



**Lesson Name:** Vernal Pool  
**Name of Sanctuary:** Museum of American Bird Art  
**Grade Level:** 3-5  
**Location Options:** At sanctuary  
**Time:** 1 hour  
**For more info:** [maba@massaudubon.org](mailto:maba@massaudubon.org) or 781-821-8853

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## Program Description

Students visit a vernal pool to observe, collect, and study organisms in their natural habitat.

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## Massachusetts Curriculum Frameworks

**Framework:** Science and Technology  
**Strand:** Life Science  
**Topic:** Structures and Functions  
Adaptations of Living Things  
Energy and Living Things

## Learning Standards

### 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.

### Adaptations of Living Things

- 3-5 Life Science #9: Recognize plant behaviors, such as the way seedlings' stems grow toward light and their roots grow downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors, e.g., in winter, some trees shed leaves, some animals hibernate, and other animals migrate.
- 3-5 Life Science #10: Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.

### 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.



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### Massachusetts Curriculum Frameworks

<b>Framework:</b>	English Language Arts
<b>Strand:</b>	Language
<b>Topic:</b>	Questioning, Listening, and Contributing

### Learning Standards

#### 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.

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### Massachusetts Curriculum Frameworks

<b>Framework:</b>	English Language Arts
<b>Strand:</b>	Composition
<b>Topic:</b>	Writing

### Learning Standards

#### Writing

PreK-12 Composition #19: Students will write with a clear focus, coherent organization, and sufficient detail.

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### Massachusetts Curriculum Frameworks

<b>Framework:</b>	Arts
<b>Strand:</b>	Visual Arts
<b>Topic:</b>	Observation, Abstraction, Invention, and Expression

### Learning Standards

#### Observation, Abstraction, Invention, and Expression

PreK-12 Visual Arts #3: Students will demonstrate their powers of observation, abstraction, invention, and expression in a variety of media, materials, and techniques.

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### 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:

- Identify and classify living and non-living things in a vernal pool habitat.
- Explain how the basic needs of the organisms (air, food, shelter, water, space) are met in the changing seasonal dynamics of this unique habitat.
- Describe several life cycles that are specific to the vernal pool habitat.



- Observe how vernal pool organisms are adapted to survive in their habitat.
- Explain how changes in the environment (caused naturally or by humans) can affect vernal pool organisms.
- Explain how energy is passed along the food chain.
- Describe how organisms are interdependent.

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## Vocabulary

adaptation	environment	life cycle
consumer	habitat	organism
decomposer	interdependent	producer

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## Assessments

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

- Mass Audubon Educator will observe students exploring, observing, and identifying vernal pool organisms.
- Students will participate in answering Mass Audubon Educator-prompted questions about how organisms meet their needs in the fast life of such a unique habitat.
- Students will draw pictures of one of the collected organisms.
- Students will write a few sentences explaining how the organism they drew is adapted to its vernal pool habitat.
- Students will demonstrate their understanding of how vernal pool organisms are interdependent by participating in the web of life wrap-up activity.

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## Summarizer

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

- Students will create a web of life showing the interconnections of the vernal pool. By playing The Web of Life Game, students will explain how living and nonliving things in a vernal pool are connected, and how people can have a positive effect on vernal pools.
- Mass Audubon Educator will seat students in a circle and pass out a prepared index card, which has a specific vernal pool producer, consumer or decomposer printed on it. Mass Audubon Educator will hand a ball of yarn to the first student and pose the question, “How are you connected to a living or nonliving thing in this circle?” (For example, the student has the word “tadpole” written on card, and





he/she states fairy shrimp, because the tadpole eats the fairy shrimp, the yarn is then passed to that student (the fairy shrimp). Then the fairy shrimp student might say insect larva because it needs to eat the insect larvae to survive. Students will pass the yarn around to the whole circle until everyone is included in the web of life. Next, Mass Audubon Educator will tell students to imagine a change has happened to the vernal pool, like oil running off a road into the pool. What is added to or taken away from the web? Mass Audubon Educator has the affected organism stand up, and every other student that feels a tug on his/her string should then stand up to show somehow they have been affected by the removal of just one item. Students who stood up will explain how they were affected.

- Mass Audubon Educator asks students if there is anything people can do to have a positive effect on vernal pools. Students will brainstorm what they can do to have a positive effect on other ecosystems near them (e.g. putting trash and recyclables where they belong; teaching others to do the same).



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## 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.

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## 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.

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## 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.

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## 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.

