

Grade 4 - Unit 1 - Ecosystems and Adaptations

Unit Focus

The theme of the fourth grade year is "How do our actions impact the world around us?" Students will tackle this question throughout the year, culminating in a final project that asks the students to propose a solution to a local issue by writing to a vested party.

Students will develop their understanding of ecosystems through the lens of our local wetlands as students explore the inhabitants and their adaptations for survival and the importance of wetlands to our town. Learning activities will include food webs, impact of invasive species, the function of wetlands and human impact. This unit will include a field trip to Hammonasset State Park in the fall and will be revisited during a trip to Circle Beach in the spring where students will participate in tagging horseshoe crabs in support of Project Limulus. The culminating project for this unit will require students to create a creature with structural adaptations that enable it to survive in a given habitat.

Stage 1: Desired Results - Key Understandings

Established Goals	Transfer	
<p>Next Generation Science <i>Elementary Standards: 3</i></p> <ul style="list-style-type: none"> 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. 3-LS4-3 <p><i>Elementary Standards: 4</i></p> <ul style="list-style-type: none"> Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 4-LS1-1 <p>Next Generation Science Standards (DCI) <i>Science: 3</i></p> <ul style="list-style-type: none"> Different organisms vary in how they look and function because they have different inherited information. LS3.3.B1 For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. LS4.3.C1 Populations live in a variety of habitats, and change in those habitats affects the organisms living there. LS4.3.D1 The environment also affects the traits that an organism develops. 	<p>T1 Make observations and ask questions to define a problem based on prior knowledge and curiosity that stimulates further exploration, analysis, and discovery.</p> <p>T2 Create models to explore complex systems, show mastery of key science concepts, and/or develop solutions through creation of a product open to testing and redesign.</p>	
	Meaning	
	Understandings	Essential Questions
<p>U1 Invasive species are brought to new environments and can cause damage to the ecosystem.</p> <p>U2 All living things have different structures and behaviors that help them survive, grow, and meet their needs.</p> <p>U3 Organisms depend on things in their environment for their own growth, reproduction, and survival.</p> <p>U4 When people or natural events change an environment, it can affect all of the living things in the ecosystem.</p>	<p>Q1 How do our actions and choices impact the world around us?</p> <p>Q2 How do organisms use internal and external structures and their senses to survive?</p> <p>Q3 What impact do various factors have on the balance of a healthy ecosystem?</p>	

Stage 1: Desired Results - Key Understandings

	Acquisition of Knowledge and Skill	
	Knowledge	Skills
<p>LS3.3.B2</p> <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. LS2.3.C1 <p><i>Science: 4</i></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. LS1.4.A1 <p><i>Science: 5</i></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. LS2.5.A1 <p>Student Growth and Development 21st Century Capacities Matrix</p> <p><i>Critical Thinking</i></p> <ul style="list-style-type: none"> Synthesizing: Students will be able to thoughtfully combine information/data/evidence, concepts, texts, and disciplines to draw conclusions, create solutions, and/or verify generalizations for a given purpose. MM.1.3 <p><i>Creative Thinking</i></p> <ul style="list-style-type: none"> Innovation: Students will be able to take an existing solution or object in order to consider limitations and possible transformations. MM.2.1 	<p>K1 Wetlands provide an important habitat for animals and protect our coastline from flooding and pollution.</p> <p>K2 There are many plants and animals in an ecosystem that interact with each other and the environment. Biodiversity is the amount of different species of plants and animals in an ecosystem.</p> <p>K3 Humans impact Wetlands by building on them and introducing non-native plants and animals.</p> <p>K4 Organisms go through different phases of development called life cycles.</p> <p>K5 Organisms have many types of relationships. This includes predator-prey, symbiosis and competition for resources.</p> <p>K6 <u>Vocabulary</u>: wetlands, habitat, migration, absorption, peat, adaptations, food web, invasive species, life cycle, interdependence, biodiversity, structure, function, producer, consumer, structure, function, producer, consumer</p>	<p>S1 Making observations and/or measurements to form conclusions.</p> <p>S2 Explain how an organism's structures relates to their functions, allowing the organism to survive in it' environment.</p>