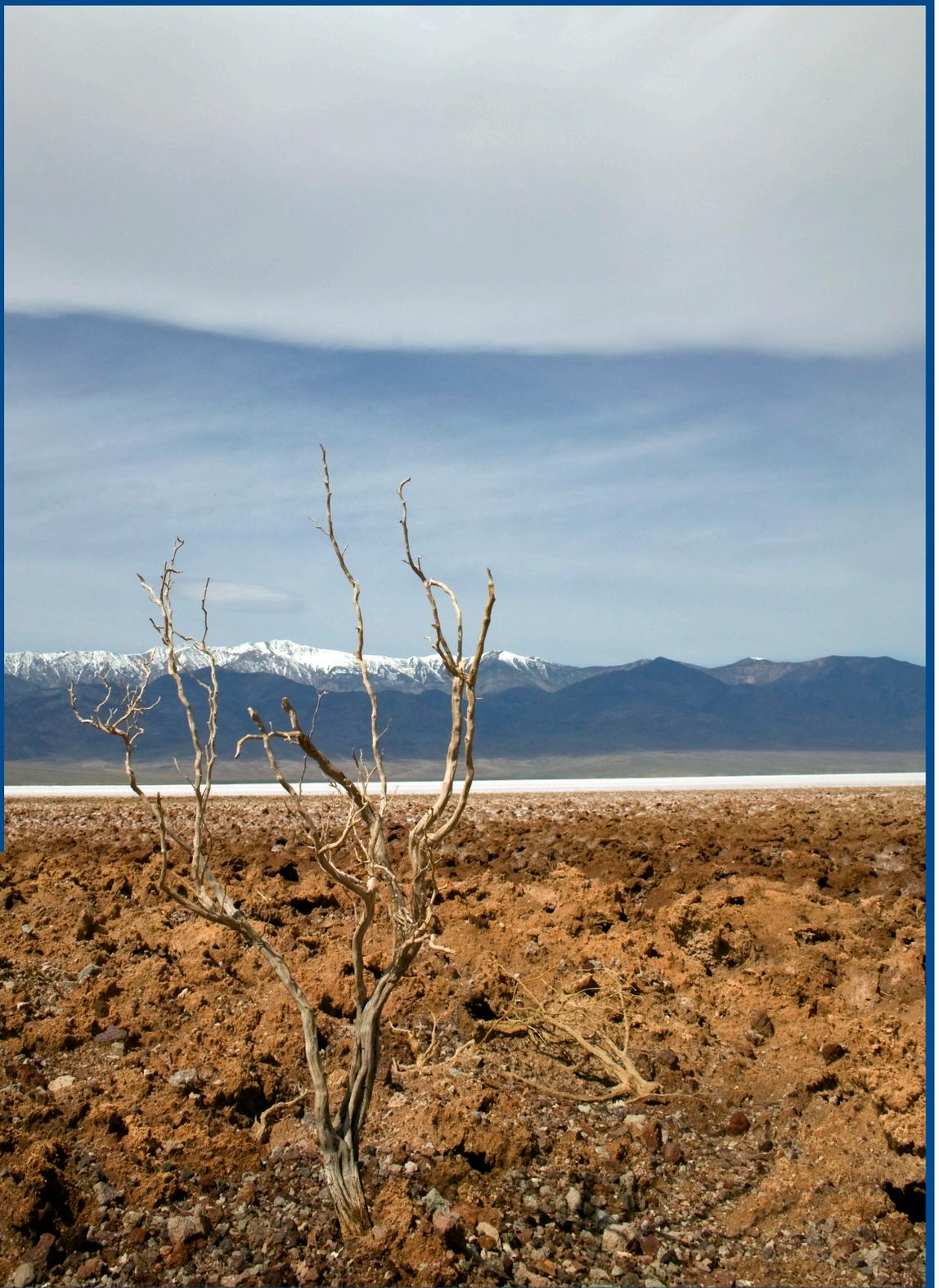


6

Science Standard
6.5.d.



Playing the Same Role

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

Linda Adams, Secretary, California Environmental Protection Agency
Patty Zwarts, Deputy Secretary for Policy and Legislation, California Environmental Protection Agency
Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
Mark Leary, Executive Director, California Integrated Waste Management Board
Mindy Fox, Director, Office of Education and the Environment, California Integrated Waste Management Board

Key Partners:

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Lesson 1 Here a Pig, There a Pig...

None required for this lesson.

Lesson 2 What is a Biome?

None required for this lesson.

Lesson 3 What Lives in Which Biome?

None required for this lesson.

Lesson 4 Just Playing a Role

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Lesson 5 Human Uses of Organisms Across Biomes

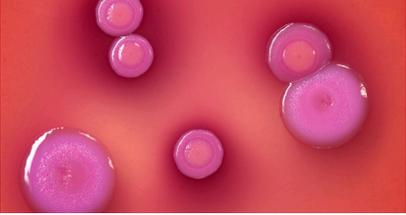
None required for this lesson.

Assessments

Playing the Same Role—Traditional Unit Assessment Master	10
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Alpine: Food Web Cards

Lesson 4

<p>✂</p> <p>Lichen</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Himalayan tahr, brown bear, pika, bacteria</p>	<p>✂</p> <p>Rhododendron</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Himalayan tahr, bacteria</p>	<p>✂</p> <p>Bacteria</p>  <p>Gets energy from: Decaying plants and animals Provides matter and energy to: Not shown in this food web</p>
<p>✂</p> <p>Pika</p>  <p>Gets energy from: Lichen Provides matter and energy to: Snow leopard, brown bear, Himalayan griffon vulture, bacteria</p>	<p>Himalayan Tahr</p>  <p>Gets energy from: Lichen, rhododendron Provides matter and energy to: Snow leopard, bacteria, Himalayan griffon vulture</p>	<p>Brown Bear</p>  <p>Gets energy from: Lichen, pika Provides matter and energy to: Himalayan griffon vulture, bacteria</p>
<p>✂</p> <p>Snow Leopard</p>  <p>Gets energy from: Himalayan tahr Provides matter and energy to: Himalayan griffon vulture, bacteria, pika</p>	<p>Himalayan Griffon Vulture</p>  <p>Gets energy from: Snow leopard, brown bear, pika, Himalayan tahr Provides matter and energy to: Bacteria</p>	

Deciduous: Food Web Cards

Lesson 4

<p>✂</p> <p>Elderberry</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Land snail, hermit thrush, fungi, bear</p>	<p>✂</p> <p>Oak Tree</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Black bear, fungi</p>	<p>✂</p> <p>Fungi</p>  <p>Gets energy from: Decaying plants and animals Provides matter and energy to: Land snail</p>
<p>✂</p> <p>Land Snail</p>  <p>Gets energy from: Elderberry and fungi Provides matter and energy to: Black bear and red-spotted newt</p>	<p>Red-spotted Newt</p>  <p>Gets energy from: Fungi, plants, and land snail Provides matter and energy to: Fungi</p>	<p>Hermit Thrush</p>  <p>Gets energy from: Insect, land snail, elderberry Provides matter and energy to: Bobcat, black bear, fungi</p>
<p>✂</p> <p>Black Bear</p>  <p>Gets energy from: Land snail, oak tree, hermit thrush, elderberry Provides matter and energy to: Fungi</p>	<p>Bobcat</p>  <p>Gets energy from: Land snail, hermit thrush Provides matter and energy to: Fungi</p>	<p>✂</p>



Ocotillo



Gets energy from: Sunlight
Provides matter and energy to: Ants, kangaroo rat, fungi



Prickly Pear Cactus



Gets energy from: Sunlight
Provides matter and energy to: Desert tortoise, fungi



Fungi



Gets energy from: Decaying plants and animals
Provides matter and energy to: Not shown in this food web



Desert Tortoise



Gets energy from: Prickly pear cactus, wildflowers, grasses
Provides matter and energy to: Kit fox, fungi

Kangaroo Rat



Gets energy from: Ocotillo, creosote bush
Provides matter and energy to: Great horned owl, kit fox, fungi

Ant



Gets energy from: Ocotillo
Provides matter and energy to: Black-collared lizard, fungi



Black-collared Lizard



Gets energy from: Ants, flies
Provides matter and energy to: Fungi, snakes, kit fox

Kit Fox



Gets energy from: Kangaroo rat, desert tortoise, black-collared lizard
Provides matter and energy to: Great horned owl, fungi

Great Horned Owl



Gets energy from: Kangaroo rat, kit fox
Provides matter and energy to: Fungi



Grassland: Food Web Cards

Lesson 4

<p>✂</p> <p>Bluestem Grass</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Bison, prairie dog, fungi</p>	<p>✂</p> <p>Purple Coneflower</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Pronghorn, prairie dog, fungi</p>	<p>✂</p> <p>Fungi</p>  <p>Gets energy from: Decaying plants and animals Provides matter and energy to: Not shown in this food web</p>
<p>✂</p> <p>Prairie Dog</p>  <p>Gets energy from: Bluestem grass, purple coneflower Provides matter and energy to: Coyote, red-tailed hawk, prairie rattlesnake, fungi</p>	<p>Pronghorn</p>  <p>Gets energy from: Purple coneflower Provides matter and energy to: Coyote, fungi</p>	<p>Bison</p>  <p>Gets energy from: Bluestem grass Provides matter and energy to: Fungi</p>
<p>✂</p> <p>Coyote</p>  <p>Gets energy from: Pronghorn, prairie dog, prairie rattlesnake, fruiting plants Provides matter and energy to: Fungi</p>	<p>Prairie Rattlesnake</p>  <p>Gets energy from: Prairie dog Provides matter and energy to: Red-tailed hawk, coyote, fungi</p>	<p>Red-tailed Hawk</p>  <p>Gets energy from: Prairie dog, prairie rattlesnake Provides matter and energy to: Fungi</p>



Huckleberry



Gets energy from: Sunlight
Provides matter and energy to: Raccoon, Roosevelt elk, fungi



Algae



Gets energy from: Sunlight
Provides matter and energy to: Aquatic insects, fungi



Fungi



Gets energy from: Decaying plants and animals
Provides matter and energy to: Banana slug



Banana Slug



Gets energy from: Fungi and plants
Provides matter and energy to: Raccoon, fungi

Dragonfly



Gets energy from: Algae and other aquatic insects
Provides matter and energy to: Raccoon, coho salmon, fungi

Roosevelt Elk



Gets energy from: Huckleberry
Provides matter and energy to: Cougar, fungi



Raccoon



Gets energy from: Huckleberry, aquatic insects, banana slug, coho salmon
Provides matter and energy to: Cougar, fungi

Coho Salmon (young)



Gets energy from: Aquatic insects
Provides matter and energy to: Raccoon, fungi

Cougar



Gets energy from: Raccoon, Roosevelt elk
Provides matter and energy to: Fungi



Savanna: Food Web Cards

Lesson 4



Wattle Tree



Gets energy from: Sunlight
Provides matter and energy to: Bacteria, ants, emu



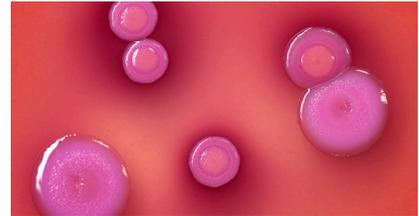
Gum Tree



Gets energy from: Sunlight
Provides matter and energy to: Termites, blue-faced honeyeater, bacteria



Bacteria



Gets energy from: Decaying plants and animals
Provides matter and energy to: Not shown in this food web



Emu



Gets energy from: Wattle tree
Provides matter and energy to: Dingo, bacteria

Termite



Gets energy from: Gum tree
Provides matter and energy to: Echidna, bacteria, blue-faced honeyeater

Blue-faced Honeyeater



Gets energy from: Gum tree, termites
Provides matter and energy to: Dingo, bacteria



Echidna



Gets energy from: Ants, termites
Provides matter and energy to: Dingo, bacteria

Dingo



Gets energy from: Echidna, emu, blue-faced honeyeater
Provides matter and energy to: Bacteria





Northern Bluebell



Gets energy from: Sunlight
Provides matter and energy to: Moose, short-horned grasshopper, bacteria



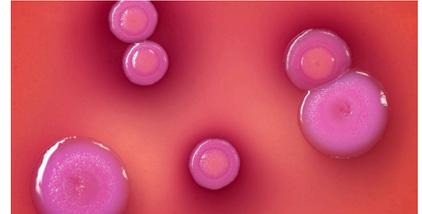
Mountain Juneberry



Gets energy from: Sunlight
Provides matter and energy to: Short-horned grasshopper, moose, pine marten, belted kingfisher, bacteria



Bacteria



Gets energy from: Decaying plants and animals
Provides matter and energy to: Not shown in this food web



Short-horned Grasshopper



Gets energy from: Northern bluebell, mountain juneberry
Provides matter and energy to: Belted kingfisher, pine marten, leopard frog, bacteria

Moose



Gets energy from: Northern bluebell, mountain juneberry
Provides matter and energy to: Timber wolf, bacteria

Belted Kingfisher



Gets energy from: Mountain juneberry, short-horned grasshopper, northern leopard frog
Provides matter and energy to: Pine marten, bacteria



Pine Marten



Gets energy from: Mountain juneberry, northern leopard frog, short-horned grasshopper, belted kingfisher
Provides matter and energy to: Bacteria

Northern Leopard Frog



Gets energy from: Short-horned grasshopper
Provides matter and energy to: Pine marten, belted kingfisher, bacteria

Timber Wolf



Gets energy from: Moose
Provides matter and energy to: Bacteria



<p>✂</p> <p>Reindeer Moss</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Human beings, lemming, caribou, fungi</p>	<p>✂</p> <p>Sedge</p>  <p>Gets energy from: Sunlight Provides matter and energy to: Caribou, grizzly bear, lemming, fungi</p>	<p>✂</p> <p>Fungi</p>  <p>Gets energy from: Decaying plants and animals Provides matter and energy to: Not shown in this food web</p>
<p>✂</p> <p>Lemming</p>  <p>Gets energy from: Sedge, reindeer moss Provides matter and energy to: Grizzly bear, mosquitoes, fungi</p>	<p>Caribou</p>  <p>Gets energy from: Reindeer moss, sedge Provides matter and energy to: Human beings, grizzly bear, fungi, mosquito</p>	<p>Grizzly Bear</p>  <p>Gets energy from: Caribou, sedge, lemming Provides matter and energy to: Mosquitoes, fungi</p>
<p>✂</p> <p>Mosquitoes</p>  <p>Gets energy from: Human beings, grizzly bear, lemming, caribou Provides matter and energy to: Fungi</p>	<p>Human Beings</p>  <p>Gets energy from: Caribou, reindeer moss Provides matter and energy to: Mosquitoes, fungi</p>	

Name: _____

Part 1

Instructions: Select the best answer and circle the correct letter. (2 points each)

1. One way that organisms depend on one another in an ecosystem is through _____.
 - a. the water cycle
 - b. energy flow
 - c. a biome
 - d. the climate

2. Biomes are defined by their _____.
 - a. climate
 - b. latitude
 - c. vegetation
 - d. All of the above.

3. A biome's climate is described by showing its yearly _____.
 - a. precipitation
 - b. latitude and vegetation
 - c. temperature
 - d. temperature and precipitation

4. Which of the following is true about biomes?
 - a. They all have ecosystems made up of living organisms.
 - b. They are always cold and dry in the winter months.
 - c. They are only found on American and Australian continents.
 - d. They do not exist in the polar regions.

5. _____ are not found in all biomes.
 - a. Producers
 - b. Feral pigs
 - c. Consumers
 - d. Decomposers

6. Which of the following organisms plays the role of consumer in all biomes?
 - a. buffalos
 - b. pigs
 - c. humans
 - d. camels

Name: _____

Part 2

Instructions: Match each biome to its correct set of characteristics. (2 points each)

Biome

Tundra

Taiga

**Deciduous
Forest**

Desert

Rainforest

Savanna

Grassland

Chaparral

Alpine

Characteristics

Warm in winter, hot in summer; precipitation in winter, but not usually in summer. Scrub plants are most common in this biome; vegetation can survive dry conditions.

Found in high elevations; has very cold winters and cool, short summers. Vegetation grows close to the ground and can survive windy, frozen conditions.

Has the coldest temperatures of all biomes and very little precipitation. The ground stays frozen all year. Vegetation is made up of lichens and small shrubs that grow close to the ground.

This biome has the most land area of all the biomes; conifers are much of the vegetation. Long, cold winters and mild, wet summers.

Large temperature and precipitation difference between winter and summer. Wildfires rejuvenate the ecosystems in this biome. Grasses make up most of the vegetation.

Warm or hot year-round with lots of precipitation. Many tall straight trees grow in this biome and form a canopy; all of the vegetation can survive in very wet conditions.

Summers are warm and winters are cold. There is precipitation most of the year. Vegetation includes trees, mosses, lichens, and ferns. The trees lose their leaves in the winter to survive the cold.

Located near the Equator. There are wet and dry seasons in this biome, but the temperatures stay warm year-round. Vegetation is made up of grasses, shrubs, and scattered trees.

Temperatures can shift dramatically between day and night. The vegetation survives dry conditions. Plants have spines, hairs, or tough, leathery leaves. Some plants are capable of storing a lot of water.

Comparing Biomes

Name: _____

	Biome: <input type="text"/>	Biome: <input type="text"/>
Describe the typical vegetation.	<hr/>	<hr/>
Describe at least two characteristics that plants living in the biome might have.	<hr/>	<hr/>
Name one producer, one consumer, and one decomposer that might live in the ecosystems associated with the biome.	Producer: _____ Consumer: _____ Decomposer: _____	Producer: _____ Consumer: _____ Decomposer: _____

Comparing Biomes

Name: _____

Comparing Biomes Scoring Tool

Component	3 points	2 points	1 point
Chooses the correct photograph from the Biome Photographs and pastes it in place.	n/a	Correctly identifies both biomes by placing two correct photographs.	Correctly identifies one biome by placing one correct photograph.
Describes the location and climate of the biome.	Correctly describes the location, typical temperature, and precipitation of both biomes and describes seasonal differences.	Correctly describes the location, typical temperature, and precipitation of both biomes.	Correctly describes the location, typical temperature, and precipitation of one biome.
Describes the typical vegetation.	Correctly describes the prominent vegetation in both biomes and some of the characteristic features (for example, shrubs close together, tall trees).	Correctly describes the prominent type of vegetation found in both biomes.	Correctly describes the prominent type of vegetation found in one biome.
Describes the characteristics that plants associated with the biome might have.	Correctly describes three or more characteristics typically found in plants from each biome.	Correctly describes two characteristics typically found in plants from each biome.	Correctly describes two characteristics typically found in plants from only one of their biomes, or describes only one characteristic.
Names one producer, one consumer, and one decomposer that might live in the ecosystems associated with the biome.	Correctly identifies appropriate species for all three ecological roles in both biomes.	Correctly identifies appropriate species for two of the ecological roles in both biomes, or correctly identifies appropriate species for all the ecological roles in only one biome.	Correctly identifies appropriate species for one of the ecological roles in both biomes, or correctly identifies appropriate species for two of the ecological roles in one biome.
Identifies organisms in the same ecological role that is used by humans.	Correctly identifies all four organisms in each biome.	Correctly identifies three of the four organisms in each biome.	Correctly identifies two of the four organisms in each biome.

Biome Photographs

Alternative Unit Assessment Master





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