

NGSS Connections

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Oyster Encounter

Grades 3-5

Performance Expectations: Students’ ability to complete the following performance expectation(s) will be supported by participation in this activity.

3-LS2-1. Construct an argument that some animals form groups that help members survive.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

Dimension	NGSS Code or citation	Corresponding student task in activity
Disciplinary Core Idea	3-LS2.C Ecosystem Dynamics, Functioning, and Resilience <ul style="list-style-type: none"> • When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. 	Students watch a time-lapse video of an area in the Inner Harbor with increased levels of sedimentation. Students discuss what happens to oysters on an oyster reef if there is too much sedimentation and/or pollution in their habitat.
	3-LS2.D Social Interactions and Group Behavior <ul style="list-style-type: none"> • Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. 	Students address the question: What organisms live on the oyster? Students use magnifying glasses and microscopes to identify organisms on live oysters and oyster shells after learning about different organisms that may be found living together on an oyster reef (via an oyster ID guide).
	3-LS4.C Adaptation <ul style="list-style-type: none"> • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. 	Students complete a KWL chart answering the driving question: How are oysters important for the Bay? Through asking questions and making observations about oyster shells, students learn about the specific environment for oysters.

	<p>3-LS4.D Biodiversity and Humans</p> <ul style="list-style-type: none"> • Populations live in a variety of habitats, and change in those habitats affects the organisms living there. 	<p>Students make observations regarding the color, size, smell, and texture of oyster shells to help determine where oysters live.</p> <p>Students watch a time-lapse video of an area in the Inner Harbor with increased levels of sedimentation. Students discuss what happens to oysters on an oyster reef if there is too much sedimentation and/or pollution in their habitat.</p>
	<p>4-LS1.A Structure and Function</p> <ul style="list-style-type: none"> • Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. 	<p>Students use magnifying glasses and microscopes to observe the external anatomy of live oysters. Students also work together as a group to identify internal organs in an opened (sucked) oyster. As a class, students learn and discuss the function of oyster body parts.</p>
	<p>5-LS2.A Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> • The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. 	<p>Students determine that oysters eat phytoplankton (plant plankton). Students see pictures of phytoplankton and discuss how oysters are able to eat phytoplankton found in the water.</p> <p>By answering the driving question (How are oysters important for the Bay?), students determine what a healthy oyster reef ecosystem looks like and what other organisms would be present in a healthy oyster reef ecosystem.</p>
	<p>5-ESS3.C Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> • Human activities in agriculture, industry, and everyday life have had major effects on the land, 	<p>Students watch a time-lapse video of an area in the Inner Harbor with increased levels of sedimentation. Students discuss how sediment gets into the Chesapeake Bay.</p>

	vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.	Students learn about what people in Maryland are doing to protect oysters in the Chesapeake Bay.
Practice	<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation. Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings. 	<p>Students analyze and interpret data (observations) they collected while observing live oysters and the organisms that live on the oysters.</p> <p>Students compare and contrast what organisms they found living on their oysters.</p>
	<p>Constructing an Explanation</p> <ul style="list-style-type: none"> Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. 	Students make observations regarding the internal and external anatomy of oysters to explain how oysters are important for the Bay.
Crosscutting Concept	<p>Patterns</p> <ul style="list-style-type: none"> Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. 	Students observe similarities and differences between oyster shells (left and right valves) to infer why oyster shells would have different shapes, colors, sizes, and textures.
	<p>Structure and Function</p> <ul style="list-style-type: none"> Substructures have shapes and parts that serve functions. 	Students examine the internal anatomy of oysters and determine what function each body part serves.
<p><u>Nature of Science</u></p> <p>Scientific Investigations Use a Variety of Methods</p> <ul style="list-style-type: none"> Science investigations use a variety of methods, tools, and techniques. <p>Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena</p> <ul style="list-style-type: none"> Science explanations describe the mechanisms for natural events. <p>Science is a Human Endeavor</p> <ul style="list-style-type: none"> Most scientists and engineers work in teams. <p>Science Addresses Questions About the Natural and Material World</p> <ul style="list-style-type: none"> Science findings are limited to what can be answered with empirical evidence. 		

Connections to Common Core State Standards

English Language Arts/Literacy

SL.3.1.C

SL.3.1.D

SL.4.1.C

SL.4.1.D

SL.5.1.C

SL.5.1.D