Mass Audubon
Protecting the Nature of Massachusetts

School Program Name:	Ecosystems
Name of Sanctuary:	Wildlife Sanctuary
Grade Level:	3-5
Location Options:	At sanctuary
Time:	2 hours
For more info:	arcadia@massaudubon.org or

Program Description

Students visit two to three ecosystems to observe, collect, and record living and nonliving things. They compare the ecosystems and discuss how ecosystems can change.

Massachusetts Curriculum Frameworks

Framework:	Science and Technology
Strand:	Life Science
Topic:	Characteristics of Plants and Animals Adaptations of Living Things Energy and Living Things

Learning Standards

Characteristics of Plants and Animals

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

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 #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

Framework: English Language Arts
Strand: Language
Topic: 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.

Massachusetts Curriculum Frameworks

Framework: English Language Arts
Strand: Composition
Topic: Writing

Learning Standards

Writing

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

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:

- Recognize the variety of plants and animals in a given ecosystem and how their basic needs (air, water, food, shelter, space) are met.
- Make an educated guess about what an animal eats based on its physical characteristics.
- Identify and classify living and nonliving things in a given ecosystem.
- Give examples of connections in an ecosystem (living/living, living/nonliving, nonliving/nonliving).
- Explain how ecosystems can change over time.
- Explain how a change to a given ecosystem (e.g. invasive plant growth, habitat loss) affects the living and nonliving things in that ecosystem.
- Describe how energy derived from the sun is used by plants to make food and is transferred within a food chain from producers (plants) to consumers to decomposers.

- Describe how people can have a positive impact on an ecosystem.

Vocabulary

biodiversity
food web
food chain
habitat
succession
habitat loss
ecosystem
invasive plant
living thing
nonliving thing
predator
prey

Assessments

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

- Mass Audubon Educator will observe students exploring, observing, and identifying living and nonliving things.
- Students will participate in answering Mass Audubon Educator-prompted questions.
- Students will draw pictures of a living or nonliving thing, showing how it is connected to other living and nonliving things.
- Students will use what they know about animals to make educated guesses about whether an animal is a predator, prey, or both.
- Students will demonstrate their understanding of ecosystems and how people can have a positive effect on them by participating in a wrap-up activity.

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 ecosystem they observed. By playing The Web of Life Game, students will explain how living and nonliving things in an ecosystem are connected, and how people can have a positive effect on ecosystems.
- Mass Audubon Educator will seat students in a circle and pass out a prepared index card, which has a specific producer, consumer or decomposer (from the ecosystem you studied) 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 ecosystem similar to the one they just observed. What is added to or taken away from the web? For example, purple loosestrife outgrows other plants, which are removed from the ecosystem. Mass Audubon Educator has the plants 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 the ecosystem you studied. Give examples of what is being done (e.g. invasive removal, native plantings). Students will brainstorm what they can do to have a positive effect on ecosystems near them (e.g. putting trash and recyclables where they belong; teaching others to do the same).

Mass Audubon

Protecting the Nature of Massachusetts

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.