



Lesson Name: Dams and Dam Removal- Highwater events
Name of Sanctuary: Wildlife Sanctuary
Grade Level: 3-5
Location Options: At sanctuary or in class
Time: 1-2 hours
For more info: gtraser@massaudubon.org or
phone number

Program Description

Over the past decade there have been an increasing number of extreme highwater events affecting Sackett Brook. Using stream tables, students design and “play out” several scenarios of the effects of flashy flooding.

Massachusetts Curriculum Frameworks

Framework: Science and Technology
Strand: Life Science
Topic: Living Things and Their Environment

Learning Standards 3-5 # 10: Organisms can cause changes in their environment to ensure their survival, which may affect the ecosystem.

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:

- Predict the effect on the surrounding landscape of a high water event in the presence and absence of dams and bridges.

Materials-

Four stream tables with tubing- available from Educomp
50 lbs of play sand
Small plastic animals
Leaves and small sticks
Several buckets of water
Wooden dams and bridges cut to fit the stream tables
Plasticine clay
Blackboard/ Whiteboard to draw results



Vocabulary

Erosion
Geology
Turbidity
Flow rate
Alluvial Fan
Meander
Flood
Floodplain

Mass Audubon Educator Background

Mass Audubon Educator should:

- Have an understanding about streams, rivers and hydrology.

Assessments

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

- Students will predict and diagram what a stream will look like for several events- Hurricane (and subsequent flooding) with dams and bridges, compared to without dams and bridges.

Procedure

1. Mass Audubon Educator will instruct students how to set up stream tables. Two stream tables are set up with the model dams and bridges, two are set up with just sand. Small plastic animals are positioned throughout all models, (on the surface and buried) as are leaves and small sticks.
2. One model with a dam and one model without are set up with a slow running stream (using siphon and clamped hoses) and the others with dam and without are set up for a large quantity of water. Before starting the “hurricane” students diagram the stream table they are working on.
3. The “hurricane” tables are flooded with water, and students observe, compare and contrast, and then diagram the flooded tables. They report on the effects of rising waters on wildlife, and discuss the differences between dammed and undammed streams.



Summarizer

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

- Students will accurately diagram the stream and results of rising waters, and discuss the effects on wildlife.

Mass Audubon Teacher Naturalist Reflections

Although a messy lesson, requiring a great deal of set up, this lesson allows students to see the immediate effects that dams and streams have on flowing waters, the landscape and wildlife. Students enjoy building the model, positioning the wildlife, and eventually letting the storm wash over. They also see the immediate differences in erosion and scouring, and the impact further downstream.



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.

