Student Name _____

Teacher Name _____

School _____

System _____

BIOLOGY I

Item Sampler

Tennessee End of Course Assessment
Biology I Form 3

Reporting Category 3: Interdependence

PEARSON

Developed and published under contract with State of Tennessee Department of Education by the Educational Measurement group of Pearson, a business of NCS Pearson, Inc., 2510 North Dodge Street, Iowa City, Iowa 52245. Copyright © 2012 by State of Tennessee Department of Education. All rights reserved. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of State of Tennessee Department of Education.

Contents

Introduction to Biology I 4
Content of tests 4
Test development 4
Test administration 4
Tips for Taking the Test 5
Preparing for the test 5
Before the test 5
During the test 5
Directions for Using the Item Sampler 6
Biology I Item Sampler 7
Answer Key with Reporting Category and Performance Indicator 31

Introduction to Biology I

Content of tests

The testing program titled the *Tennessee End of Course Assessment* was established to meet the Tennessee mandate for end of course assessments in Tennessee secondary schools. These tests measure the Tennessee State Performance Indicators. Subject areas covered by the end of course assessments include Mathematics, Language Arts, History, and Science.

Test development

For the *Tennessee End of Course Assessment*, a staff of writers – composed of both teachers and professional test developers experienced in each of the content areas – researched and wrote the items. Professional editors and content specialists carefully reviewed all items and test directions for content and accuracy. To provide a large pool of items for final test selection, the test developers created approximately twice as many items as were needed in the final editions of the tests.

After tryout tests were administered, student responses were analyzed. Professional content editors and researchers carefully reviewed items, their data, and test directions for content, suitability, and accuracy before including particular items and test directions in operational tests.

Test administration

Tennessee End of Course Assessments are given to students as they near the end of courses that are included in the program. Tests may be given midyear for block schedules or near the end of the school year.

You will have ample time to read and answer each of the questions. The Biology I test has been designed to be administered in one session and is not timed.

Tips for Taking the Test

Preparing for the test

- Review this Tennessee End of Course Item Sampler for Biology I carefully and thoroughly.
- Acquire the Tennessee End of Course Practice Test for Biology I, and take the test several times.
- Become familiar with the correct way to mark answers on the answer sheet.

Before the test

- Get a good night's sleep. To do your best, you need to be rested.

During the test

- Relax. It is normal to be somewhat nervous before the test. Try to relax and not worry.
- Listen. Listen to and read the test directions carefully. Ask for an explanation of the directions if you do not understand them.
- Plan your time. Do not spend too much time on any one question. If a question seems to take too long, skip it and return to it later. First answer all questions that you are sure about.
- Think. If you are not sure how to answer a question, read it again and try your best to answer the question. Rule out answer choices that you know are incorrect and choose from those that remain.

Directions for Using the Item Sampler

This Item Sampler for Biology I provides specific information to students and teachers. It contains examples of different item types for each Performance Indicator that may be tested in any given end of course test administration. Performance Indicators have been grouped by Reporting Categories. These Reporting Categories will be used to report information regarding performance on the end of courts test to students, teachers, schools, and systems.

The items in this Item Sampler will not be found in the end of course tests. The number of items in this Item Sampler does not reflect the emphasis of content on the test. In order to identify the emphasis of content, the End of Course Assessment Practice Test for Biology I should be used. The Practice Test gives a better representation of content emphasis across Reporting Categories and Performance Indicators.

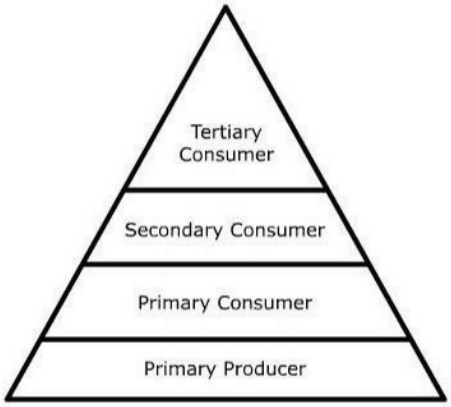
An Answer Key is located in Page 31. Use it to check your answers. Review items that you get wrong.

Reporting Category: Interdependence

Numbers 1 through 44

Performance Indicator: 3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.

1. **In a marine ecosystem, a decrease in secondary consumers could cause a decrease in primary producers. A marine food pyramid is shown below.**

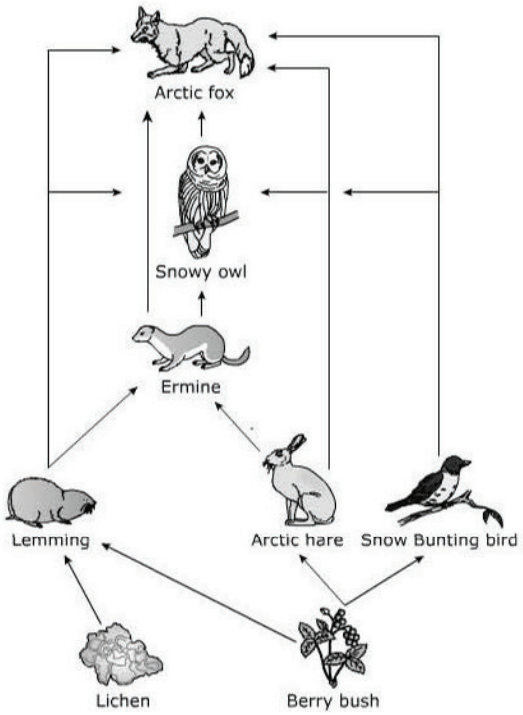


What would best explain the decrease in primary producers?

- A an increase in solar energy
- B a decrease in oxygen levels in the water
- C a decrease in the population of tertiary consumers
- D an increase in the population of primary consumers

Performance Indicator: 3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.

2. **A tundra food web is shown below.**



What would most likely happen if the lemming population significantly decreased?

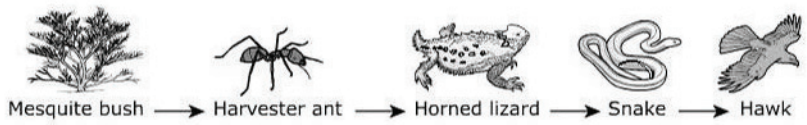
- A The bird population would increase.
- B The rabbit population would increase.
- C The ermine population would decrease.
- D The arctic fox population would decrease.

Go On ▶

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

3.

A desert food chain is shown below.



What would likely be the result if a pesticide is used to reduce the number of harvester ants?

- **A** an increase in snakes and a decrease in hawks
- **B** a decrease in snakes and an increase in hawks
- **C** a decrease in mesquite bushes and an increase in horned lizards
- **D** an increase in mesquite bushes and a decrease in horned lizards

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

4.

A lightning strike causes a grassfire that burns the producers in a grassland ecosystem. What would <u>best</u> explain why some of the primary consumers are unaffected by the grassfire?

- **A** They live in burrows.
- **B** They climbed up trees.
- **C** They can survive by only drinking water.
- **D** They are able to produce their own food.

Go On ▶

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

5.

Global warming has led to a decrease in ice in both the Arctic and Antarctic regions. The table below shows some animals in these areas and how they use their habitat.

Animal	Habitat	Area used for hunting	Area used for raising young
Polar bear	Arctic	Ice	Ice
Ringed seal	Arctic	Water	Ice
Emperor penguin	Antarctica	Water	Ice
Chinstrap penguin	Antarctica	Water	Ice and land

Which population of animals would be least affected by global warming?

- **A** polar bear
- **B** ringed seal
- **C** emperor penguin
- **D** chinstrap penguin

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

6.

Pond ecosystems require nitrogen, phosphorus, and potassium in order to support the growth of algae. This increase in algal growth can cause in increase in decaying matter in the pond. What long-term effect might an increase in algal growth have on a pond ecosystem?

- **A** an increase of the fish population in the ecosystem
- **B** an increase in available food for the fish in the ecosystem
- **C** a population increase in other producers, such as water lilies, in the ecosystem
- **D** a decrease in the amount of available oxygen necessary for fish in the ecosystem

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

7.

Red-cockaded woodpeckers feed by pecking away the bark of old-age living pine trees and eating the insects found below the bark. They also require old-age living pine trees to make their nesting and roosting cavity. Young and dead pine trees are not suitable habitats or suitable foraging materials for these birds. Additionally, if the tree they are nesting in dies or if the shrub understory of the area approaches the height of the cavity in the tree, they will abandon the tree. The carrying capacity of the red-cockaded woodpeckers would be positively affected by an increase in which organism?

- **A** dead pine trees
- **B** high shrub understory
- **C** young living pine trees
- **D** old-age living pine trees

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

8.

A population of rabbits is below the carrying capacity in a forest habitat that has many resources and few predators. Which statement <u>best</u> describes what could happen to the rabbit population during a period of time?

- **A** The population of rabbits will remain stable.
- **B** Some rabbits will migrate to find additional resources.
- **C** The rabbits will become susceptible to disease which will decrease the population.
- **D** The population of rabbits will increase in the absence of adverse environmental pressures.

Go On ▶

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

9.

Human-built dams across rivers have both positive and negative effects on the environment. What effect does building dams have on environments downstream?

- **A** a positive effect due to increasing the natural flow of nutrients
- **B** a negative effect due to decreasing the natural flow of nutrients
- **C** a positive effect due to reducing populations of non-native species
- **D** a negative effect due to increasing the populations of native species

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

10.

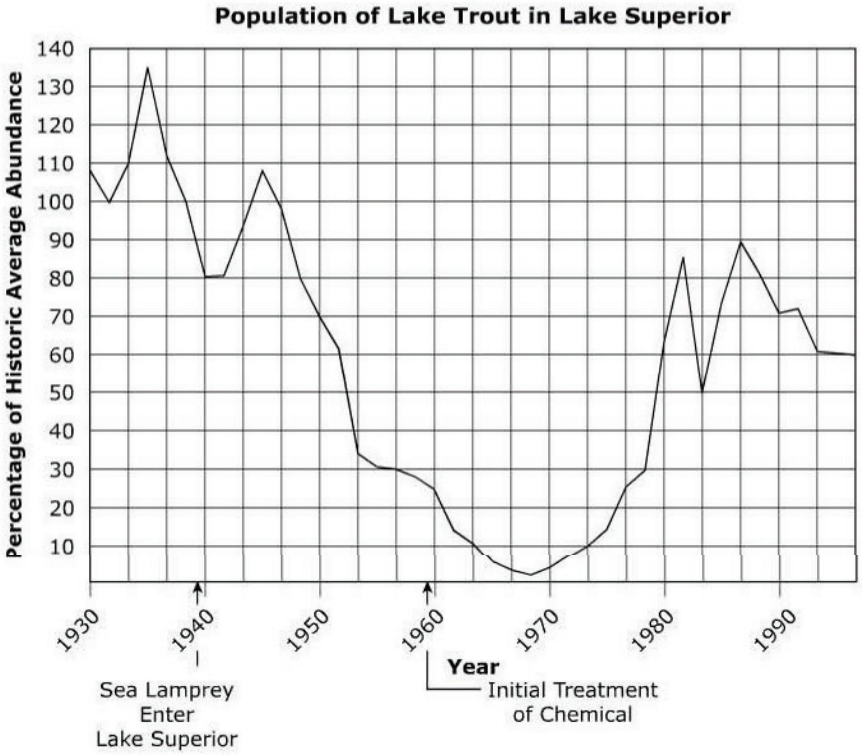
Forest fires are often started by lightning. In the past, forestry services would extinguish the fires before they spread. Today, many forestry services practice controlled burning of forests. What is the <u>most</u> likely reason forestry practices have changed?

- **A** Controlled burnings return nutrients to the soil.
- **B** Controlled burnings prevent the logging of trees.
- **C** Controlled burnings maintain the population growth of animal species.
- **D** Controlled burnings increase the amount of water runoff after a storm.

Go On ▶

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

11. **Lake trout are freshwater fish that inhabit many of the Great Lakes. In the 1830s humans built canals and locks from the Atlantic Ocean to the Great Lakes to increase trade. The canals and locks enabled invasive sea lamprey to enter the Great Lakes. In 1958 biologists began applying a chemical into streams flowing into Lake Superior that was specifically toxic to sea lampreys. The graph shows the population of lake trout in Lake Superior during a 65-year period.**



What most likely would have happened if the sea lamprey population was not controlled?

- **A** The lake trout might have developed immunity to the sea lamprey.
- **B** The lake trout might have become extinct in Lake Superior.
- **C** The lake trout would have migrated to the Atlantic Ocean.
- **D** The lake trout would have increased reproductively.

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

12.

Coral reefs are important to many ocean ecosystems because they provide food and shelter for numerous marine organisms. Climate changes that lead to increased water temperatures can slow the growth of coral. Scientists monitor the physical conditions and species distribution of coral reefs and try to temporarily alter conditions when they are harmful to coral reefs. Which of these actions by scientists would best accomplish the goal of preserving coral reefs?

- **A** protect the biodiversity of coral reefs
- **B** restrict regulations concerning coral reefs
- **C** isolate predators from coral reef organisms
- **D** identify new species associated with coral reefs

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

13.

Which human activity would most likely cause the biggest long-term threat to the biodiversity in a forest ecosystem?

- **A** burning a section of trees to stop a fire
- **B** constructing a road through the forest
- **C** planting native species on abandoned farmland
- **D** cutting down infected trees to stop the spread of a disease in the forest

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

14. **Reindeer, caribou, arctic hare, arctic foxes, mosses, and lichens are just a few of the organisms that live in the tundra and depend on it for habitat and food. Which environmental change would most likely affect the biodiversity of the tundra?**

- **A** decrease in floods
- **B** increase in farming
- **C** decrease in wildfires
- **D** increase in temperatures

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

15. **Biodiversity is important because it boosts the productivity of an ecosystem. Each species has an important role. For example, honeybees are necessary for plant biodiversity. In recent years, the number of honeybees has declined significantly. How does the decline in the number of honeybees most affect plant biodiversity?**

- **A** Fewer pollinators mean less plant reproduction.
- **B** Less honey production leads to a reduced amount of food for plants.
- **C** Less carbon dioxide from bees leads to a decrease in photosynthesis by plants.
- **D** Fewer honeybees lead to the extinction of the most common, widespread plants.

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

16. **The oak savanna ecosystem is dependent on wildfires and controlled burnings to manage the growth of invasive and nonnative shrubs and trees and to help maintain the native semi-open ecosystem. Which statement best describes the impact invasive plant species could have if not maintained by fires?**

- **A** They could decrease the populations of native plant and animal species.
- **B** They could decrease the amount of oxygen available for the native animals.
- **C** They could increase the amount of food available to native plant and animal species.
- **D** They could increase the amount of nitrogen in the soil that is toxic to the native plants.

Performance Indicator: 3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

17. **The population of the Karner blue butterfly has decreased by 99%. Karner butterfly larvae feed only on the leaves of the blue lupine. Blue lupines grow in dry, sandy soils found in oak savannas and pine barrens. The habitat of blue lupines is maintained by wildfires, prescribed burns, mowing, and grazing. Which activity would lead to a further decrease in the population of Karner blue butterflies?**

- **A** initiating state burning bans
- **B** increased logging of pine forests
- **C** decrease in the number of blue lupine competitors
- **D** planting large amounts of blue lupines in oak savannas

Go On ▶

Performance Indicator: 3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

18.

A fish species depends on high oxygen concentration in lake water. How could an increase in photosynthetic algae concentration in the water trigger the extinction of this fish species?

- **A** The algae could alter water pH by excreting wastes, making oxygen less soluble in the water.
- **B** The algae could block enough sunlight that the water cools, reducing the amount of oxygen the water can hold.
- **C** The algae could produce material leading to an increase in decomposer populations, which would deplete available oxygen.
- **D** The algae could directly compete with the fish for oxygen, which would gradually eliminate the fish due to algae's ability to reproduce rapidly.

Performance Indicator: 3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

19.

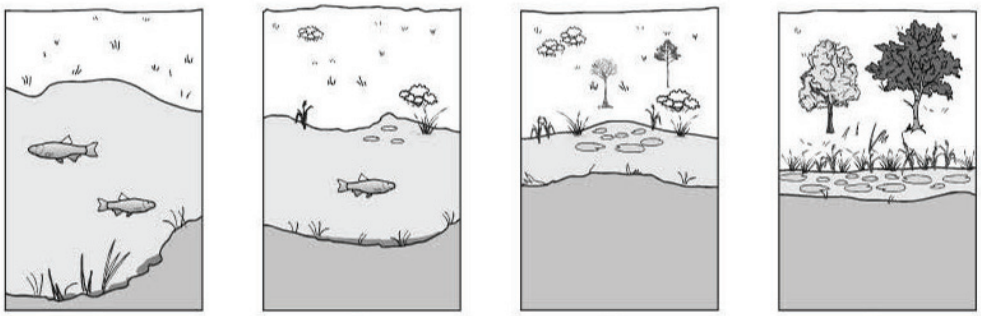
A region has average winter temperatures of 2°C. A climate change results in a drop in winter temperatures to an average of −8°C. A mammal species lives in the region. Which property in the species would <u>most</u> likely cause the mammal to become extinct as a result of the climate change?

- **A** The species grows a thicker winter coat of fur and a thinner summer coat of fur.
- **B** The species grows a whiter winter coat of fur and a browner summer coat of fur.
- **C** The species has relatively unvarying white fur.
- **D** The species has relatively unvarying thin fur.

Go On ▶

Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

20. **The diagram shows an example of primary succession.**



1 2 3 4

Which factor is responsible for beginning the process of change in the ecosystem from Diagram 1 to Diagram 4?

- **A** climate cooling in the area
- **B** organic matter from producers
- **C** breakdown of rocks by pioneer plants
- **D** action of roots by large trees in the area

Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

21. **Primary succession occurs in a place where an ecosystem has not been established. Which occurrence represents a first step in the process of primary succession?**

- **A** a forest of pine trees develops
- **B** grasses and shrubs appear
- **C** a forest of shade trees develops
- **D** lichens appear on bare rocks

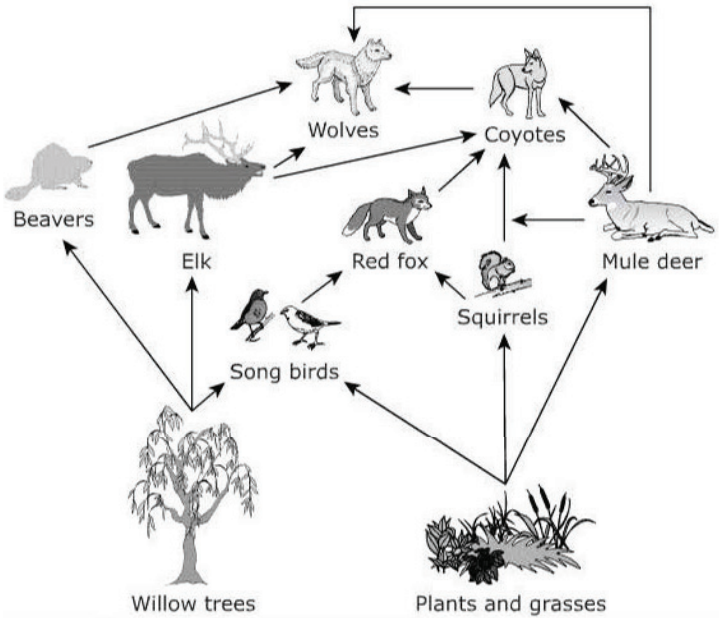
Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

22. **Which of these factors is <u>most</u> important for reestablishing plants and trees on an abandoned farm?**

- **A** ATP and xylem
- **B** oxygen and nitrogen
- **C** glucose and vitamins
- **D** sunlight and carbon dioxide

Performance Indicator: 3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.

23. **In the 1930s, wolves in Yellowstone National Park were eliminated after many years of hunting. The wolves were reintroduced into Yellowstone National Park in 1995. The illustration below depicts a food web in Yellowstone National Park.**



What effect did the reintroduction of wolves into Yellowstone likely have on this ecosystem?

- **A** The elk population decreased.
- **B** The red fox population decreased.
- **C** The songbird population decreased.
- **D** The willow tree population decreased.

Performance Indicator: 3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.

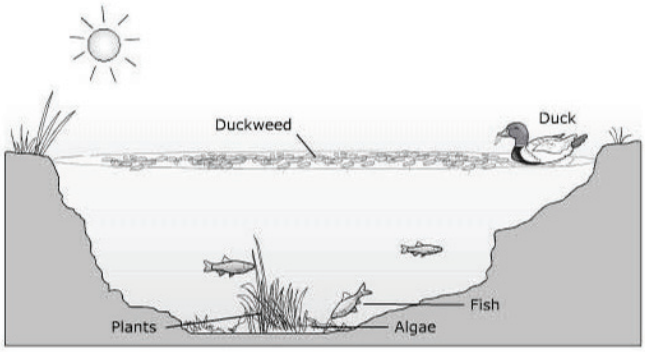
24. **The following diagram represents a food pyramid.**

A decrease in the frog population would most likely lead to an increase in the population of which organism?

- **A** Owl
- **B** Grass
- **C** Snake
- **D** Grasshopper

Performance Indicator: 3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.

25. **Duckweed is a floating plant commonly found growing on the surface of ponds. During favorable conditions, the population of this plant can increase quickly and cover the entire surface of a pond.**



What effect would an increase in duckweed have on a pond ecosystem?

- **A** The duck population would decrease due to a lower food supply.
- **B** The fish population would increase due to an increased food supply.
- **C** The underwater plant population would decrease due to decreased sunlight.
- **D** The algae population would increase due to higher levels of oxygen in the water.

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

26.

The leatherback sea turtle population is dependent on sandy beaches in which to dig nests and lay their eggs. During incubation, the temperature of the sand influences the gender of the hatchlings. When the sand temperature is above 30 degrees Celsius, more females hatch. When the sand temperature is below 30 degrees Celsius, more males hatch. Eggs that incubate in sand temperatures above 34 degrees may not hatch. What effect would increasing temperatures on Earth have on the sea turtle population?

- **A** There will be an increase in sandy coastlines for nest building.
- **B** There will be an increase in the number of male turtles that hatch.
- **C** There will be overall lower hatch rates due to higher sand temperatures.
- **D** There will be overall lower hatch rates due to a lack of water for nest building.

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

27.

The illustration below shows an ecosystem in the Southern Plains.

How would a drought in the Southern Plains <u>most</u> likely affect the quail population?

- **A** a decrease in the quail population due to a decrease in nesting cover
- **B** an increase in the quail population due to a decrease in the insect population
- **C** a decrease in the quail population due to a decrease in the mouse population
- **D** an increase in the quail population due to a decrease in the rabbit population

Performance Indicator: 3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

28.

Drought in an ecosystem results in decreased populations of primary consumers. What would best explain the decrease in primary consumers?

- **A** a decrease in wind speeds
- **B** a decrease in primary producers
- **C** an increase in airborne pathogens
- **D** an increase in secondary consumers

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

29.

White-tailed deer prefer to live in wooded areas. Their diet consists of grasses, shrubs, and other small forage plants. White-tailed deer are prey to animals such as coyotes, bobcats, and wolves. These deer are also the most important hosts for a parasite, the deer tick, and are critical for deer tick survival. Larvae of the deer tick feed on birds and smaller mammals. How would the carrying capacity of other organisms in the ecosystem change if the white-tailed deer population decreased?

- **A** The carrying capacity of shrubs would decrease.
- **B** The carrying capacity of coyotes would increase.
- **C** The carrying capacity of deer tick larvae would increase.
- **D** The carrying capacity of adult deer ticks would decrease.

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

30.

Populations of white-tailed deer live in an ecosystem that has an abundant food supply of woody-type plants with minimal supplies of grasses and weeds. The table shows the typical diet composition of white-tailed deer in this type of ecosystem as well as other animals frequently introduced into this type of ecosystem.

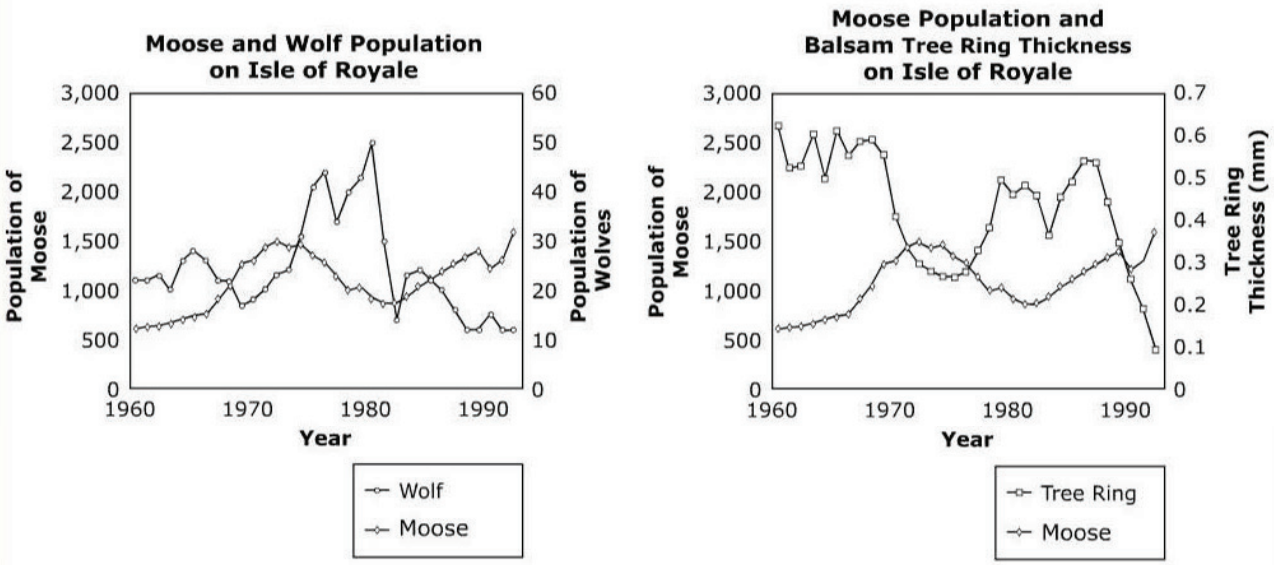
Organism	Percent of Diet Composed of Grasses and Weeds	Percent of Diet Composed of Woody Plants
White-Tailed Deer	40	60
Cattle	93	7
Nilgai Antelope	70	30
Fallow Deer	35	65
Sheep	78	22

Introduction of which animal into this type of ecosystem would most likely affect the carrying capacity of the white-tailed deer population?

- **A** Cattle
- **B** Sheep
- **C** Fallow Deer
- **D** Nilgai Antelope

Performance Indicator: 3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.

31. **Isle Royale is found in Lake Superior and has limited plant and animal migration due to its location. Moose are thought to have first migrated to Isle Royale around 1900 while wolves arrived in the 1940s. The graphs show the relationships between the number of these mammals and the diameter of balsam fir trees on the island.**



Which conclusion <u>best</u> describes the interaction between these populations on the Isle Royale?

- **A** The size of balsam fir trees is impacted by how the population of wolves affects the population of moose.
- **B** The moose population is only impacted by the wolf population and not the growth of the balsam fir population.
- **C** The wolf population decreases as the moose population increases due to the presence of larger balsam fir trees.
- **D** The population of wolves indirectly increases when balsam fir trees become smaller in diameter since there are fewer moose.

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

32.

To reduce erosion in an area, an exotic fast-growing vine is introduced into the area without any growth control. How will the new plant most likely have an effect on the ecosystem?

- **A** The vine will provide protection for native plants.
- **B** The vine will provide more wood for use in the area.
- **C** The vine will compete with native plants for sunlight and space.
- **D** The vine will compete with native animals for food, water, and minerals.

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

33.

In 1906, the Grand Canyon National Game Preserve was established on the Kaibab Plateau in Arizona. Regulations prohibited deer hunting but allowed some hunting of mountain lions, coyotes, and bobcats. What most likely resulted from the hunting regulations within the preserve?

- **A** The deer population grew too large for the area to support.
- **B** The carrying capacity of the area immediately decreased.
- **C** Invasive plant species became established.
- **D** Predator populations became extinct.

Performance Indicator: 3210.2.4 Predict how various types of human activities affect the environment.

34.

Dams are built for a number of reasons that include both flood control and the production of hydroelectric power. Dams back up the water of a stream or river, flooding the area behind the dam. This controlled flooding creates a lake or reservoir. Which best explains how these dams affect the environment?

- **A** Dams decrease water availability for animals.
- **B** Dams increase the biodiversity of plants and animals.
- **C** Dams cause the types of trees to change downstream.
- **D** Dams prevent some fish from migrating upstream to spawn.

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

35.

In southern California, the intentional reduction of the coyote population has led to a decrease in the types of song birds in that area. Which is a likely explanation why song bird populations have decreased?

- **A** Coyotes protect nests built by song birds.
- **B** Coyotes feed on animals that prey on song birds.
- **C** Song birds are killed by diseases carried by coyotes.
- **D** Song birds feed on animal matter killed by coyotes.

Go On ▶

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

36.

Deforestation of the Amazon Rain Forest for agricultural practices has the potential to affect biodiversity by decreasing the amount of trees and vegetation which serve as food and shelter and absorb carbon dioxide from the atmosphere. Deforestation also leads to rapid soil erosion. How could deforestation of the Amazon Rain Forest affect the biodiversity of that area?

- **A** Deforestation could lead to a decrease in runoff pollution which could affect the availability of water.
- **B** Deforestation could lead to a decrease in greenhouse gases which could cause temperatures to decrease.
- **C** Deforestation could lead to a decrease in organisms' habitats which could lead to loss of particular species.
- **D** Deforestation could lead to a decrease in global warming which could lead to rapid regrowth of trees and vegetation.

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

37.

Eutrophication can occur when a lake, pond, or slow-moving river acquires a high concentration of nutrients such as phosphates and nitrates. Often, this increase in nutrients is the result of run-off during rain storms. How can eutrophication affect the life of organisms in one of these environments?

- **A** Plants and algae decrease from the addition of fertilizers.
- **B** Aquatic animals increase in number due to the increased food supply.
- **C** Bottom-dwelling plants and animals decrease in number from an increase in algae and oxygen.
- **D** Plant and animal biodiversity decreases from increased levels of organic matter and decomposing organisms.

Go On ▶

Performance Indicator: 3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

38.

A farmer plows a field of grass to plant crops. Which population of animals will most likely be impacted the greatest from the habitat change?

- **A** deer that feed on field plants
- **B** birds that nest in forest trees
- **C** moles that burrow in shallow soil
- **D** insects whose larva feed on dead animals

Performance Indicator: 3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

39.

Freshwater mussel species have specific habitat requirements regarding the temperature and quality of water. They are filter feeders that live in shallow areas of free-flowing streams. During the mussel life cycle, specific fish species are used as hosts for their microscopic larval stage. Which environmental change would most likely contribute to the extinction of mussel species?

- **A** building a dam near the source of a river
- **B** stocking rivers and streams with host fish
- **C** increasing microscopic nutrients in streams
- **D** increasing stream water flow by clearing debris

Go On ▶

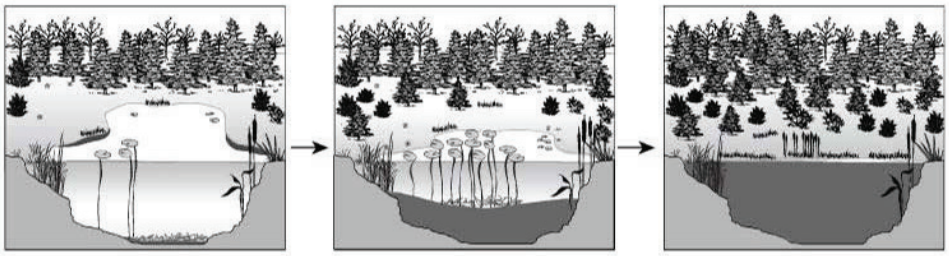
Performance Indicator: 3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

40. **The spring-fed San Marcos River and Spring Lake in central Texas are home to the endangered fountain darter. Fountain darters require dense, bottom plant cover for hiding and breeding. The giant ramshorn snail is an invasive, non-native species that eats large amounts of fountain darter habitat plants. The giant ramshorn snail population increases during times when spring flows are low. If a lengthy drought occurs in this region, what will most likely be the effect on fountain darters?**

- **A** Grazing species will disappear, leaving more habitat cover for fountain darters.
- **B** Due to habitat loss from giant ramshorn snail competition, fountain darters may become extinct.
- **C** Fountain darters will adapt to the environmental change by producing hybrid species.
- **D** The drought will cause fountain darters to seek other types of cover for reproduction.

Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

41. **The figures below show the changes in a pond over time.**



What event is responsible for the initial changes in the pond?

- **A** colonization of the pond by plants
- **B** accumulation of sediment in the pond
- **C** a change in water temperature of the pond
- **D** increased activity of decomposers in the pond

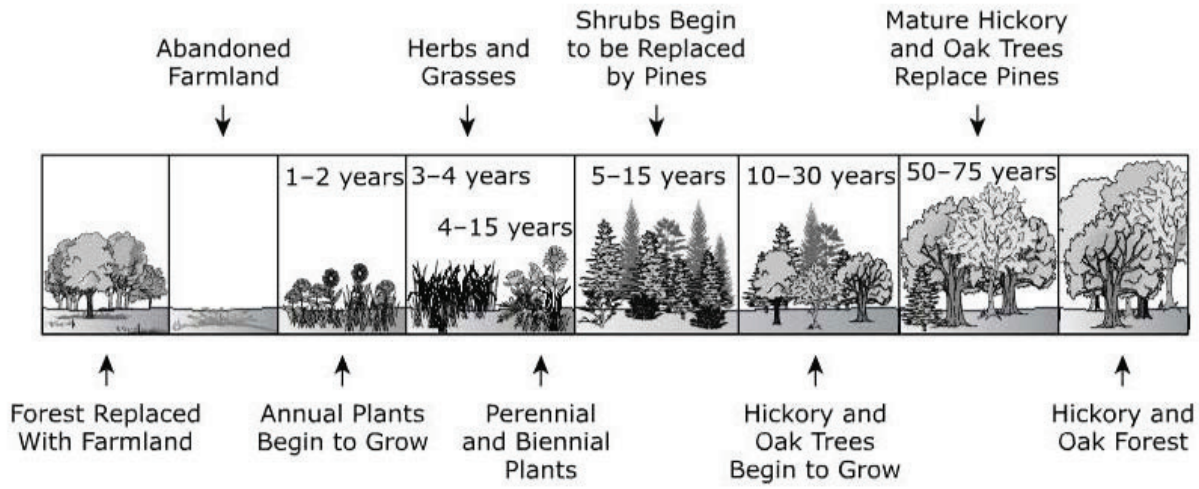
Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

42. **Which event would lead to primary succession?**

- **A** the logging of a forest
- **B** the melting of a glacier
- **C** an abandoned farm
- **D** an open area caused by a forest fire

Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

43. **In an ecosystem, the species that grow and produce the most offspring become the most abundant organisms. Over time, the dominant species in an ecosystem change as a result of the influence of several factors. The diagram shows how secondary biological succession that begins in a field in the southeastern United States occurs.**



Which is an accurate description of factors that affected the succession in this particular ecosystem?

- **A** A forest fire started the succession, and increased temperature caused successive stages.
- **B** The type of available soil and climate change were the major factors in succession in this system.
- **C** Human activities triggered the change, and the amount of available light was responsible for the final stage.
- **D** Drought, high temperatures, wind storms, and an increase in the depth of the soil were the major factors in this system.

Go On ▶

Performance Indicator: 3210.2.7 Analyze factors responsible for the changes associated with biological succession.

44. **On May 18, 1980, Mount St. Helens, a volcano in southwest Washington state, erupted. Which organisms most likely colonized first in the area around the volcanic eruption?**

- **A** flowering plants
- **B** shrubs
- **C** lichens
- **D** trees

Reporting Category 3: Interdependence		
Item Number	**Correct Answer**	**Performance Indicator**
1	D	3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.
2	C	3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.
3	D	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.
4	A	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.
5	D	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.
6	D	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
7	D	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
8	D	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
9	B	3210.2.4 Predict how various types of human activities affect the environment.
10	A	3210.2.4 Predict how various types of human activities affect the environment.
11	B	3210.2.4 Predict how various types of human activities affect the environment.
12	A	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
13	B	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.

14	D	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
15	A	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
16	A	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
17	A	3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.
18	C	3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.
19	D	3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.
20	B	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
21	D	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
22	D	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
23	A	3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.
24	D	3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.
25	C	3210.2.1 Predict how population changes of organisms at different trophic levels affect an ecosystem.
26	C	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.

27	A	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.
28	B	3210.2.2 Interpret the relationship between environmental factors and fluctuations in population size.
29	D	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
30	C	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
31	A	3210.2.3 Determine how the carrying capacity of an ecosystem is affected by interactions among organisms.
32	C	3210.2.4 Predict how various types of human activities affect the environment.
33	A	3210.2.4 Predict how various types of human activities affect the environment.
34	D	3210.2.4 Predict how various types of human activities affect the environment.
35	B	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
36	C	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
37	D	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
38	C	3210.2.5 Make inferences about how a specific environmental change can affect the amount of biodiversity.
39	A	3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.
40	B	3210.2.6 Predict how a specific environmental change may lead to the extinction of a particular species.

41	B	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
42	B	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
43	C	3210.2.7 Analyze factors responsible for the changes associated with biological succession.
44	C	3210.2.7 Analyze factors responsible for the changes associated with biological succession.