Into the Outdoors

DISCUSSION GUIDE

STURGEON CONSERVATION

educational partners

U.S. DEPARTMENT OF THE INTERIOR 1824 · BUREAU OF INDIAN AFFAIRS

Great Lakes RESTORATION

Natural Resource Science

GRADE LEVELS
Middle School - Grades 6-8

ENDURING KNOWLEDGE
Students should know the history of sturgeon in Wisconsin and their importance today.

LEARNING TARGETS:

1. Students should know that sturgeon are considered "living fossils" because they've been around since the age of the dinosaurs.

2. Students should know sturgeon are the largest fish to inhabit the Great Lakes region.

3. Students should understand the importance of sturgeon to the Menominee Tribe.

4. Students should understand the life cycle of sturgeon.

5. Students should understand the sturgeon conservation efforts put forth by the Wisconsin DNR and Menominee Tribe.

6. Students should understand the technology used by the Wisconsin DNR to restore sturgeon to the upper Wolf River.

DISCUSSION GUIDE FOR VIDEO

TEACHER BACKGROUND

History:

In the early 1800s, the Menominee Tribe chose to settle near Keshena, Wisconsin as their reservation. One reason they chose this location was because of the fact that there's drumming sound coming from Keshena Falls. They believed that the drumming sound called the lake sturgeon in the spring up the Wolf River where they would migrate from Lake Winnebago to spawn at Keshena Falls. When the sturgeon would spawn, the Menominee ancestors would celebrate the arrival of spring. The sturgeon was one of the original foods of the Menominee Tribe and was very important part of their culture and history.

Sturgeon are native to the Great Lakes region and had extensive and large populations in pre-settlement times. However, as settlement took place, people removed more fish than what the population could sustain. That's because sturgeon are such a vulnerable fish species that take decades to reach maturity plus they don't spawn every year. In the late 1800s, dam construction on the Wolf River prevented the sturgeon from returning back to Menominee Tribal lands. That impacted both the fish and their cultural importance to the Menominee people.

Conservation and Technology:

The Wisconsin DNR, the Bureau of Indian Affairs, and the Menominee Tribe of Wisconsin have collaborated in a cooperative project to restore sturgeon to the upper Wolf River. Technology plays a key role in capturing so many of the big fish below the dam. The DNR captures sturgeon by using a method called "electro-fishing." They send an electrical current into the river from electrodes that hang down into the water. A gas-powered generator on the boat makes the electricity that's sent into the water from the "anode". The electrical current flows through the water to the "cathode". When a fish gets into the electrical field, the electrical current makes it swim towards the anode and it's stunned enough to scoop into a net. Once the sturgeon are captured, they are inspected and a PIT tag (passive induction transponder) is inserted into the fish to help keep track of them. Some of the big fish also get surgically implanted with an audio pinging device that helps record their movements in the river system for up to ten years.

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TEACHER BACKGROUND *(continued)*

Life Cycle and Habitat:

The females will lay the eggs and then the males come in and fertilize those eggs. Then the eggs will incubate for about 7 to 10 days. The eggs hatch as fry. They actually have food within them called a yoke sack that they use as their food source for a few days following hatching. Then they have to start feeding on other food sources. By the time they hit their first winter, these fish are typically in the 10 to 11-inch range. After that, the fish live in the upper Wolf River and eventually filter back down to Lake Winnebago as they hit their 5 to 10 years of age. Sturgeon males are typically about 14 years old before they are mature enough to spawn, while the females are 20 to 25 years old before they can spawn. Females spawn on the average every four years, while males spawn on an average every two years. Sturgeon can live up to 150 years.

The sturgeon in the Lake Winnebago system are the healthiest population in the world. This is because of the excellent habitat and food sources in Lake Winnebago. The main food source for sturgeon in the Winnebago system are called chironomids, or lake fly larva. The other food source for sturgeon in the Winnebago system is more of a seasonal food source and that's dead or dying gizzard shad. It's a very fatty food source that helps them grow much bigger in a shorter period of time.

VOCABULARY:

- Electro-fishing: The use of electrical current to aid in the capture of fish

- Pre-historic: The period before written records

- PIT Tag (passive induction transponder): A microchip inserted into the fish to electronically identify particular fish

- Spawning: releasing or depositing eggs

- Menominee Tribe: A nation of Native Americans living in Wisconsin

- Conservation: Preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife

SPECIAL CONSIDERATIONS:

This activity is richest when completed in the classroom with discussion shared within the whole class. It may be helpful to create a guide sheet for notes with headings and questions to help guide students in picking out significant information.

BEFORE VIEWING THE VIDEO:

Ask students what they currently know about sturgeon and their history in Wisconsin. It may be helpful to complete a KWL chart, the K and W before the video and the L after the video.

VIEWING AND DISCUSSION GUIDE:

It may be helpful to create a guide sheet for notes with the headings and questions found below will help guide students in picking out significant information.

History:

• Why are sturgeon considered "living fossils?"

• In the late 1800s, what prevented sturgeon from spawning upstream on the Wolf River?

• Historically, why were sturgeon important to the Menominee Tribe?

Conservation and Technology:

• What does PIT tag stand for and how is it used?

• What is electro-fishing?

• What other technologies do scientists use to monitor fish?

• What programs are the Wisconsin DNR and the Menominee Tribe doing to conserve the sturgeon population?

VIEWING AND DISCUSSION GUIDE (continued):

Life Cycle and Habitat

- What and how do sturgeon eat?
- What makes Lake Winnebago such a rich habitat for sturgeon?
- What specific food in the Winnebago system makes sturgeon grow big in a short amount of time?
- Explain the sturgeon spawning process.
- How are the sturgeon protected when they are spawning so close to the shore?

EVALUATION:

1. An informal assessment can be made of students' notes and participation in discussion.
2. Activities can be assessed using rubrics based on good research, presentation, and material construction.

EXTENDED LEARNING:

1. Complete the L part of the KWL chart after the discussion.
2. Have students research the answers to the questions they had in their KWL chart that were not covered in the discussion.
3. Students can group together and research a topic related to sturgeon in Wisconsin. Topics could include the following: conservation, life cycle, history, or technology. Students could present their finding to the class in a way they see fit.

The following **Student Proficiency Standards** can be met by teaching STURGEON CONSERVATION:

WISCONSIN STATE STANDARDS AND BENCHMARKS

History:

Students in Wisconsin will learn about the history of Wisconsin… examining change and continuity over time in order to develop historical perspective, explain historical relationship, and analyze issues that affect the present and the future.

8th grade: B.8.1, B.8.7, B.8.8

Science:

Students in Wisconsin will show how different structures both reproduce and pass on characteristics of their group, explain how some of the changes on the earth are contributing to changes in the balance of life and affecting the survival or population growth of certain species, and project how current trends in human resource use and population growth will influence the natural environment, and show how current policies affect those trends.

8th grade: F.8.5, F.8.9, F.8.10

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