



Lesson Name: Fish and History
Name of Sanctuary: Berkshire Wildlife Sanctuary
Grade Level: 3-6
Location Options: At school
Time: 1 hours
For more info: berkshires@massaudubon.org or
(413)637-0320

Program Description

Description

By examining the transition from a cold-water, anadromous population to the warm-water stocked fish of today, students understand how human influences have changed the river's species.

Massachusetts Curriculum Frameworks

Learning Standards

Concept/ Topic to Teach: How land use and habitat destruction impact the biodiversity of the river.

Standards:

Discipline: *History and Social Science*

Strand: *United States History, Geography, Economics, and Government: Early Exploration to Westward Movement* 5.6

Discipline: *Science and Technology/Engineering*

Strand: *Life Science*

Topic: *Adaptations of Living Things*

6 and 7



Lesson Objectives

What will students know and be able to do? These objectives must be observable and measurable.

Students will know and be able to:

- Objective The students will be introduced to anadromous fish and the life cycle of the Atlantic salmon. They will learn about the fish species, past and present, and the history of the Housatonic as told by fisheries of the river. From glaciations to the present, the fish that have inhabited the river are indicators of its condition.

Materials Handouts:

Anadromous Fish and the Life Cycle of the Atlantic salmon

Vocabulary

Anadromous	salmon
Catadromous	shad
Glaciers	eels
Dam	bass
Cold water species	Warm water species

Mass Audubon Educator Background

Mass Audubon Educator should:

- Have knowledge of fish life cycle and human history of the Housatonic River

Assessments

How will you know that the students have met the standards?

- Students will identify two past species of fish and two current species of fish found in the Housatonic, and describe how humans impacted them.



Procedure

- Mass Audubon Educator will:
- This class is presented through questions and answers.

- **What was the Housatonic River like 10,000 years ago?**
 - Cleaner, not polluted, not as much diversity, bigger, etc. Also, it was frozen ice; a glacial sheet covered the area. About 2,000 years later, the ice was melting and plants such as lichens, mosses, small conifers and cold loving plants started growing as the glaciers retreated. These plants and other animals, such as fish, were able to live in the river and in the watershed.

- **Anadromous fish** start their life in fresh water and then when they are a certain size they leave the river and go into the sea. (Fish can be classified by shape, size, by bones or no bones, and by life cycles).

- **Ask if anyone knows the life cycle of the Atlantic salmon.**
 - Accept answers, and direct attention to back of the handout. Ask: **What could be the advantage?** (Time, space, food are all correct. Fish will grow as big as their container and the amount of food available, given enough time. Examples: Goldfish in a bowl from the carnival, put into a tank will get bigger, and in the lake or river will be 2 feet long. Other anadromous fish: Sturgeon can live 100 years, record up to 30 feet long. Historically-in the Berkshires, 12 feet long . **Food from sturgeon?** Caviar. Very expensive because it is very rare. Many anadromous fish are rare and endangered. By 1735 (write the year on the chalkboard) all anadromous fish had been wiped out, and none lived in the river anymore. **What happened? What was going on by 1735 on ALL the rivers in Berkshire County?** People were moving into the area and building houses and mills close to the river. **Why?** Transportation, food, drinking water, fertile soil and **POWER**. Before electricity, dams were built across the river and fish were no longer able to get back upstream.

- **What do we do now to help anadromous fish?**

Build Fish Ladders or Elevators: Dams on rivers are obstacles to anadromous fish. On some rivers in Massachusetts, fish ladders have been built at the dam site to aid the movement of anadromous fish up the river. For example, at the Holyoke Power and Light dam, a fish elevator built on the side of the river channels fish to it, raises the fish up and releases them above the dam. (Once, a seal got into the elevator and was released into the Connecticut River in Northampton. No one had noticed it in the elevator even though the viewing area is staffed by MA Fish and Wildlife employees.) Encourage students to include a visit to the Holyoke Fish Elevator in the spring. It is not far from the Holyoke Mall.





- I. **Restore anadromous fish to rivers:** Anadromous fish had been extirpated from all Massachusetts rivers including the Blackstone, Connecticut, Housatonic and Mystic Rivers. (Note: It is unclear if anadromous fish were ever in the Massachusetts portion of the Housatonic as they may not have been able to negotiate the Great Falls located on the Housatonic in Canaan, Connecticut.) Anadromous fish had also been extirpated from the Penobscot River in Maine and the Hudson River in New York. Today large mouth bass, small mouth bass, and carp (relatives of goldfish) are the more numerous fish species in these rivers. Restoration efforts to return anadromous fish to some rivers is now underway in several Northeast states. These efforts include habitat protection, fisheries management, research, regulation, hatchery production and stocking. Shad and salmon are released into the Connecticut River and the Farmington River, and the eastern Massachusetts rivers have herring and striped bass because of human intervention.

Summarizer

How will the Mass Audubon Educator close the lesson to see if students met the objectives?

- Students will answer questions about human impacts on fish populations.

Mass Audubon Teacher Naturalist Reflections

An extension will ask students to postulate on the effects of climate change on fish populations.



Mass Audubon School Programs

At Mass Audubon we strive to create learning experiences that are enriching, innovative, meaningful, and engaging. All our school programs are aligned with Massachusetts Curriculum Frameworks. Our network of wildlife sanctuaries and nature centers located in urban, suburban, and rural communities around the state enable us to have strong relationships with local schools.

Our Education Foundations

- Place-based education is an educational philosophy that connects learning to what is local for an individual. We help build conservation communities, working with students and teachers in cities and towns to develop place-based environmental education that is linked directly to their home community.
- Inquiry-based learning is focused on teamwork, being learner-centered, questioning ourselves and the world around us, providing a more focused, time-intensive exploration, promoting lifelong learning, communication, and learning as fun.
- We are fully committed to creating a positive and supportive environment for all learners.
- We strive to be culturally sensitive, recognizing and embracing cultural differences.

Differentiated Instruction

- We strive to create a positive learning environment that is inclusive, supportive to all learners, and sensitive to cultural diversity.
- Outdoor classroom experiences are structured to meet the needs of the particular learners.
- Students work in small groups using hands-on materials.
- A variety of educational media are used, including colorful illustrations.
- With advance notice, efforts will be made to accommodate all learning styles and physical needs.

Notes

- Nature exploration is dependent upon the weather and other conditions. A class might observe different wildlife than they expected to see. An outdoor lesson can sometimes provide unexpected, but enriching teachable moments on a natural history topic that was not planned.
- Mass Audubon nature centers each have a unique landscape and will customize programs to work best at their particular site.
- Our lessons can be adapted to incorporate a classroom teacher's needs.

