

# National Council for the Social Studies (NCSS), National Geography Standards (NGS), Next Generation Science Standards (NGSS)

Subjects: Science, Social Studies

Grades: 3, 4, 5, 6, 7, 8

## Virtual Field Trips

### Galapagos Islands

#### National Council for the Social Studies (NCSS)

##### Social Studies

#### Grade 3 - Adopted: 2010

THEME	NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION	SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
CATEGORY	3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION	3.1.5. Physical changes in community, state, and region, such as seasons, climate, and weather, and their effects on plants and animals.

#### National Council for the Social Studies (NCSS)

##### Social Studies

#### Grade 4 - Adopted: 2010

THEME	NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION	SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
CATEGORY	3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION	3.1.5. Physical changes in community, state, and region, such as seasons, climate, and weather, and their effects on plants and animals.

#### National Geography Standards (NGS)

##### Science

#### Grade 3 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PR. Places and Regions
STANDARD	PR.4. The physical and human characteristics of places
STRAND	PR.4.2. The Characteristics of Places: Places have physical and human characteristics

BENCHMARK	PR.4.2.A.	Describe and compare the physical characteristics of places at a variety of scales, local to global, as exemplified by being able to
EXPECTATION	PR.4.2.A.3.	Describe and compare the physical environments and landforms of different places in the world (e.g., mountains, islands, valleys or canyons, mesas).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: There are four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere)
BENCHMARK	PS.7.1.A.	Identify attributes of Earth's different physical systems, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify examples of water features on Earth's surface that comprise the hydrosphere (e.g., oceans, rivers, lakes, water vapor, ground water, different types of precipitation).
EXPECTATION	PS.7.1.A.3.	Identify examples of landforms on Earth's surface (e.g., mountains, volcanoes, valleys, plains).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.3.	Physical Processes: Physical processes shape features on Earth's surface
BENCHMARK	PS.7.3.B.	Describe how physical processes shape features on Earth's surface, as exemplified by being able to
EXPECTATION	PS.7.3.B.2.	Describe the physical processes that shaped particular landform features using pictures of landforms such as canyons, mesas, and deltas.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: The components of ecosystems
BENCHMARK	PS.8.1.A.	Identify the components of different ecosystems, as exemplified by being able to
EXPECTATION	PS.8.1.A.3.	Describe local ecosystems by surveying and recording the properties of their components.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Identify and describe the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.1.	Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.
EXPECTATION	PS.8.2.A.2.	Identify and draw pictures of different plants and animals in various local ecosystems (e.g., a pond, forest, city park).
EXPECTATION	PS.8.2.A.3.	Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).

ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.14.	How human actions modify the physical environment
STRAND	ES.14.3.	Consequences for People and Environments: The consequences of human modifications of the physical environment
BENCHMARK	ES.14.3.A.	Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to
EXPECTATION	ES.14.3.A.1.	Identify and describe the changes in local habitats that resulted from human activities.
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.15.	How physical systems affect human systems
STRAND	ES.15.2.	Environmental Hazards: Environmental hazards affect human activities
BENCHMARK	ES.15.2.A.	Identify and describe the locations of environmental hazards, as exemplified by being able to
EXPECTATION	ES.15.2.A.2.	Identify on a map of the Pacific basin the occurrences of earthquakes and volcanoes and describe the pattern that results (e.g., the Pacific Ring of Fire).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.16.	The changes that occur in the meaning, use, distribution, and importance of resources
STRAND	ES.16.1.	Types and Meanings of Resources: The characteristics of renewable, nonrenewable, and flow resources
BENCHMARK	ES.16.1.A.	Identify and explain the characteristics of renewable, nonrenewable, and flow resources, as exemplified by being able to
EXPECTATION	ES.16.1.A.1.	Explain the meaning of the term "resource" and then illustrate the idea of renewable, nonrenewable, and flow resources by sorting example photographs into each of the three categories.
ESSENTIAL ELEMENT	NGS.UG.	The Uses of Geography
STANDARD	UG.18.	How to apply geography to interpret the present and plan for the future
STRAND	UG.18.1.	Using Geography to Interpret the Present and Plan for the Future: Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events
BENCHMARK	UG.18.1.A.	Analyze geographic contexts in which current events and issues occur, as exemplified by being able to
EXPECTATION	UG.18.1.A.3.	Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.
ESSENTIAL ELEMENT	NGS.UG.	The Uses of Geography
STANDARD	UG.18.	How to apply geography to interpret the present and plan for the future
STRAND	UG.18.2.	Changes in Geographic Contexts: Places, regions, and environments will continue to change
BENCHMARK	UG.18.2.A.	Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being

able to  
 Describe how to plan for the environmental future of a place by  
 EXPECTATION UG.18.2.A.1. completing the following statements: “I will keep....” “I will change....”  
 and “I will remove....”

### National Geography Standards (NGS)

#### Science

#### Grade 4 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PR.	Places and Regions
STANDARD	PR.4.	The physical and human characteristics of places
STRAND	PR.4.2.	The Characteristics of Places: Places have physical and human characteristics
BENCHMARK	PR.4.2.A.	Describe and compare the physical characteristics of places at a variety of scales, local to global, as exemplified by being able to
EXPECTATION	PR.4.2.A.3.	Describe and compare the physical environments and landforms of different places in the world (e.g., mountains, islands, valleys or canyons, mesas).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth’s Physical Systems: There are four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere)
BENCHMARK	PS.7.1.A.	Identify attributes of Earth's different physical systems, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify examples of water features on Earth's surface that comprise the hydrosphere (e.g., oceans, rivers, lakes, water vapor, ground water, different types of precipitation).
EXPECTATION	PS.7.1.A.3.	Identify examples of landforms on Earth's surface (e.g., mountains, volcanoes, valleys, plains).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.3.	Physical Processes: Physical processes shape features on Earth’s surface
BENCHMARK	PS.7.3.B.	Describe how physical processes shape features on Earth’s surface, as exemplified by being able to
EXPECTATION	PS.7.3.B.2.	Describe the physical processes that shaped particular landform features using pictures of landforms such as canyons, mesas, and deltas.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: The components of ecosystems
BENCHMARK	PS.8.1.A.	Identify the components of different ecosystems, as exemplified by being able to

EXPECTATION	PS.8.1.A.3.	Describe local ecosystems by surveying and recording the properties of their components.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Identify and describe the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.1.	Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.
EXPECTATION	PS.8.2.A.2.	Identify and draw pictures of different plants and animals in various local ecosystems (e.g., a pond, forest, city park).
EXPECTATION	PS.8.2.A.3.	Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.14.	How human actions modify the physical environment
STRAND	ES.14.3.	Consequences for People and Environments: The consequences of human modifications of the physical environment
BENCHMARK	ES.14.3.A.	Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to
EXPECTATION	ES.14.3.A.1.	Identify and describe the changes in local habitats that resulted from human activities.
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.15.	How physical systems affect human systems
STRAND	ES.15.2.	Environmental Hazards: Environmental hazards affect human activities
BENCHMARK	ES.15.2.A.	Identify and describe the locations of environmental hazards, as exemplified by being able to
EXPECTATION	ES.15.2.A.2.	Identify on a map of the Pacific basin the occurrences of earthquakes and volcanoes and describe the pattern that results (e.g., the Pacific Ring of Fire).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.16.	The changes that occur in the meaning, use, distribution, and importance of resources
STRAND	ES.16.1.	Types and Meanings of Resources: The characteristics of renewable, nonrenewable, and flow resources
BENCHMARK	ES.16.1.A.	Identify and explain the characteristics of renewable, nonrenewable, and flow resources, as exemplified by being able to
EXPECTATION	ES.16.1.A.1.	Explain the meaning of the term "resource" and then illustrate the idea of renewable, nonrenewable, and flow resources by sorting example photographs into each of the three categories.
ESSENTIAL ELEMENT	NGS.UG.	The Uses of Geography
STANDARD	UG.18.	How to apply geography to interpret the present and plan for the future

STRAND	UG.18.1.	Using Geography to Interpret the Present and Plan for the Future: Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events
BENCHMARK	UG.18.1.A.	Analyze geographic contexts in which current events and issues occur, as exemplified by being able to
EXPECTATION	UG.18.1.A.3.	Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.
ESSENTIAL ELEMENT	NGS.UG.	The Uses of Geography
STANDARD	UG.18.	How to apply geography to interpret the present and plan for the future
STRAND	UG.18.2.	Changes in Geographic Contexts: Places, regions, and environments will continue to change
BENCHMARK	UG.18.2.A.	Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being able to
EXPECTATION	UG.18.2.A.1.	Describe how to plan for the environmental future of a place by completing the following statements: "I will keep...." "I will change...." and "I will remove...."

### National Geography Standards (NGS)

#### Science

#### Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PR.	Places and Regions
STANDARD	PR.4.	The physical and human characteristics of places
STRAND	PR.4.2.	The Characteristics of Place: Physical and human characteristics of places change
BENCHMARK	PR.4.2.A.	Explain the ways that physical processes change places, as exemplified by being able to
EXPECTATION	PR.4.2.A.2.	Explain the ways in which islands and coastal places may change as a result of sea level rise.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.B.	Analyze and explain patterns of physical features resulting from the interactions of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.B.1.	Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.A.	Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
EXPECTATION	PS.8.1.A.3.	Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.B.	Construct a model to explain how an ecosystem works, as exemplified by being able to
EXPECTATION	PS.8.1.B.1.	Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.
EXPECTATION	PS.8.1.B.3.	Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.14.	How human actions modify the physical environment
STRAND	ES.14.3.	Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK	ES.14.3.A.	Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to
EXPECTATION	ES.14.3.A.3.	Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.15.	How physical systems affect human systems
STRAND	ES.15.2.	Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global
BENCHMARK	ES.15.2.B.	Explain the causes and locations of various types of environmental hazards, as exemplified by being able to
EXPECTATION	ES.15.2.B.1.	Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).
EXPECTATION	ES.15.2.B.2.	Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.16.	The changes that occur in the meaning, use, distribution, and importance of resources
STRAND	ES.16.3.	Sustainable Resource Use and Management: Humans can manage

		resources to sustain or prolong their use
BENCHMARK	ES.16.3.A.	Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
EXPECTATION	ES.16.3.A.1.	Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

### National Geography Standards (NGS)

#### Science

#### Grade 6 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PR.	Places and Regions
STANDARD	PR.4.	The physical and human characteristics of places
STRAND	PR.4.2.	The Characteristics of Place: Physical and human characteristics of places change
BENCHMARK	PR.4.2.A.	Explain the ways that physical processes change places, as exemplified by being able to
EXPECTATION	PR.4.2.A.2.	Explain the ways in which islands and coastal places may change as a result of sea level rise.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.B.	Analyze and explain patterns of physical features resulting from the interactions of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.B.1.	Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.A.	Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
EXPECTATION	PS.8.1.A.3.	Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.B.	Construct a model to explain how an ecosystem works, as exemplified by being able to



EXPECTATION PS.8.1.B.1. Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.

EXPECTATION PS.8.1.B.3. Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).

ESSENTIAL ELEMENT NGS.ES. Environment and Society

STANDARD ES.14. How human actions modify the physical environment

STRAND ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities

BENCHMARK ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to

EXPECTATION ES.14.3.A.3. Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

ESSENTIAL ELEMENT NGS.ES. Environment and Society

STANDARD ES.15. How physical systems affect human systems

STRAND ES.15.2. Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global

BENCHMARK ES.15.2.B. Explain the causes and locations of various types of environmental hazards, as exemplified by being able to

EXPECTATION ES.15.2.B.1. Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).

EXPECTATION ES.15.2.B.2. Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.

ESSENTIAL ELEMENT NGS.ES. Environment and Society

STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources

STRAND ES.16.3. Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use

BENCHMARK ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to

EXPECTATION ES.16.3.A.1. Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

## National Geography Standards (NGS)

### Science

## Grade 7 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PR. Places and Regions

STANDARD	PR.4.	The physical and human characteristics of places
STRAND	PR.4.2.	The Characteristics of Place: Physical and human characteristics of places change
BENCHMARK	PR.4.2.A.	Explain the ways that physical processes change places, as exemplified by being able to
EXPECTATION	PR.4.2.A.2.	Explain the ways in which islands and coastal places may change as a result of sea level rise.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.B.	Analyze and explain patterns of physical features resulting from the interactions of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.B.1.	Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.A.	Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
EXPECTATION	PS.8.1.A.3.	Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.B.	Construct a model to explain how an ecosystem works, as exemplified by being able to
EXPECTATION	PS.8.1.B.1.	Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.
EXPECTATION	PS.8.1.B.3.	Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.14.	How human actions modify the physical environment
STRAND	ES.14.3.	Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK	ES.14.3.A.	Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to

EXPECTATION	ES.14.3.A.3.	Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.15.	How physical systems affect human systems
STRAND	ES.15.2.	Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global
BENCHMARK	ES.15.2.B.	Explain the causes and locations of various types of environmental hazards, as exemplified by being able to
EXPECTATION	ES.15.2.B.1.	Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).
EXPECTATION	ES.15.2.B.2.	Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.16.	The changes that occur in the meaning, use, distribution, and importance of resources
STRAND	ES.16.3.	Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use
BENCHMARK	ES.16.3.A.	Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
EXPECTATION	ES.16.3.A.1.	Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

### National Geography Standards (NGS)

#### Science

#### **Grade 8** - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PR.	Places and Regions
STANDARD	PR.4.	The physical and human characteristics of places
STRAND	PR.4.2.	The Characteristics of Place: Physical and human characteristics of places change
BENCHMARK	PR.4.2.A.	Explain the ways that physical processes change places, as exemplified by being able to
EXPECTATION	PR.4.2.A.2.	Explain the ways in which islands and coastal places may change as a result of sea level rise.
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.B.	Analyze and explain patterns of physical features resulting from the

		interactions of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.B.1.	Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.A.	Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to
EXPECTATION	PS.8.1.A.3.	Identify and describe the variable components in an ocean ecosystem that influence the interdependencies in an ecosystem (e.g., water temperature, depth, salinity, acidity, plants, fish, and marine mammals in an aquatic ecosystem).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK	PS.8.1.B.	Construct a model to explain how an ecosystem works, as exemplified by being able to
EXPECTATION	PS.8.1.B.1.	Construct a food chain or web of food chains by sequentially arranging pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals) to identify interactions within ecosystems.
EXPECTATION	PS.8.1.B.3.	Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.14.	How human actions modify the physical environment
STRAND	ES.14.3.	Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK	ES.14.3.A.	Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to
EXPECTATION	ES.14.3.A.3.	Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.15.	How physical systems affect human systems
STRAND	ES.15.2.	Environmental Hazards: The types, causes, and characteristics of environmental hazards occur at a variety of scales from local to global
BENCHMARK	ES.15.2.B.	Explain the causes and locations of various types of environmental hazards, as exemplified by being able to
EXPECTATION	ES.15.2.B.1.	Describe the physical environmental conditions that create or result in different environmental hazards (e.g., plate tectonics causing earthquakes, sea surface temperatures contributing to hurricane development in the Atlantic, strong frontal systems in thunderstorms spawning tornadoes).

EXPECTATION	ES.15.2.B.2.	Identify the tectonic plate boundaries on a map and analyze the most likely locations of future earthquakes and volcanoes based on an explanation for the causes of these environmental hazards.
ESSENTIAL ELEMENT	NGS.ES.	Environment and Society
STANDARD	ES.16.	The changes that occur in the meaning, use, distribution, and importance of resources
STRAND	ES.16.3.	Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use
BENCHMARK	ES.16.3.A.	Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
EXPECTATION	ES.16.3.A.1.	Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

### National Geography Standards (NGS)

#### Social Studies

#### Grade 3 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: The components of ecosystems
BENCHMARK	PS.8.1.A.	Identify the components of different ecosystems, as exemplified by being able to
EXPECTATION	PS.8.1.A.1.	Identify the three major components of an ecosystem (i.e., biomass, climate, and soil).
EXPECTATION	PS.8.1.A.2.	Identify examples of each ecosystem component (e.g., pine trees versus grasslands, low versus high rainfall, clay versus sandy soils).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Identify and describe the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.1.	Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.
EXPECTATION	PS.8.2.A.3.	Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.3.	Characteristics and Geographic Distribution of Biomes: The characteristics

		of biomes
BENCHMARK	PS.8.3.A.	Describe the characteristics of biomes, as exemplified by being able to
EXPECTATION	PS.8.3.A.1.	Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.
EXPECTATION	PS.8.3.A.2.	Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).
EXPECTATION	PS.8.3.A.3.	Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallow, tropical marine waters).

### National Geography Standards (NGS)

#### Social Studies

#### Grade 4 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.1.	Components of Ecosystems: The components of ecosystems
BENCHMARK	PS.8.1.A.	Identify the components of different ecosystems, as exemplified by being able to
EXPECTATION	PS.8.1.A.1.	Identify the three major components of an ecosystem (i.e., biomass, climate, and soil).
EXPECTATION	PS.8.1.A.2.	Identify examples of each ecosystem component (e.g., pine trees versus grasslands, low versus high rainfall, clay versus sandy soils).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Identify and describe the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.1.	Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.
EXPECTATION	PS.8.2.A.3.	Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.3.	Characteristics and Geographic Distribution of Biomes: The characteristics of biomes
BENCHMARK	PS.8.3.A.	Describe the characteristics of biomes, as exemplified by being able to
EXPECTATION	PS.8.3.A.1.	Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.

EXPECTATION	PS.8.3.A.2.	Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).
EXPECTATION	PS.8.3.A.3.	Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallow, tropical marine waters).

### National Geography Standards (NGS)

#### Social Studies

#### Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.A.	Identify and describe patterns in the environment that result from the interaction of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.2.	Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

### National Geography Standards (NGS)

#### Social Studies

#### Grade 6 - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.A.	Identify and describe patterns in the environment that result from the interaction of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and

		biomes).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.2.	Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

### National Geography Standards (NGS)

#### Social Studies

#### **Grade 7** - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.A.	Identify and describe patterns in the environment that result from the interaction of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.2.	Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

### National Geography Standards (NGS)

#### Social Studies

#### **Grade 8** - Adopted: 2012

ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.7.	The physical processes that shape the patterns of Earth's surface
STRAND	PS.7.1.	Components of Earth's Physical Systems: The four components of Earth's



		physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent
BENCHMARK	PS.7.1.A.	Identify and describe patterns in the environment that result from the interaction of Earth's physical processes, as exemplified by being able to
EXPECTATION	PS.7.1.A.2.	Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).
ESSENTIAL ELEMENT	NGS.PS.	Physical Systems
STANDARD	PS.8.	The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND	PS.8.2.	Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK	PS.8.2.A.	Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
EXPECTATION	PS.8.2.A.2.	Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

### Next Generation Science Standards (NGSS)

#### Science

### Grade 3 - Adopted: 2013

STRAND	NGSS.3-LS.	LIFE SCIENCE
TITLE	3-LS1.	From Molecules to Organisms: Structures and Processes Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	3-LS1-1.	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
STRAND	NGSS.3-LS.	LIFE SCIENCE
TITLE	3-LS4.	Biological Evolution: Unity and Diversity Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	3-LS4-2.	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
PERFORMANCE EXPECTATION	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.
PERFORMANCE EXPECTATION	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.

### Next Generation Science Standards (NGSS)

## Science

### Grade 4 - Adopted: 2013

STRAND	NGSS.4-LS.	LIFE SCIENCE
TITLE	4-LS1.	From Molecules to Organisms: Structures and Processes Students who demonstrate understanding can: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
PERFORMANCE EXPECTATION	4-LS1-1.	

### Next Generation Science Standards (NGSS)

## Science

### Grade 5 - Adopted: 2013

STRAND	NGSS.5-PS.	PHYSICAL SCIENCE
TITLE	5-PS3.	Energy Students who demonstrate understanding can: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
PERFORMANCE EXPECTATION	5-PS3-1.	
STRAND	NGSS.5-LS.	LIFE SCIENCE
TITLE	5-LS2.	Ecosystems: Interactions, Energy, and Dynamics Students who demonstrate understanding can: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
PERFORMANCE EXPECTATION	5-LS2-1.	
STRAND	NGSS.5-ESS.	EARTH AND SPACE SCIENCE
TITLE	5-ESS3.	Earth and Human Activity Students who demonstrate understanding can: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
PERFORMANCE EXPECTATION	5-ESS3-1.	

### Next Generation Science Standards (NGSS)

## Science

### Grade 6 - Adopted: 2013

STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS1.	From Molecules to Organisms: Structures and Processes Students who demonstrate understanding can: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
PERFORMANCE EXPECTATION	MS-LS1-5.	
STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics Students who demonstrate understanding can:

PERFORMANCE EXPECTATION	MS-LS2-2.	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
PERFORMANCE EXPECTATION	MS-LS2-3.	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
PERFORMANCE EXPECTATION	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
PERFORMANCE EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STRAND	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
TITLE	MS-ESS2.	Earth's Systems Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	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.

### Next Generation Science Standards (NGSS)

#### Science

#### Grade 7 - Adopted: 2013

STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS1.	From Molecules to Organisms: Structures and Processes Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	MS-LS1-5.	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	MS-LS2-2.	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
PERFORMANCE EXPECTATION	MS-LS2-3.	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
PERFORMANCE EXPECTATION	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
PERFORMANCE EXPECTATION	MS-LS2-5.	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STRAND	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
TITLE	MS-ESS2.	Earth's Systems Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	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.

**Next Generation Science Standards (NGSS)**  
**Science**

**Grade 8** - Adopted: 2013

STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS1.	From Molecules to Organisms: Structures and Processes Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	MS-LS1-5.	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
STRAND	NGSS.MS-LS.	LIFE SCIENCE
TITLE	MS-LS2.	Ecosystems: Interactions, Energy, and Dynamics Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	MS-LS2-2.	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
PERFORMANCE EXPECTATION	MS-LS2-3.	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
PERFORMANCE EXPECTATION	MS-LS2-4.	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
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STRAND	NGSS.MS-ESS.	EARTH AND SPACE SCIENCE
TITLE	MS-ESS2.	Earth's Systems Students who demonstrate understanding can:
PERFORMANCE EXPECTATION	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.