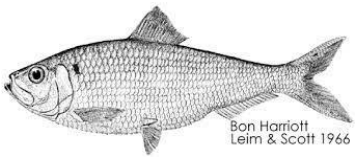


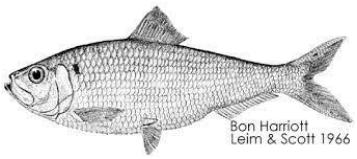
River Herring Life Cycle Lesson Plan

Grade Level	Time	Topic
Third	1 hour	River Herring Life Cycle

Objectives	Standards
• Explore the different stages of a herring's life and draw connections to the students' life. • Understand the importance of river herring in the ecosystem. • Understand how human changes to the habitat may affect river herring migration and reproduction.	**NGSS Standards** • **3-LS1-1**. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. **Massachusetts STE Standards** • **3-LS1-1.** Use simple graphical representations to show that different types of organisms have unique and diverse life cycles. Describe that all organisms have birth, growth, reproduction, and death in common but there are a variety of ways in which these happen. • **3-LS4-4.** Analyze and interpret given data about changes in a habitat and describe how the changes may affect the ability of organisms that live in that habitat to survive and reproduce. **Ocean Literacy Principles** • **Ocean Literacy Principle 5**: The ocean supports a great diversity of life and ecosystems. • **Ocean Literacy Principle 6**: The ocean and humans are inextricably interconnected.

Background:

River Herring Lesson – 3rd Grade
River Herring Life Cycle Lesson Plan



River herring (alewife or blueback herring) are migratory fish that range along the East Coast from Florida to Maine. They are diadromous fish meaning they spend part of their lives in saltwater and part of their lives in freshwater. There are 13 diadromous species in Massachusetts, including river herring, American eels, Atlantic sturgeon, American shad and more. Each spring, millions of river herring migrate to Massachusetts rivers returning to where they were born to lay their eggs. The young fish will stay in the freshwater until they are mature enough to migrate to estuaries (where the freshwater meets the saltwater). Eventually, adults will head out into the saltwater to eat and get bigger.

River herring are a key species within the food chain for other recreational and commercial fish, such as cod, haddock and striped bass. Their declining numbers due to predation, bycatch, and other human-made obstacles have been observed in recent years. Herring themselves feed on zooplankton, small fish, and the eggs and larvae of other species.

Herring are not jumpers, so obstacles such as dams and culverts can cause significant problems in their ability to successfully reach their spawning grounds. Fish ladders are often not that effective at offering the fish an alternative to getting by the dams. They are most successful when they are traveling along streams and rivers that have overhanging vegetation that provides shade and protection from predators. Rocky bottoms allow for greater camouflage with their darker colors. Herring are schooling fish and will move together in groups as they travel up and down the rivers. Out in the ocean, they also maintain their numbers as a way to provide safety.

Understanding river herring migration and life history is important as river herring are key components of coastal communities and ecosystems serving as both a food source and indicator of environmental health.

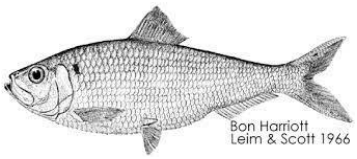
In this activity, you will explore the different stages of a herring's life, and what they might be doing during different times of the year as they grow and mature and eventually return to their birth places to spawn their own young.

Materials:

- Life cycle wheel template (**Life cycle wheel**, **Student wheel**, **Arrow,** and **Month Wheel)**
- Scissors
- Glue
- Coloring materials (i.e. colored pencils, crayons, markers)
- Paper fastener
- If available, heavier paper for the **Life Cycle Wheel**
    - This will be supporting the other pieces and will be easier with heavier paper

Directions:

This life cycle wheel shows the various stages of a river herring's life adjacent to what is happening in the child's life at the same time/season. The students will be putting together their own life cycle wheel, coloring in the different stages of the river herring's life and drawing their own activities during each month. Have the children look at the Life Cycle Wheel, Student Wheel, Arrow, and Month Wheel. In the empty segments of the Student Wheel, the students will be drawing what they are doing during the



corresponding month, (i.e. draw a pumpkin in October to represent Halloween). They will then color in their wheels and fasten all the pieces together with a paper fastener. NOTE: You can do assembly first or last.

Step 1: Life Cycle Wheel (largest wheel)

- Ask students to identify the adult river herring (big herring) and the juvenile river herring (little herring)
- Pick two different colors to represent the adult river herring and the juvenile river herring and color them in.
- We know that river herring spend some of their time in saltwater and some of their time in freshwater. Using two different colors, color in the two different symbols representing the ocean and river throughout the wheel to show when the herring spend time in each.
    - ocean 
    - a river

Step 2: Student Wheel (middle wheel)

- Have your students draw their own pictures for each month. These should be images that represent a big event or something special to the students during this month (i.e. I would draw a cake in June for my birthday).
- They may also wish to color in the segments for each month in the Month Wheel

Step 3: Assembly

- Cut out each wheel (Life Cycle Wheel, Student Wheel, Month Wheel). **make sure to also cut out the arrow on the same page as the Life Cycle Wheel
- Poke a small hole through the paper using a pen or pencil in the middle of each wheel where the black dot is located.
- Place the Student Wheel (medium sized circle) on the Life Cycle Wheel (largest circle) making sure to line up the first letter of the months. Glue the smaller wheel to the larger one. (Line up your holes)
- Place the Month Wheel in the center of the Student Wheel making sure to line the months up correctly (the first letter of each month is written in gray on the Student Wheel). Glue the wheel down. (Line up your holes)
- Place the end of the arrow over the black dot in the center of your wheel and use the paper fastener to poke a hole through it and attach the arrow.
- Make sure the paper fastener is through all of the pieces and secure it in the back (folding both flaps of the fastener down)

Special thanks to Coonamessett River Trust Intern Gemma Pennucci for her work on this activity.