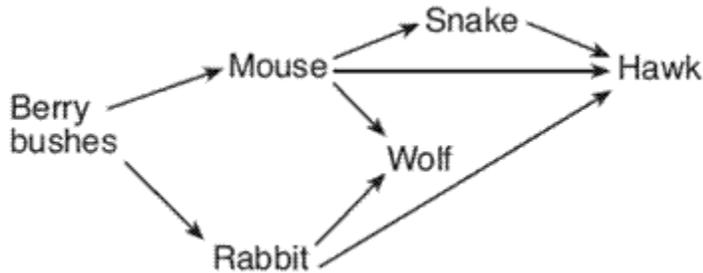


Ecology: Practice Questions #1

1. One biotic factor that affects consumers in an ocean ecosystem is

- A. number of autotrophs
- B. temperature variation
- C. salt content
- D. pH of water

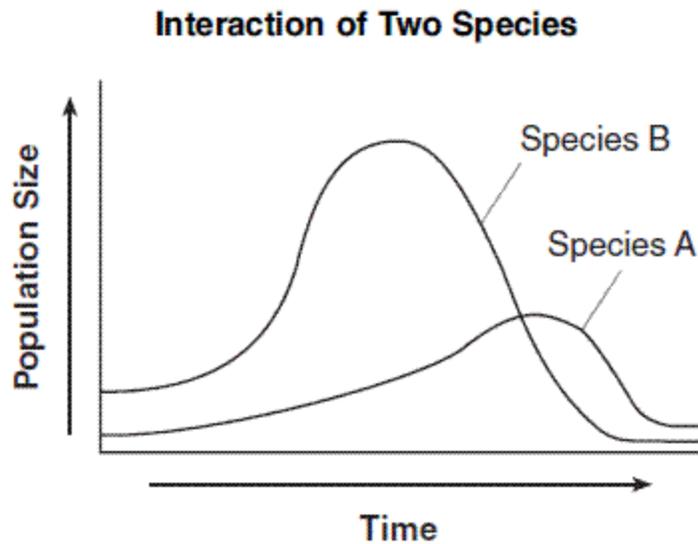
2. A food web is represented in the diagram below.



Which population in this food web would most likely be *negatively* affected by an increase in the mouse population?

- A. snake
 - B. rabbit
 - C. wolf
 - D. hawk
3. Some bloodsucking insects insert their mouthparts directly into a blood vessel and withdraw blood. Other bloodsucking insects have mouthparts that cut through the skin and blood vessels and produce a small pool of blood from which they feed. Both mouthpart types are specialized for
- A. autotrophic nutrition
 - B. heterotrophic nutrition
 - C. regulation
 - D. excretion
4. Decomposers are important in the environment because they
- A. convert large molecules into simpler molecules that can then be recycled
 - B. release heat from large molecules so that the heat can be recycled through the ecosystem
 - C. can take in carbon dioxide and convert it into oxygen
 - D. convert molecules of dead organisms into permanent biotic parts of an ecosystem

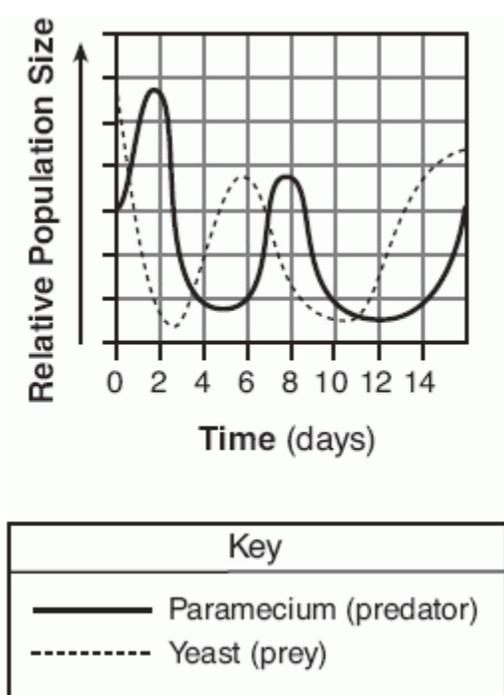
5. The graph below shows changes in the populations of two species that interact only with each other over a period of time.



Which statement best describes these two species?

- A. Species *A* is a producer and species *B* is its consumer.
 - B. Species *A* is a host and species *B* is its parasite.
 - C. Species *A* is a predator and species *B* is its prey.
 - D. Species *A* is a scavenger and species *B* is its decomposer.
6. A new island formed by volcanic action may eventually become populated with biotic communities as a result of
- A. a decrease in the amount of organic material present
 - B. decreased levels of carbon dioxide in the area
 - C. the lack of abiotic factors in the area
 - D. the process of ecological succession

7. The graph below represents a predator-prey relationship.



What is the most probable reason for the increasing predator population from day 5 to day 7?

- A. an increasing food supply from day 5 to day 6
- B. a predator population equal in size to the prey population from day 5 to day 6
- C. the decreasing prey population from day 1 to day 2
- D. the extinction of the yeast on day 3

8. Which statement best describes the flow of energy and the movement of chemical compounds in an ecosystem?

- A. Energy flows into living organisms and remains there, while chemical compounds are transferred from organism to organism.
- B. Chemical compounds flow in one direction in a food chain and energy is produced.
- C. Energy is transferred from organism to organism in a food chain and chemical compounds are recycled.
- D. Energy flows out of living organisms and is lost, while chemical compounds remain permanently inside organisms.

9. One biotic factor that limits the carrying capacity of any habitat is the

- A. availability of water
- B. level of atmospheric oxygen
- C. activity of decomposers
- D. amount of soil erosion

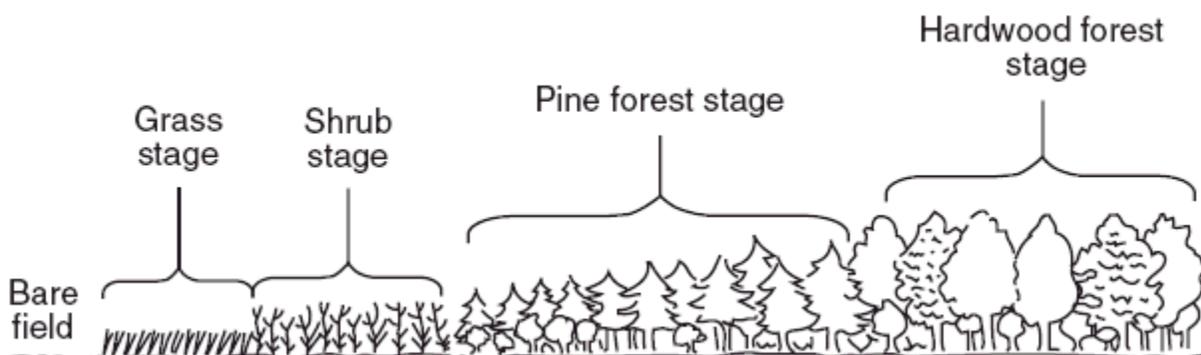
10. Abiotic factors that characterize a forest ecosystem include

- A. light and biodiversity
- B. temperature and amount of available water
- C. types of producers and decomposers
- D. pH and number of heterotrophs

11. A particular species of unicellular organism inhabits the intestines of termites, where the unicellular organisms are protected from predators. Wood that is ingested by the termites is digested by the unicellular organisms, forming food for the termites. The relationship between these two species can be described as

- A. harmful to both species
- B. parasite/host
- C. beneficial to both species
- D. predator/prey

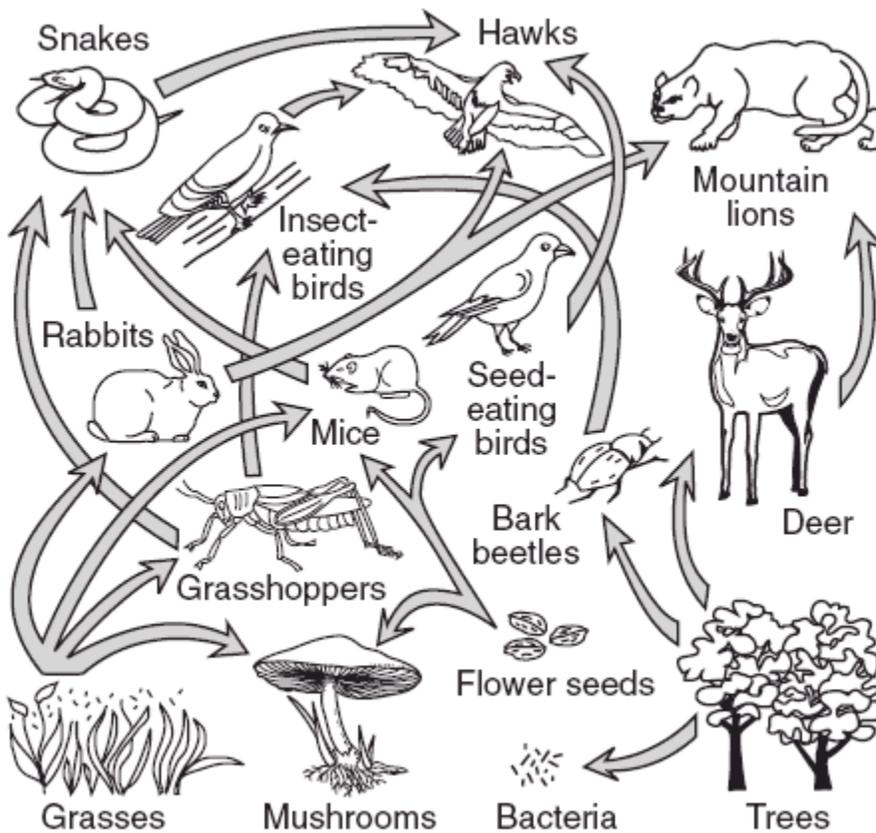
12. The diagram below represents a biological process taking place in an area of New York State unaffected by natural disasters.



Which statement correctly describes a stage in this process?

- A. The grass stage is the most stable stage and exists for thousands of years.
- B. The shrub stage modifies the ecosystem, making it more suitable for the pine forest.
- C. The pine forest stage has no biodiversity and the least competition.
- D. The hardwood forest stage will be replaced by a pine forest.

13. The diagram below represents a food web.



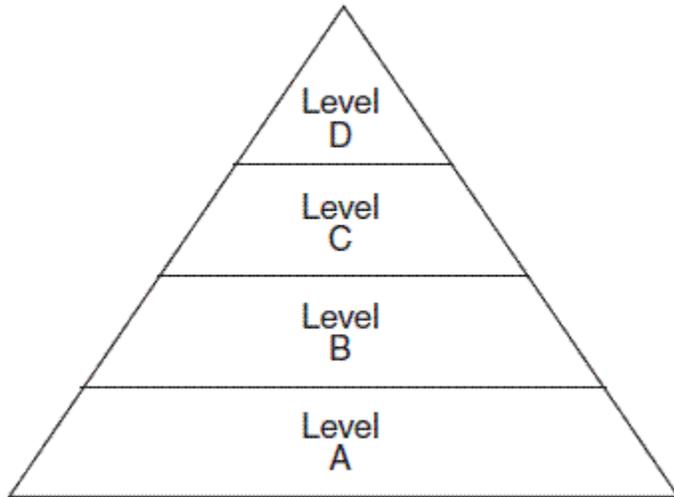
Which organisms are correctly paired with their nutritional roles?

- A. hawk—decomposer; insect-eating bird—parasite
- B. mouse—autotroph; flower seed—heterotroph
- C. mountain lion—predator; bark beetle—herbivore
- D. grasshopper—carnivore; grass—autotroph

14. An established ecosystem may remain stable over hundreds of years because

- A. species interdependence is absent
- B. there is a lack of variety in the species
- C. no competition exists between the species
- D. there are natural checks on species

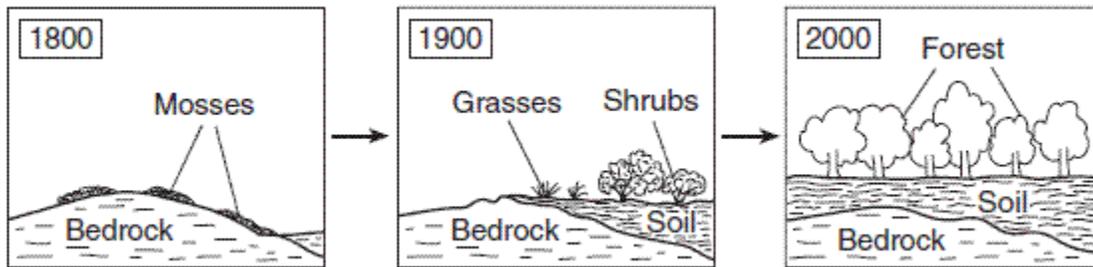
15. An energy pyramid is represented below.



The energy for use by organisms in level A originally comes from

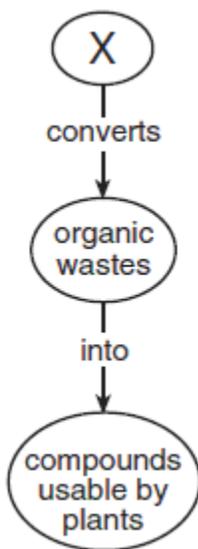
- A. producers
 - B. the Sun
 - C. level B
 - D. level D
16. The reason that organisms *cannot* produce populations of unlimited size is that
- A. the resources of Earth are finite
 - B. there is no carrying capacity on Earth
 - C. species rarely compete with one another
 - D. interactions between organisms are unchanging
17. What will most likely occur if two different plant species compete for the same requirements in an ecosystem?
- A. They will usually develop different requirements.
 - B. One species may adapt to a different environment.
 - C. One species may be eliminated from that ecosystem.
 - D. They will alter the environment so that they can both survive in that ecosystem.
18. Abiotic factors that could affect the stability of an ecosystem could include
- A. hurricanes, packs of wolves, and temperature
 - B. blizzards, heat waves, and swarms of grasshoppers
 - C. droughts, floods, and heat waves
 - D. species of fish, number of decomposers, and supply of algae

19. The size of a mouse population in a natural ecosystem tends to remain relatively constant due to
- the carrying capacity of the environment
 - the lack of natural predators
 - cycling of energy
 - increased numbers of decomposers
20. The diagram below represents a process that occurs in nature.



This diagram can be used to illustrate the

- effects of reduced competition between different types of plant life
 - effect of human intervention on a stable ecosystem
 - ecological succession from bare rock to stable ecosystem
 - evolution of mosses to trees over 200 years
21. The process illustrated in the sequence below occurs constantly in the biosphere.



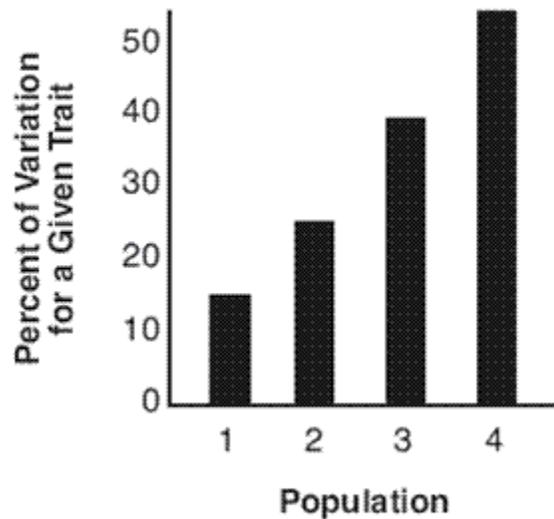
Which type of organism is most likely represented by X?

- decomposer
- producer
- herbivore
- carnivore

22. Which component of a stable ecosystem can *not* be recycled?

- A. oxygen
- B. water
- C. energy
- D. nitrogen

23. The graph below shows the percent of variation for a given trait in four different populations of the same species. The populations inhabit similar environments.



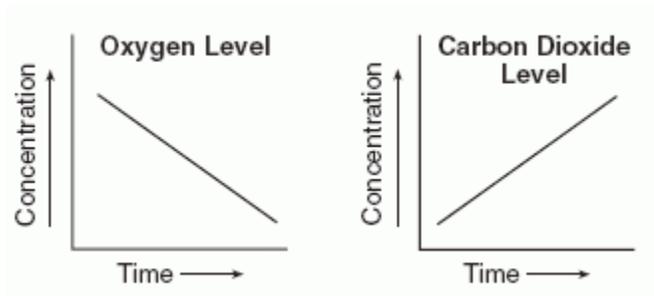
In which population will the greatest number of individuals most likely survive if a significant environmental change related to this trait occurs?

- A. 1
- B. 2
- C. 3
- D. 4

24. Which type of organism can obtain energy directly from any of the other organisms in an ecosystem?

- A. herbivore
- B. decomposer
- C. producer
- D. carnivore

25. The graphs below show the changes in the relative concentrations of two gases in the air surrounding a group of mice.



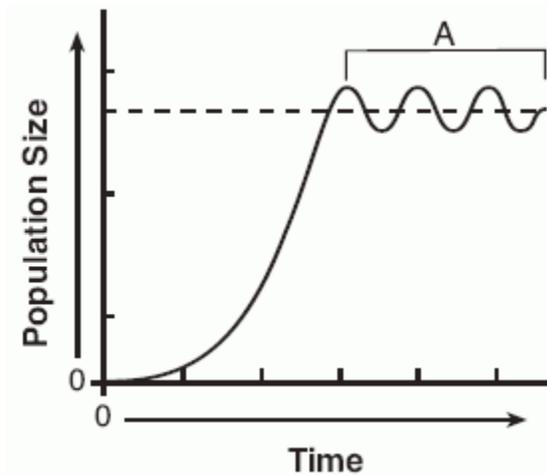
Which process in the mice most likely accounts for the changes shown?

- A. active transport
- B. evaporation
- C. respiration
- D. photosynthesis

26. A stable ecosystem would *not* contain

- A. materials being cycled
- B. consumers without producers
- C. decomposers
- D. a constant source of energy

27. The graph below indicates the size of a fish population over a period of time.

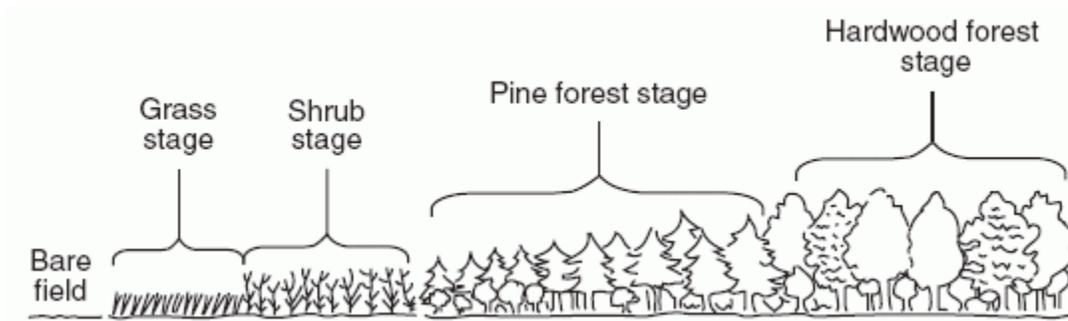


The section of the graph labeled A represents

- A. biodiversity within the species
- B. nutritional relationships of the species
- C. a population becoming extinct
- D. a population at equilibrium

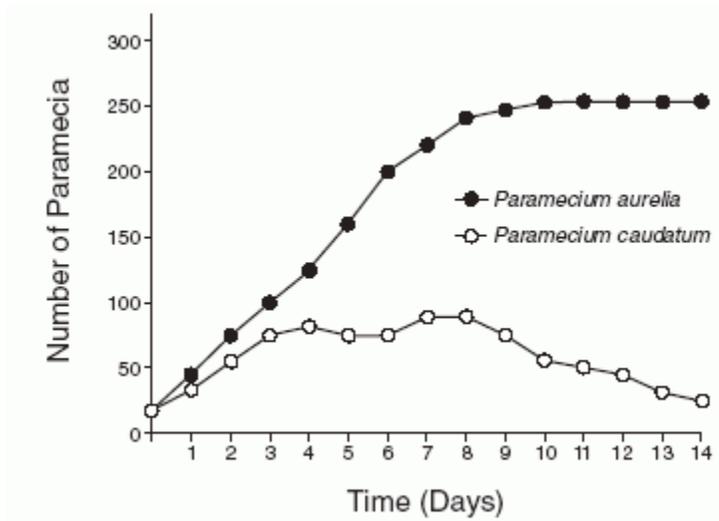
28. Some of the energy taken in by an organism is not available to other organisms in a food web. Energy that is not available to other organisms in a food web is energy that is
- A. stored in the remains of a dead animal
 - B. lost to the environment as heat
 - C. stored in eggs produced during sexual reproduction
 - D. produced in muscle tissue during the growth of an organism

29. Which of the stages in the diagram consists of plant species that modify the environment, eventually making it more suitable for another community?



- A. grass stage, only
 - B. grass, shrub, and pine forest stages
 - C. shrub, pine forest, and hardwood forest stages
 - D. hardwood forest stage, only
30. The size of a frog population in a pond remains fairly constant over a period of several years because of
- A. decreasing competition
 - B. environmental carrying capacity
 - C. excessive dissolved oxygen
 - D. the depth of water
31. Organisms that are able to manufacture organic nutrients from substances in the abiotic environment are classified as
- A. heterotrophs
 - B. fungi
 - C. predators
 - D. autotrophs

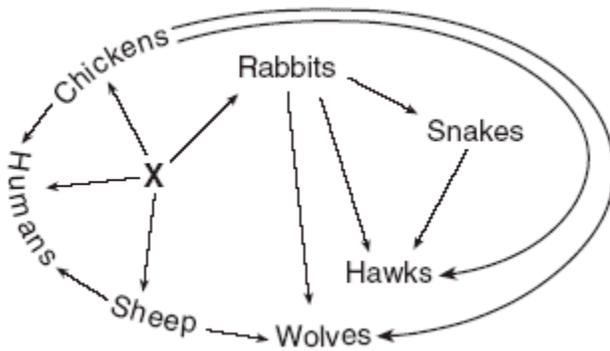
32. The graph below shows the growth of two populations of paramecia grown in the same culture dish for 14 days.



Which ecological concept is best represented by the graph?

- A. recycling
 - B. equilibrium
 - C. competition
 - D. decomposition
33. Maple trees and tulips are classified as autotrophs because they both
- A. produce gametes by the process of mitosis
 - B. produce carbon dioxide and water as metabolic wastes
 - C. are able to obtain complex organic materials from the environment
 - D. are able to synthesize organic molecules from inorganic raw materials
34. A greater stability of the biosphere would most likely result from
- A. decreased finite resources
 - B. increased deforestation
 - C. increased biodiversity
 - D. decreased consumer populations
35. One season, there was a shortage of producers in a food web. As a result, the number of deer and wolves decreased. The reason that both the deer and wolf populations declined is that
- A. producers are not as important as consumers in a food web
 - B. more consumers than producers are needed to support the food web
 - C. organisms in this food web are interdependent
 - D. populations tend to stay constant in a food web

36. A partial food web is represented in the diagram below.



Letter X most likely represents

- A. autotrophs
- B. carnivores
- C. decomposers
- D. parasites

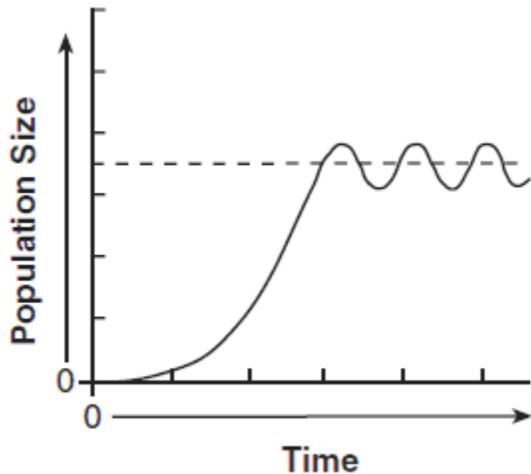
37. Which factor would have the greatest effect on the flow of energy into an ecosystem?

- A. a large decrease in the amount of sunlight available
- B. a large increase in the number of carnivores
- C. a small increase in the number of decomposers
- D. a small decrease in the amount of minerals available

38. Abiotic factors that affect the growth of grass in a lawn include

- A. bacteria and soil
- B. earthworms and nutrients
- C. moisture and minerals
- D. fertilizer and decomposers

39. The graph below shows the changes in the size of a fish population over a period of time.



The dashed line on the graph represents the

- A. carrying capacity of the environment
- B. life span of the species
- C. level at which extinction is reached
- D. level of maximum biodiversity of the species

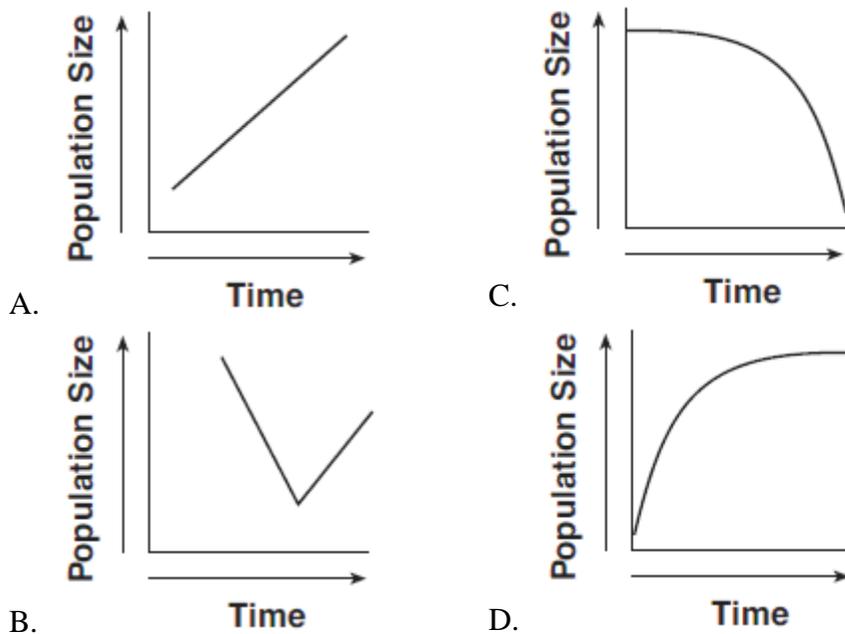
40. Base your answer to the question on the passage below and on your knowledge of biology.

Alaska: Anchorage — Birders noted a sharp increase in European starlings in the 2005 Anchorage Christmas Bird Count. The sometimes aggressive species is relatively new to Alaska. Only three starlings were spotted during the 1995 Christmas bird count. Last year, there were 35. This year, birders counted 156.

The change in the starling population in Anchorage from 1995 to 2005 could have been due to the presence of

- A. a large population of competing species
- B. a wide variety of predators
- C. an abundant food supply
- D. very few flowering plants

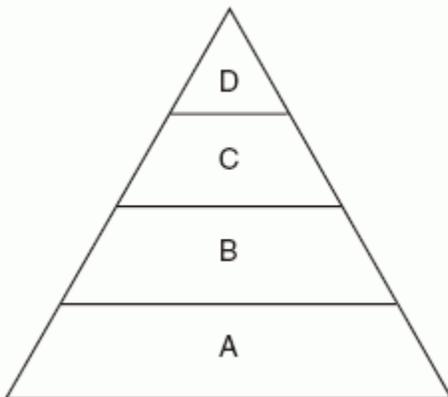
41. Which graph represents a population that grew and is maintained at the carrying capacity of its ecosystem?



42. In a forest community, a shelf fungus and a slug live on the side of a decaying tree trunk. The fungus digests and absorbs materials from the tree, while the slug eats algae growing on the outside of the trunk. These organisms do not compete with one another because they occupy

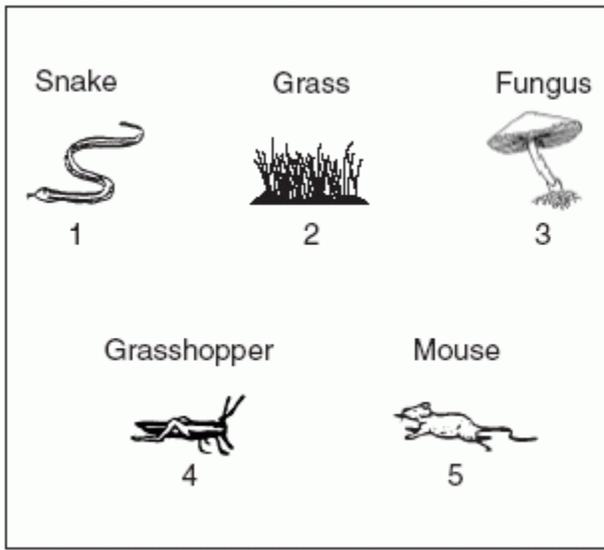
- A. the same habitat, but different niches
- B. the same niche, but different habitats
- C. the same niche and the same habitat
- D. different habitats and different niches

43. Which statement about the pyramid of energy shown below is correct?



- A. The amount of energy needed to sustain the pyramid enters at level *D*.
- B. The total amount of energy decreases with each successive feeding level from *D* to *A*.
- C. The amount of energy is identical in each level of the pyramid.
- D. The total amount of energy at level *D* is less than the total amount of energy at level *B*.

44. Organisms from a particular ecosystem are shown below.



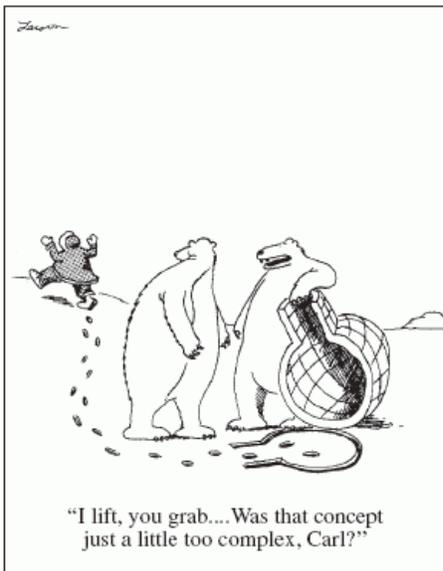
Which statement concerning an organism in this ecosystem is correct?

- A. Organism 2 is heterotrophic.
- B. Organism 3 helps recycle materials.
- C. Organism 4 obtains all of its nutrients from an abiotic source.
- D. Organism 5 must obtain its energy from organism 1.

45. The relationship that exists when athlete's foot fungus grows on a human is an example of

- A. predator/prey
- B. producer/consumer
- C. parasite/host
- D. decomposer/autotroph

46. Which ecological term best describes the polar bears in the cartoon below?



- A. herbivores
- B. parasites
- C. carnivores
- D. producers

(adapted)

47. An environment can support only as many organisms as the available energy, minerals, and oxygen will allow. Which term is best described by this statement?
- A. biological feedback
 - B. carrying capacity
 - C. homeostatic control
 - D. biological diversity
48. In December 2004, a tsunami (giant wave) destroyed many of the marine organisms along the coast of the Indian Ocean. What can be expected to happen to the ecosystem that was most severely hit by the tsunami?
- A. The ecosystem will change until a new stable community is established.
 - B. Succession will continue in the ecosystem until one species of marine organism is established.
 - C. Ecological succession will no longer occur in this marine ecosystem.
 - D. The organisms in the ecosystem will become extinct.
49. Years after the lava from an erupting volcano destroyed an area, grasses started to grow in that area. The grasses were gradually replaced by shrubs, evergreen trees, and finally, by a feedback
- A. ecological succession
 - B. plant preservation
 - C. deforestation
50. The carrying capacity for herbivores in a habitat is most directly affected by the availability of
- A. heat energy released by carnivores
 - B. carbon dioxide in the atmosphere
 - C. photosynthetic organisms
 - D. decomposers in the soil

Answer Key 1 Ecology

- | | |
|-------|-------|
| 1. A | 26. B |
| 2. B | 27. D |
| 3. B | 28. B |
| 4. A | 29. B |
| 5. C | 30. B |
| 6. D | 31. D |
| 7. A | 32. C |
| 8. C | 33. D |
| 9. C | 34. C |
| 10. B | 35. C |
| 11. C | 36. A |
| 12. B | 37. A |
| 13. C | 38. C |
| 14. D | 39. A |
| 15. B | 40. C |
| 16. A | 41. D |
| 17. C | 42. A |
| 18. C | 43. D |
| 19. A | 44. B |
| 20. C | 45. C |
| 21. A | 46. C |
| 22. C | 47. B |
| 23. D | 48. A |
| 24. B | 49. B |
| 25. C | 50. C |