



School Program Name:	Pond Life
Name of Sanctuary:	Moose Hill Wildlife Sanctuary
Grade Level:	Grades 3 – 5
Location Options:	At the sanctuary or your site
Time:	2 hours combine with a second program for a full-day field trip
For more info:	moosehilledu@massaudubon.org

Program Description

Students will become aquatic entomologists inside and outside of the “lab”. Using tools to sample the wetland edge they will learn to classify aquatic insects; observe stages of metamorphosis and discover the adaptations used to survive in a watery world. Students will also participate in building an aquatic food chain using the creatures we discover.

Significant savings are offered when you select a second program to create a full-day of hands-on learning at Moose Hill. This program combines well with Ecosystem of the Vernal Pool, Insect Safari, or Habitat Hunt. Because of our large trail system and full-day option, we can serve up to 130 students for many programs. We provide a ratio of one Moose Hill teacher-naturalist to 12 to 14 students.

Massachusetts State Curriculum Frameworks

Subject:	Science and Technology
Topic:	Life Science

Learning Standards

Characteristics of Plants and Animals

3-5 Life Science #1: Classify plants and animals according to the physical characteristics that they share.

Structures and Functions

3-5 Life Science #3: Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.

3-5 Life Science #4: Describe the major stages that characterize life cycles

3-5 Life Science #5: Differentiate between observed characteristics of plants and **animals** that are fully inherited (e.g., color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by the climate or environment (e.g., browning of leaves due to too much sun, language spoken).

Adaptations of Living Things

3-5 Life Science #7: Give examples of how changes in the environment (drought, cold) have caused some plants and animals to die or move to new locations (migration).



3-5 Life Science #8: Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received from the environment. Recognize that some animal behaviors are instinctive (e.g., turtles burying their eggs), and others are learned (e.g., humans building fires for warmth, chimpanzees learning how to use tools).

Energy and Living Things

3-5 Life Science #11: Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.

Massachusetts State Curriculum Frameworks

Subject: Science and Technology

Topic: Technology

Learning Standards

Materials and Tools

3-5 Technology #1.1: Identify materials used to accomplish a design task based on a specific property, i.e., weight, strength, hardness, and flexibility.

3-5 Technology #1.2: Identify and explain the appropriate materials and tools (e.g., hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) to construct a given prototype safely.

Massachusetts State Curriculum Frameworks

Subject: English Language Arts

Topic: Language

Learning Standards

Discussion

PreK-12 Language #1: Students will use agreed-upon rules for informal and formal discussions in small and large groups.

Questioning, Listening, and Contributing

PreK-12 Language #2: Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.

Vocabulary and Concept Development

PreK-12 Language #4: Students will understand and acquire new vocabulary and use it correctly in reading and writing.

Massachusetts State Curriculum Frameworks

Subject: Math

Topic: Math



Learning Standards

Data Analysis, Statistics, and Probability

PreK-6 Math #D1: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Lesson Objectives

Students will know and be able to:

Vocabulary

aquatic	entomologist	insect
adaptation	larva	pupa
nymph	metamorphosis	classification
arthropod	insect	arachnid
crustacean	thorax	abdomen
antenna	exoskeleton	Segmented

Assessments

How will the Mass Audubon educator know that the students have met the standards?

- Mass Audubon educator will observe students exploring, observing, and identifying aquatic arthropods within a wetland habitat.
- Students will use the arthropods they see in the lab to create an aquatic arthropod food chain.
- Students will participate in answering teacher prompted questions.
- Students will demonstrate their understanding of identify and classify a type of arthropod by participating in a wrap-up activity.

Summarizer

How will the Mass Audubon educator close the lesson to see if students met your objective?

- Students will name the things that an organism needs from its habitat and how aquatic arthropods acquire these things, including the means it uses to get air.
- Students will participate in creating an aquatic arthropod food chain using the animals they discover as aquatic entomologists.
- Students will answer the naturalist's questions about the characteristics of "arthropods," "arachnids," "crustaceans," "insects," and "amphibians."
- Students will describe or act out the life cycle of an insect or an amphibian.



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 when given enough notice.

