**1.** What would most likely happen in the ecosystem shown in the above food web if a disease caused a major decrease in the cheetah population?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The impala population would increase. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The impala population would decrease. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The grass population would increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The lion population would decrease. |

**2.** Scientists wanted to study how competition would affect two different deer species living in the same ecosystem. The result of their eight-year study is summarized in the graph below.

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of white-tailed deer will dramatically increase. |

What can you predict will most likely happen to the white-tailed deer in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of white-tailed deer will most likely die out over time. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of white-tailed deer will equal the population of axis deer. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of white-tailed deer will continue to stabilize. |

**3.** The Canadian lynx is a large wild cat that lives in the cold regions of Canada. The snowshoe hare is the main prey species that is hunted by the Canadian lynx. The snowshoe hare eats grass, fern, and leaves.  
  
If the population of Canadian lynx were to completely disappear, what would most likely happen to the food supply of the snowshoe hare?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of snowshoe hare would outgrow the food supply, so there would be less food available. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of snowshoe hare would decrease, and there would be more food available. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The snowshoe hare would stop eating grass, so there would be less food available. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The snowshoe hare would start eating each other, so the food supply would not be affected. |

**4.** Many people want to live in urban areas. One of the main factors that limits the number of people that can live in an area is

|  |  |  |
| --- | --- | --- |
|  | **A.** | the number of people who don't want to live in an area. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | the amount of public transportation that is available. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | the location of schools, churches, and libraries. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | the amount of space that is available to build shelter. |

**5.** The vegetation in a grassland ecosystem consists mainly of grasses, shrubs, and bushes. The prairie dog is a small rodent that grazes on the grasses found in the North American grasslands. The swift fox feeds on the prairie dog, and is in turn preyed upon by the badger. The golden eagle feeds on the badger. The following graph shows a decline in the population of the golden eagle over a span of five years, due to a disease that affected the golden eagle population.

What effect will the disease most likely have on the golden eagle’s ecological community?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The badger and prairie dog populations will increase while that of the swift fox will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The badger and swift fox populations will increase while that of the prairie dog will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The prairie dog population will increase while that of the swift fox and badger will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The swift fox and prairie dog populations will increase while that of the badger will decrease. |

**6.** A variety of small animals and insects can live in a mountain tundra ecosystem. The ground in such places is often rocky with very little soil. The plants that grow there are fragile and grow slowly.

What would most likely happen in the ecosystem if many people carelessly trampled the tundra and killed off the plants?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The new plants would grow more quickly. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The number of rocks in the tundra would increase. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The amount of soil in the tundra would increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The populations of many animal species would decrease. |

**7.** Scientists wanted to study how competition would affect two different deer species living in the same ecosystem. The result of their eight-year study is summarized in the graph below.

What can you predict will most likely happen to the white-tailed deer in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of white-tailed deer will equal the population of axis deer. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of white-tailed deer will dramatically increase. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of white-tailed deer will continue to stabilize. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of white-tailed deer will most likely die out over time. |

**8.** Fertilizer runoff causes an increase in the dissolved nutrients of the ecosystem shown in the food web below. This causes the number of phytoplankton to double.

How will this most likely affect the other species in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The shrimp population will increase which will cause an increase in the squid population. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The shrimp population will decrease which will cause an increase in the sperm whale population. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The shrimp population will decrease which will cause an increase in the squid population. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The shrimp population will increase which will cause a decrease in the sperm whale population. |

**9.** The vegetation in a grassland ecosystem consists mainly of grasses, shrubs, and bushes. The prairie dog is a small rodent that grazes on the grasses found in the North American grasslands. The swift fox feeds on the prairie dog, and is in turn preyed upon by the badger. The golden eagle feeds on the badger. The following graph shows three of these populations declining in size over a span of five years, from the time a disease began affecting the swift fox population in this ecosystem.

How would this disease most likely impact the grassland ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The vegetation in the grasslands will increase and soil erosion will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The vegetation in the grasslands will increase and soil erosion will increase. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The vegetation in the grasslands will decrease and soil erosion will increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The vegetation in the grasslands will decrease and soil erosion will decrease. |

**10.** American toads are the major prey species of Eastern hognose snakes in Connecticut. What would most likely happen to these predators if a plague killed all of the American toads in the region?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of Eastern hognose snakes would not be affected. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | Eastern hognose snakes would immediately adapt to eat mice instead. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of Eastern hognose snakes would decline. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of Eastern hognose snakes would increase. |

**11.** Scientists wanted to study how competition would affect two different deer species living in the same ecosystem. The result of their eight-year study is summarized in the graph below.

What can you predict will most likely happen to the white-tailed deer in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of white-tailed deer will most likely die out over time. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of white-tailed deer will continue to stabilize. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of white-tailed deer will dramatically increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of white-tailed deer will equal the population of axis deer. |

**12.** Scientists wanted to study how competition would affect two different deer species living in the same ecosystem. The result of their eight-year study is summarized in the graph below.

What can you predict will most likely happen to the white-tailed deer in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of white-tailed deer will continue to stabilize. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of white-tailed deer will most likely die out over time. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of white-tailed deer will equal the population of axis deer. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of white-tailed deer will dramatically increase. |

**13.** How are changes in populations related to the availability of an ecosystem's resources?

|  |  |  |
| --- | --- | --- |
|  | **A.** | Large populations need the same amount of resources as small populations. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | As populations grow, ecosystems produce more resources in order to support the larger population. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | Population sizes are limited by the amount of resources that are available. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | Changes in population are independent of the availability of an ecosystem's resources. |

**14.** Lake trout are found in the Great Lakes because they can only live in cold environments.

This example shows how the number of populations an ecosystem can support is limited by \_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
|  | **A.** | food |

|  |  |  |
| --- | --- | --- |
|  | **B.** | temperature |

|  |  |  |
| --- | --- | --- |
|  | **C.** | air |

|  |  |  |
| --- | --- | --- |
|  | **D.** | water |

**15.** A certain population of beavers builds dams across a stream to catch fish. Some years the stream carries more water than other years. The data below was collected by scientists studying the stream over a sixteen-year period.

|  |  |  |  |
| --- | --- | --- | --- |
| **Years** | **Average Stream Depth (meters)** | **Average Number of Beaver Dams** | **Average Number of Beavers** |
| 2000-2003 | 1.20 | 6 | 17 |
| 2004-2007 | 0.92 | 4 | 12 |
| 2008-2011 | 1.45 | 7 | 21 |
| 2012-2015 | 0.78 | 2 | 9 |

If the average depth of the stream for the next 4 years is 1.60 meters, which of the following is most likely to occur?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The size of the beaver population will increase. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The size of the beaver population will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The average size of each beaver will increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The average size of a beaver dam will decrease. |

**16.** A new predator is introduced into the ecosystem shown in the food web below. This predator feeds on bees and mice.

How will this most likely affect the species in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | There will be a decrease in bees and mice which will cause an increase the black bear population and a decrease in the fox population. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | There will be an increase in bees and mice which will cause an increase in the populations of both black bears and foxes. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | There will be an increase in bees and mice which will cause a decrease in the black bear population and an increase in the fox population. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | There will be a decrease in bees and mice which will cause a decrease in the populations of both black bears and foxes. |

**17.** A population of sagebrush lives in a grassland ecosystem. Over several years, erosion causes the soil of the grassland to have an increasing amount of sand in it. The data below was collected by scientists studying the ecosystem.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Percentage of Sand in Soil** | **Average Height of Sagebrush (meters)** | **Number of Sagebrush Plants** |
| 1 | 38 | 1.15 | 120 |
| 2 | 42 | 1.16 | 129 |
| 3 | 45 | 1.14 | 137 |
| 4 | 51 | 1.15 | 145 |

If the soil is 53% sand next year, which of the following is most likely to occur?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The average height of the sagebrush will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The size of the sagebrush population will increase. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The average height of the sagebrush will increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The size of the sagebrush population will decline. |

**18.** Perching birds, such as cardinals, warblers, and robins, live in trees. Suppose a developer cuts down all of the trees in an area to build a housing subdivision. What would most likely happen to the perching birds living in that ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The perching birds would stop reproducing until new trees grew in the area. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The perching birds would begin building their nests on the ground. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The perching birds would be forced to migrate to another area. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The perching birds would all starve and subsequently die out. |

**19.** The image below shows an aquatic food web.

What would most likely happen in this ecosystem if the shark population significantly increased?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population of algae would increase. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population of bluefish would decrease. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population of dolphins would increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population of crustaceans would decrease. |

**20.** What will most likely happen in an ecosystem if the population of one species grows unusually fast?

|  |  |  |
| --- | --- | --- |
|  | **A.** | Another species that eats the same food will decrease in population. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | Another species that eats the same food will also increase in population. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The food that the species eats will start growing more quickly. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The predators that prey upon the growing species will begin to starve. |

**21.** A large population of deer lives in the forest. Wolves kill and eat the deer as a primary food source. Which of the following would most likely cause an immediate decrease in the population of deer in the forest?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The wolf population stays the same. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The wolf population greatly increases. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The wolf population completely disappears. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The wolf population slightly decreases. |

**22.** Plants need sunlight, water, and minerals from the soil in order to grow and thrive. These factors

|  |  |  |
| --- | --- | --- |
|  | **A.** | prevent new plant populations from entering the ecosystem. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | are always abundant, allowing unlimited growth. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | require human intervention to be replenished. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | limit the number of plant populations that can grow in an ecosystem. |

**23.** In a particular ecosystem, the climate undergoes a gradual change, resulting in increased rainfall. Mosquitoes living in the ecosystem depend on water for reproduction. How will this climatic change most likely affect the mosquitoes in this ecosystem?

|  |  |  |
| --- | --- | --- |
|  | **A.** | It will lead to an increase in the mosquito population. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | It will lead to a decrease in the mosquito population. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | It will force the mosquitoes to migrate to other ecosystems. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | It will not affect the survival of the mosquitoes in any way. |

**24.** A population of black bears depends on salmon from a stream for food.

If a drought causes the stream to run dry one year, how will this likely impact the black bear population?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The population's size will increase. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | The population will thrive on new species of fish. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | The population's size will decrease. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | The population will be unaffected. |

**25.** A certain population of bluebirds eats spiders as a major food source.

Which of the following ecosystem changes would impact this population of bluebirds the most?

|  |  |  |
| --- | --- | --- |
|  | **A.** | a decrease in the number of daylight hours |

|  |  |  |
| --- | --- | --- |
|  | **B.** | a decrease in the rabbit population |

|  |  |  |
| --- | --- | --- |
|  | **C.** | an increase in the spider and insect population |

|  |  |  |
| --- | --- | --- |
|  | **D.** | an increase in the fish population |

**26.** Rhinoceroses and oxpeckers both live in the African savannah, and over time they have developed a mutualistic relationship.

Oxpeckers eat parasites off of rhinoceroses, which cleans the rhinoceroses while providing a meal for the oxpeckers. The rhinoceroses also benefit because these birds sound warning calls to alert them of nearby danger.

If illegal hunting of oxpeckers increases in 2012 and causes a decrease in oxpecker numbers, what will most likely happen to rhinoceros populations?

|  |  |  |
| --- | --- | --- |
|  | **A.** | Rhinoceros populations will remain constant. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | Rhinoceros populations will go extinct. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | Rhinoceros populations will increase. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | Rhinoceros populations will decline. |

**27.** One year, heavy rain makes Lake Raymond very deep. The next year, however, rain is very light, and not much water is left in Lake Raymond.   
  
How will this most likely affect animal life in Lake Raymond?

|  |  |  |
| --- | --- | --- |
|  | **A.** | There will be several new species of fish the second year. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | There will be an increase in bacterial life the second year. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | There will be more animal life the second year. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | There will be less animal life the second year. |

**28.** The following food web shows the relationship between predators and prey in a Connecticut forest.

Which of the following species would be affected if all of the grasshoppers died?

|  |  |  |
| --- | --- | --- |
|  | **A.** | leopard frogs |

|  |  |  |
| --- | --- | --- |
|  | **B.** | American robins |

|  |  |  |
| --- | --- | --- |
|  | **C.** | copperheads |

|  |  |  |
| --- | --- | --- |
|  | **D.** | all of these |
|  |  |  |

**29.** The picture below shows an aquatic ecosystem.

What would most likely happen in the ecosystem if the water became polluted by unhealthy chemicals?

|  |  |  |
| --- | --- | --- |
|  | **A.** | The ecosystem would not be changed by the water pollution. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | Some fish would die, but the coral population would increase. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | Some of the fish population and coral population would die. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | Some coral would die, but the fish population would increase. |

**30.** The diagram below shows the temperature range of two fish species in Lake Superior.

What will happen to the species in this ecosystem if the water temperature increases close to the warmest temperature shown on the diagram?

|  |  |  |
| --- | --- | --- |
|  | **A.** | Species B will survive and species A will die out. |

|  |  |  |
| --- | --- | --- |
|  | **B.** | Both species will survive. |

|  |  |  |
| --- | --- | --- |
|  | **C.** | Species A will survive and species B will die out. |

|  |  |  |
| --- | --- | --- |
|  | **D.** | Neither species will survive. |