines**, another form of hydropower. Some tidal **turbines** look like fans under the water. The power of the tide makes the fan spin, and this motion creates energy. If **sturgeon** swim near these **turbines**, they can be struck by the blades of the fan. Similar to the dangers that tidal **turbines** pose, boat strikes pose a threat to **sturgeon** as they can be struck by the blades of a propeller and the boat itself as the boat is passing.

**Pollution** and **dredging** can also cause problems for the survival of Atlantic and shortnose **sturgeons**. **Pollution** can be caused by many different actions, and can include run-off from agricultural sites, roadways, construction sites, and pesticide applications. All of these things can affect water quality. A couple of water quality factors that affect **sturgeon** are dissolved oxygen and temperature. Run-off from agricultural sites can include fertilizer which can cause harmful algal blooms. When algae blooms, it can take oxygen out of the water which can kill fish and other aquatic life. Temperature is another factor that can affect the migration **spawning** cues for **sturgeon**. The **spawning** migration begins with the rise in temperature in the spring. Hatching time and **egg** development are also dependent on temperature.



**Dredging** is another potential threat to **sturgeon** and is when the river bottom is dug up to either make the river deeper or wider. **Sturgeon** can be caught in the dredge and killed. **Dredging** can affect **spawning habitat** as well by filling the water with mud and **pollution** which can cover over the gravel and cobble **substrate** that is needed for **spawning**.

### Summary of Threats

- **Incidental catch** of **sturgeon** in some **fisheries** still happens.
- **Dams** can block **sturgeon** from reaching their **spawning** grounds.
- **Sturgeon** do not use fish ladders to get upstream of a dam. Even if they did, there is still no good way to get them back downstream of the dam.
- Tidal **turbines** can harm **sturgeon** if they get struck by the blades.
- Ship strikes and boat propellers are also a threat to **sturgeon**.
- **Dredging**, **dam** construction, and **pollution** are all factors that can cause a **loss of habitat** for **sturgeon** and can affect **spawning**, rearing, and foraging.

# Threats to Atlantic and Shortnose Sturgeons



## DOWN

(2) This occurs when run-off with fertilizer causes tiny aquatic plants to reproduce quickly, removing oxygen from the water, which can be deadly to fish.

(3) This is used as a form of alternative energy, but **sturgeon** can be killed if they swim into it and get caught in the blades.

(6) A net is called this when it is lost by a fisherman and floats around in the water. Sturgeon and marine animals can become entangled in these nets.

(7) This is what it is called when human actions are causing harm to the environment through chemicals in exhaust and runoff, as well as litter and trash in rivers, oceans, and on land.

## ACROSS

(1) Fish use this to climb over and pass a **dam** upstream; however, **sturgeon** do not use this.

(4) Although fishing for Atlantic and shortnose **sturgeons** is no longer legal, they are still caught as incidental \_\_\_\_\_.

(5) This is a form of **pollution** that flows from agricultural areas, construction sites, and roadways.

(7) This is attached to the motor on a boat and pushes it through the water. Sturgeon can be killed if they are hit by the blades on this.

