

Relevant Standards for Wild Biomes: From America's Rainforest to America's Desert

National Geography Standards

- 8 [The characteristics and spatial distribution of ecosystems and biomes on Earth's surface](#)
- 12 [The processes, patterns, and functions of human settlement](#)
- 14 [How human actions modify the physical environment](#)
- 15 [How physical systems affect human systems](#)

Next Generation Science Standards

| Grade | Topic | Disciplinary Core Idea | Performance Expectation |
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| K | Life Science | 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. Plants need water and light to live and grow. | K-LS1-1 Use observations to describe patters of what plants and animals (including humans) need to survive. |
| K | Earth Systems | ESS2.D Weather and Climate - Weather is the combination of sunlight, wind, snow, or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. | K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time. |
| K | Earth Systems | ESS2.E Biogeology - Plants and animals can change their environment. | K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. |
| K | Earth Systems | 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-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. |

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| K | Earth Systems | 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 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. Also ETS1.B Developing Possible Solutions - designs can be conveyed through sketches, drawing, physical models. These representations are useful in communicating ideas for a problem's solution to other people. |
| K | Earth Systems | 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 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. |
| 2nd grade | Life Science | LS2.A Interdependent Relationships in Ecosystems - Plants depend on water and light to grow. | 2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow. |
| 2nd grade | Life Science | 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 Make observations of plants and animals to compare the diversity of life in different habitats. |
| 2nd grade | Earth Systems | ESS2.A Earth Materials and Systems - wind and water can change the shape of the land. | 2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. |
| 2nd grade | Earth Systems | ESS2.C The Roles of Water in Earth's Surface - Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. | 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid. |
| 3rd grade | Life Science | 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 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. |

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| 3rd grade | Life Science | 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 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. |
| 3rd grade | Life Science | 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. | 3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. |
| 3rd grade | Earth Systems | ESS2.D Weather and Climate - Climate describes a range of an area's typical weather conditions to the extent to which those conditions vary over years. | 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world. |
| 3rd grade | Earth Systems | ESS3.B Natural Hazards - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. | 3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard (flooding). |
| 4th grade | Earth Systems | ESS2.A Earth Materials and Systems - Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. | 4-ESS2-1 Make Observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. |
| 4th grade | Earth Systems | ESS2.E Biogeology - Living things affect the physical characteristics of their regions. | 4-ESS2-1 Make Observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. |
| 4th grade | Earth Systems | ESS3.A Natural Resources - Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. | 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. |

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| 4th grade | Earth Systems | ESS3.B Natural Hazards - A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. | 4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. |
| 5th grade | Life Science | LS1.C Organization for Matter and Energy Flow in Organisms - plants acquire their material for growth chiefly from air and water. | 5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water. |
| 5th grade | Earth Systems | ESS2.A Earth Materials and Systems - Earth's major systems are the geosphere, the hydrosphere, the atmosphere, and the biosphere. These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate... | 5-ESS2-1 Develop a model using an example to describe the ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. |
| 5th grade | Earth Systems | ESS2.C The Roles of Water in Earth's Surface Processes - nearly all of Earth's available water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. | 5-ESS2-2 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. |
| 5th grade | Earth Systems | 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 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. |

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| Middle School | Life Science | 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. 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 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. |
| Middle School | Life Science | 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 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. |
| Middle School | Life Science | LS2.C Ecosystem Dynamics, Functioning, and Resilience - 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-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services. |
| Middle School | Life Science | LS4.D Biodiversity and Humans - Changes in biodiversity can influence humans' resources such as food, energy, and medicines, as well as ecosystem services that humans rely on - for example, water purification and recycling. | MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services. |
| Middle School | Earth Systems | ESS2.C The Roles of Water in Earth's Surface Processes - Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation, crystallization, and precipitation, as well as downhill flows on land. | MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. |

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| Middle School | Earth Systems | ESS2.D Weather and Climate -Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. | MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. |
| Middle School | Earth Systems | 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 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. |
| Middle School | Earth Systems | ESS3.C Human Impacts on Earth Systems - Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. | MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. |