

Redwood Giants: K-8th

- Students learn scientific facts about wildlife that live in the Coast Redwood habitat and make observations of taxidermy, bio-facts, and photos to describe and compare patterns and answer questions about the natural world.
- Students will be able to describe the characteristics and features of the Coast Redwood Forest habitat.
- Students will learn to describe and identify the challenges and threats wildlife face in their habitats.
- Students learn about what animals need in their habitats and how their specific body parts and behaviors (*adaptations*) help them survive in their habitats.
- Students learn about human impact on the environment and share ideas of how we can have a positive impact and help wildlife.

Grade	NGSS Disciplinary Core Idea	Examples
K	<p>LS1.C: Organization for Matter and Energy Flow in Organisms - All animals need food in order to live and grow. They obtain their food from plants or from other animals. (K-LS1-1)</p> <p>ESS2.E: Biogeology - Animals can change their environment. (K-ESS2-2)</p> <p>ESS3.C: Human Impacts on Earth Systems - Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (K-ESS3-3)</p>	<p>LS1.C: <i>Students learn that living things within a coastal redwood ecosystem all have different niches within their habitat to best suit each of their needs.</i></p> <p>ESS2.E: <i>Students learn that when prey animals like deer are overpopulated, they can overgraze and cause damage to the ecosystem. Predators of deer are necessary to keep their population in check for a healthy ecosystem.</i></p>

	<p>ESS3.A: Natural Resources - Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)</p>	<p>ESS3.C: <i>Students learn about how they can help wildlife that is injured or orphaned.</i></p> <p>ESS3.A: <i>Students learn how deforestation is impacting redwood forests and the creatures who inhabit them.</i></p>
1st	<p>LS1.A: Structure and Function - All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)</p> <p>LS1.B: Growth and Development of Organisms - Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)</p> <p>LS1.D: Information Processing - Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)</p> <p>LS3.A: Inheritance of Traits - Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents (1- LS3-1).</p>	<p>LS1.A: <i>Students learn that redwood trees have special adaptations to help them be more resistant to fire and insects.</i></p> <p>LS1.B: <i>Students learn that fawns have no scent to help them hide from predators while their mother is foraging for food for 6-7 hours each day.</i></p> <p>LS1.D: <i>Students learn how the Little Brown Bat uses echolocation to find its prey. They have smaller eyes and bigger ears than other bats who can see well at night like fruit bats.</i></p> <p>LS3.A: <i>Students learn that fawns have spots that help them camouflage on the forest floor but adults do not.</i></p>
2nd	<p>LS2.A: Interdependent Relationships in Ecosystems - Plants depend on water and light to grow. (2-LS2-1) Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)</p> <p>LS4.D: Biodiversity and Humans - There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)</p>	<p>LS2.A: <i>Students learn about how much water is needed for redwood trees and how much water they can store to better survive drought.</i></p> <p>LS4.D: <i>Students learn about the many different niches of the coastal redwood habitat that animals can occupy from the overstory to the creeks.</i></p>

	<p>ESS1.C: The History of Planet Earth - Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)</p>	<p>ESS1.C: <i>Students learn how long it takes a redwood forest to grow to maturity, mature trees can be 800-1500 years old.</i></p>
<p>3rd</p>	<p>LS1.B: Growth and Development of Organisms - Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)</p> <p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience - 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. (secondary to 3-LS4-4)</p> <p>LS2.D: Social Interactions and Group Behavior - 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. (Note: Moved from K-2.) (3-LS2-1)</p> <p>LS3.A: Inheritance of Traits - Many characteristics of organisms are inherited from their parents. (3-LS3-1) Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)</p> <p>LS3.B: Variation of Traits - Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1) The environment also affects the traits that an organism develops. (3-LS3-2)</p> <p>LS4.B: Natural Selection - Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)</p> <p>LS4.C: Adaptation - For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)</p> <p>LS4.D: Biodiversity and Humans - Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)</p>	<p>LS1.B: <i>Students learn how redwood trees begin as redwood cones in their life cycle.</i></p> <p>LS2.C: <i>Students learn about how much water is needed for redwood trees and how much water they can store at any given time to survive drought better.</i></p> <p>LS2.D: <i>Students learn how Acorn Woodpeckers work together to collect food in family groups.</i></p> <p>LS3.A: <i>Students learn how Northern Flickers get their colored feather shafts from their diet.</i></p> <p>LS3.B: <i>Students learn that there are many related salamander species within the Coastal Redwood habitat and they look different based on the different niches they occupy.</i></p> <p>LS4.B: <i>Students learn how the threatened Spotted Owl is being impacted by deforestation and competition from the Barred Owl. The Barred Owl can survive better in logging areas than the Spotted Owl.</i></p> <p>LS4.C: <i>Students learn how squirrels' tails are an adaptation to help them balance while climbing.</i></p> <p>LS4.D: <i>Students learn how raccoons feed on</i></p>

		<p><i>trash in human dominated areas but in more natural areas they feed on many foods like crayfish, berries, fish, small creatures, etc.</i></p>
4th	<p>LS1.A: Structure and Function - Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)</p> <p>LS1.D: Information Processing - Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)</p> <p>ESS2.E: Biogeology - Living things affect the physical characteristics of their regions. (4-ESS2-2)</p>	<p>LS1.A: <i>Students learn how redwood trees have adapted to contain tannins that help protect them from fires and insects.</i></p> <p>LS1.D: <i>Students learn how bats have adapted to use echolocation to find their prey at night. They have larger ears and smaller eyes than their bat counterparts that see well at night.</i></p> <p>ESS2.E: <i>Students learn that when prey animals like deer are overpopulated, they can overgraze and cause damage to the ecosystem. Predators of deer are necessary to keep their population in check for a healthy ecosystem.</i></p>
5th	<p>PS3.D: Energy in Chemical Processes and Everyday Life - The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)</p> <p>LS1.C: Organization for Matter and Energy Flow in Organisms - Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1) Plants acquire their material for growth chiefly from air and water. (5-LS1-1)</p> <p>LS2.A: Interdependent Relationships in Ecosystems - 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</p>	<p>PS3.D: <i>Students learn how different animals are connected to one another in the food web by predator/prey relationships within the coastal redwood ecosystem all beginning with the teeming plant life.</i></p> <p>LS1.C: <i>Students learn how squirrels hide food to eat during the winter, providing their body with the energy they need to make it to spring. They increase their diet leading up to the winter because increased fat stores mean more energy is stored.</i></p> <p>LS2.A: <i>Students learn how Banana Slugs play an important role in the coastal redwood ecosystem as decomposers of leaf litter and other plant matter. In addition, there are other</i></p>

	<p>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. (5-LS2-1)</p> <p>ESS3.C: Human Impacts on Earth Systems - Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)</p>	<p><i>decomposers like mushrooms in the redwood ecosystem to help cycle nutrients.</i></p> <p>LS2.A: <i>Students learn how some squirrels are dependent on deer antler sheds to chew on to help maintain their teeth.</i></p> <p>ESS3.C: <i>Students learn ways they can help support wildlife at home and in their communities with easy changes like putting lids on trash to keep animals out.</i></p>
6th-8th	<p>LS1.B: Growth and Development of Organisms - Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4)</p> <p>LS2.A: Interdependent Relationships in Ecosystems - Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)</p> <p>In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1). Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)</p> <p>LS2.B: Cycle of Matter and Energy Transfer in Ecosystems - Food webs demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-1)</p> <p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience - Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)</p>	<p>LS1.B: <i>Students learn how bucks have antlers that they use to compete for mates.</i></p> <p>LS2.A: <i>Students learn how redwood forests help to keep streams healthy and alter the habitat to help support salmon as they breed and to help support young salmon as they mature.</i></p> <p>LS2.B: <i>Students learn how Banana Slugs play an important role in the coastal redwood ecosystem as decomposers of leaf litter and other plant matter. In addition, there are other decomposers like mushrooms in the redwood ecosystem to help cycle nutrients.</i></p> <p>LS2.B: <i>Students learn how some squirrels are dependent on deer antler sheds to chew on to help maintain their teeth.</i></p> <p>LS2.C: <i>Students learn how animals within ecosystems altered by human influence will behave differently to adapt to the new conditions. For example, raccoons in areas</i></p>

Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-4)

LS4.C: Adaptation - Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS1-4)

ESS3.C: Human Impacts on Earth Systems - Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

clear cut to make human housing will consume trash rather than their natural diet to survive.

LS4.C: *Students learn about the variety of adaptations that California wildlife have including how Gray Squirrels have tails to help themselves balance and keep warm.*

ESS3.C: *Students learn about the impacts of clear cutting on redwood ecosystems.*