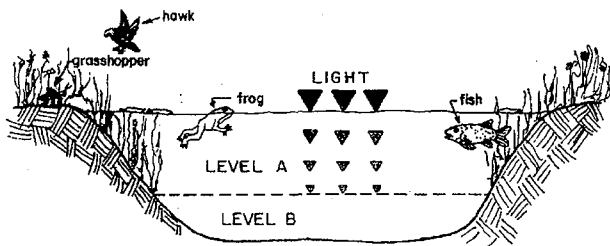


Ecology Exam Review

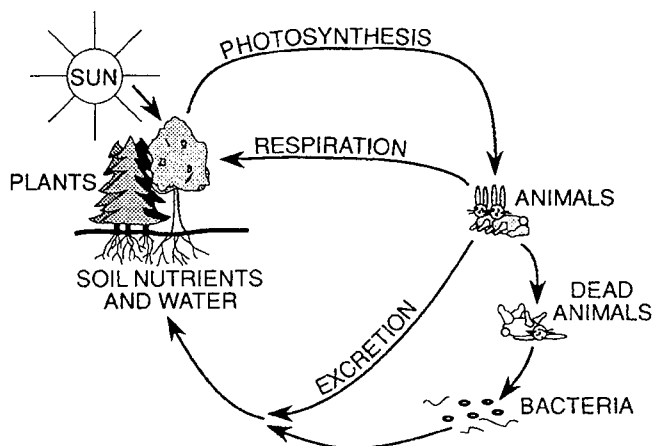
- All of Earth's water, land, and atmosphere within which life exists is known as
 - a population
 - a community
 - a biome
 - the biosphere
- Which level of biological organization includes the greatest total number of species?
 - community
 - ecosystem
 - population
 - biosphere
- Which statement best describes a characteristic of an ecosystem?
 - It must have producers and consumers but not decomposers.
 - It is stable because it has consumers to recycle energy.
 - It always has two or more different autotrophs filling the same niche.
 - It must have organisms that carry out autotrophic nutrition.
- Base your answer to the following question on the diagram of a lake ecosystem below and on your knowledge of biology. The diagram shows a cross section of a deep lake. The dashed line which separates level *A* from level *B* indicates the depth beyond which light cannot penetrate.



Which type of organism that ordinarily inhabits a lake ecosystem would *not* be found in level *B* because of the lack of light penetration?

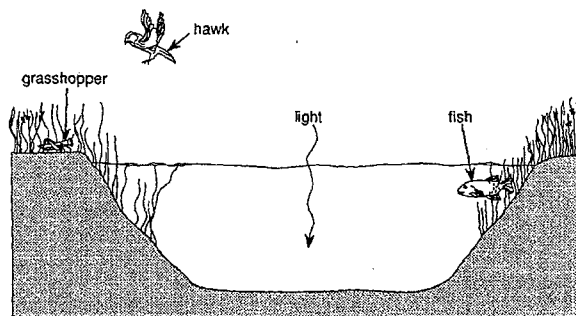
- decomposers
 - scavengers
 - carnivores
 - producers
- Which statement concerning an ecosystem is correct?
 - It can exist with or without a constant source of energy input.
 - It must contain consumers but can exist without producers.
 - It involves interactions between biotic and abiotic factors.
 - It can exist on land, but it cannot exist in lakes, rivers, or oceans.
 - In an ocean, the growth and survival of seaweed, small fish, and sharks depends on abiotic factors such as
 - sunlight, temperature, and minerals
 - sunlight, pH, and type of seaweed
 - number of decomposers, carbon dioxide, and nitrogen
 - number of herbivores, carbon, and food

- The diagram below shows living and nonliving factors and the interaction between them.



Which nutrient cycle does the diagram best represent?

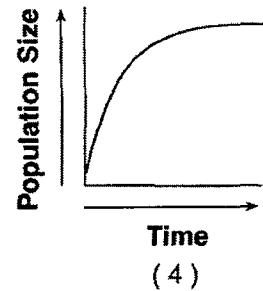
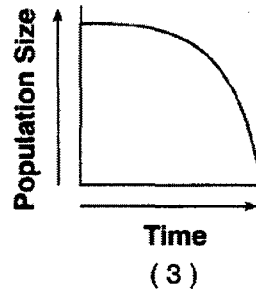
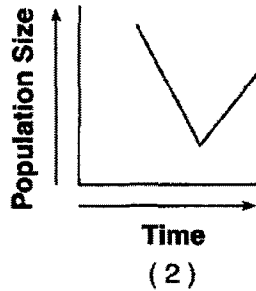
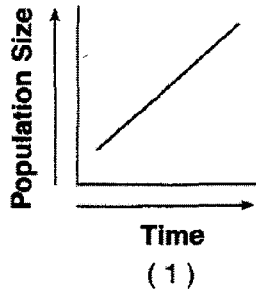
- Nitrogen Cycle
 - Water Cycle
 - Motor Cycle
 - Carbon Cycle
- Plants are green because they contain the protein chlorophyll. A bucket was left on the lawn for one week. When the bucket was removed, the grass under the bucket had turned from green to a yellowish white color. This change is due to the interaction between the grass and
 - decomposer organisms in the soil, an abiotic factor
 - the amount of sunlight, an abiotic factor
 - increased moisture under the bucket, a biotic factor
 - the metal composition of the bucket, a biotic factor
 - Which is an abiotic factor that functions as a limiting factor for the autotrophs in the ecosystem below?



- grasshopper
 - hawk
 - fish
 - light
- Requirements of some submerged aquatic plants in a pond include oxygen and carbon dioxide dissolved in the water as well as nitrates and magnesium in the mud where the plants grow. The resource that is in the shortest supply acts as the
 - abiotic factor
 - limiting factor
 - biotic factor
 - growth factor

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11.



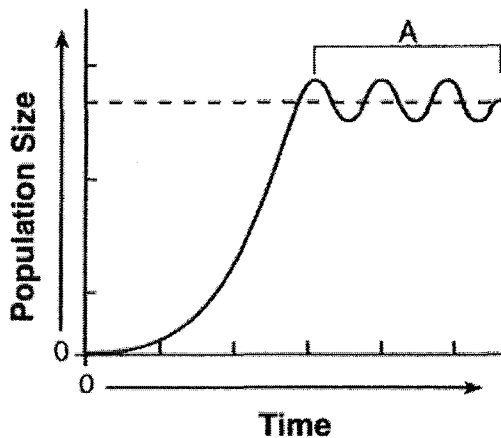
Which graph represents a population that grew and is maintained at the carrying capacity of its ecosystem?

- 1) 1 2) 2 3) 3 4) 4

12. Which group of organisms is an example of a population?

- 1) leopard frogs in a stream
- 2) birds in Colorado
- 3) reptiles in the Sahara Desert
- 4) trees in a forest

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



The section of the graph labeled *A* represents

- 1) biodiversity within the species
- 2) nutritional relationships of the species
- 3) a population becoming extinct
- 4) a population at equilibrium

14. A moss-covered log is overturned by a hungry bear looking for insects to eat. The bear disturbs an ant colony, and some chipmunks leave the hollow log to search for another home in the forest. Which relationship do these organisms have with each other?

- 1) They are all of the same species.
- 2) They all require the same type of food.
- 3) They are part of a community.
- 4) They are abiotic factors in a forest.

15. All the plants and animals interacting in a given area make up a

- 1) community 3) biosphere
- 2) population 4) species

16. Cattail plants in freshwater swamps in New York State are being replaced by purple loosestrife plants. The two species have very similar environmental requirements. This observation best illustrates

- 1) variations within a species
- 2) dynamic equilibrium
- 3) random recombination
- 4) competition between species

17. In a given habitat, different species use the same limited resources. This situation usually leads to

- 1) isolation 3) competition
- 2) succession 4) segregation

18. Male grizzly bears can maintain territorial control over many square miles. This role as a top predator in the territory is known as

- 1) a habitat 3) a biosphere
- 2) an ecosystem 4) a niche

19. The widest variety of genetic material that can be used by humans for future agricultural or medical research would most likely be found in

- 1) a large field of a genetically engineered crop
- 2) an ecosystem having significant biodiversity
- 3) a forest that is planted and maintained by a forest service
- 4) areas that contain only one or two species

20. Which ecosystem has a better chance of surviving when environmental conditions change over a long period of time?

- 1) one with a great deal of genetic diversity
- 2) one with plants and animals but no bacteria
- 3) one with animals and bacteria but no plants
- 4) one with little or no genetic diversity

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21. A scientist studied iguanas inhabiting a chain of small ocean islands. He discovered two species that live in different habitats and display different behaviors. His observations are listed in the table below.

Observations of Two Species of Iguanas

Species A	Species B
spends most of its time in the ocean	spends most of its time on land
is rarely found more than 10 meters from shore	is found many meters inland from shore
eats algae	eats cactus and other land plants

Which statement best describes these two species of iguanas?

- 1) Both species evolved through the process of ecological succession.
 - 2) Each species occupies a different niche.
 - 3) The two species can interbreed.
 - 4) Species A is a scavenger and species B is a carnivore.
22. Base your answer to the following question on the chart below and on your knowledge of biology.

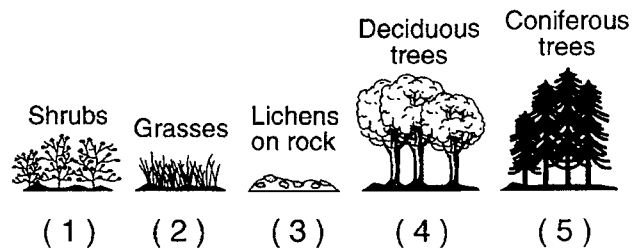
Animals in a Community	Food Consumed				
	Shrews	Grass- hoppers	Hawks	Snakes	Plants
Shrews		x			
Hawks	x			x	
Grasshoppers					x
Spiders		x			
Snakes	x				

Which organisms in this community compete for the same food supply?

- 1) snakes and hawks
 - 2) spiders and snakes
 - 3) shrews and snakes
 - 4) grasshoppers and spiders
23. Cutting down a rain forest and planting agricultural crops, such as coffee plants, would most likely result in
- 1) a decrease in biodiversity
 - 2) an increase in the amount of energy recycled
 - 3) a decrease in erosion
 - 4) an increase in the amount of photosynthesis
24. Which organisms would most likely be the pioneer organisms on a newly formed volcanic island?
- 1) conifers
 - 2) lichens
 - 3) deciduous trees
 - 4) shrubs
25. Shawangunk Grasslands National Wildlife Refuge has been developed from an abandoned airport to restore habitat for six species of birds that require an area rich in tall grasses. Workers must continually remove trees that are beginning to invade the area as a result of
- 1) direct harvesting
 - 2) genetic engineering
 - 3) evolutionary change
 - 4) ecological succession

26. What is a characteristic of a stable environment?

- 1) It usually contains only one type of producer.
 - 2) It usually contains a great diversity of species.
 - 3) It contains simple food chains that have more consumers than producers.
 - 4) It contains complex food webs that have more heterotrophs than autotrophs.
27. A volcanic eruption destroyed a forest, covering the soil with volcanic ash. For many years, only small plants could grow. Slowly, soil formed in which shrubs and trees could grow. These changes are an example of
- 1) manipulation of genes
 - 2) evolution of a species
 - 3) ecological succession
 - 4) equilibrium
28. Base your answer to the following question on the diagram below, which represent the stages of an ecological succession in New York State, and on your knowledge of biology. The stages are *not* in order.

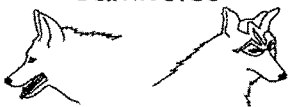


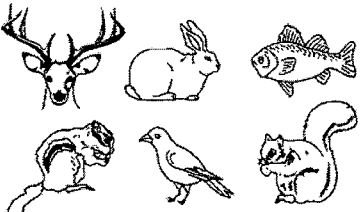
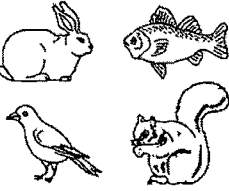

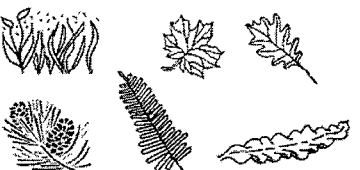



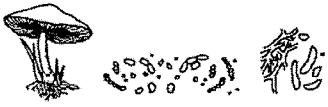



Which sequence represents a correct order of succession that would involve these stages?

- 1) 2→3→1→4→5
 - 2) 2→1→3→5→4
 - 3) 3→1→2→4→5
 - 4) 3→2→1→5→4
29. Respiration and photosynthesis have the *least* effect on the cycling of
- 1) carbon
 - 2) nitrogen
 - 3) oxygen
 - 4) hydrogen

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30. The diagram below represents the varying biodiversity in three ecosystems.

Ecosystem A	Ecosystem B	Ecosystem C
Carnivores 	Carnivores 	Carnivores 
Herbivores 	Herbivores 	Herbivores 
Autotrophs 	Autotrophs 	Autotrophs 
Decomposers 	Decomposers 	Decomposers 

The level of biodiversity in ecosystem *A* is high because it has the

- | | |
|--|---|
| <ul style="list-style-type: none"> 1) least variety of energy levels 2) greatest variety of genetic material | <ul style="list-style-type: none"> 3) greatest number of decomposers 4) least number of ecological niches |
|--|---|

31. Many years ago, a volcanic eruption killed many plants and animals on an island. Today the island looks much as it did before the eruption. Which statement is the best possible explanation for this?

- 1) Altered ecosystems regain stability through the evolution of new plant species.
- 2) Destroyed environments can recover as a result of the process of ecological succession.
- 3) Geographic barriers prevent the migration of animals to island habitats.
- 4) Destroyed ecosystems always return to their original state.

32. Which element is *not* recycled throughout an ecosystem by the processes of photosynthesis and respiration?

- | | |
|-------------|-------------|
| 1) carbon | 3) nitrogen |
| 2) hydrogen | 4) oxygen |

33. What will most likely result after a fire or other natural disaster damages an ecosystem in a certain area?

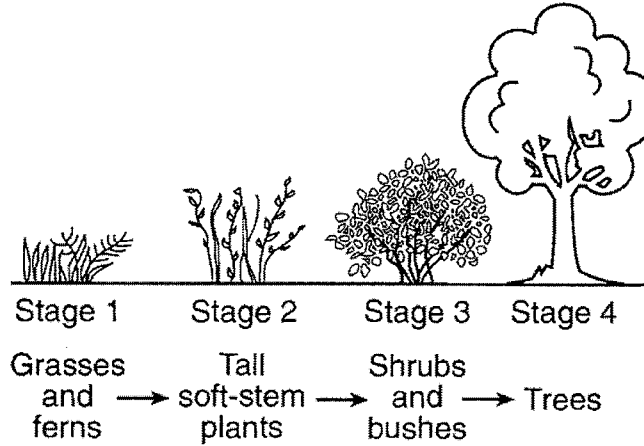
- 1) The area will remain uninhabited for an indefinite number of centuries.
- 2) A stable ecosystem will be reestablished after one year.
- 3) An ecosystem similar to the original one will eventually be reestablished if the climate is stable.
- 4) The stable ecosystem that becomes reestablished in the area will be different from the original.

34. As water cycles through an ecosystem, which process returns it to the atmosphere?

- | | |
|------------------|-----------------|
| 1) hydrolysis | 3) condensation |
| 2) transpiration | 4) cyclosis |

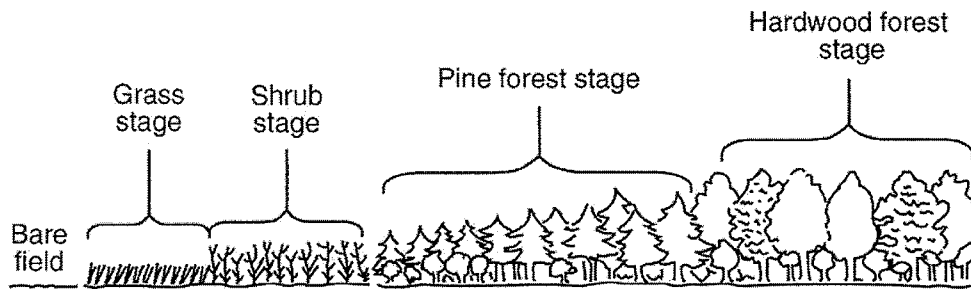
Ecology Exam Review

35. Changes in an ecosystem over a long period of time are shown in the diagram below.



These changes will most likely lead to a

- | | |
|--|--|
| 1) stable ecosystem that can last for many years | 3) long-term rise in environmental temperatures |
| 2) loss of heterotrophs that cannot be recovered | 4) forest consisting of only producers and decomposers |
36. 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?

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

37. Protein synthesis is most closely associated with the

- 1) nitrogen cycle
- 2) oxygen-carbon dioxide cycle
- 3) water cycle
- 4) phosphorus cycle

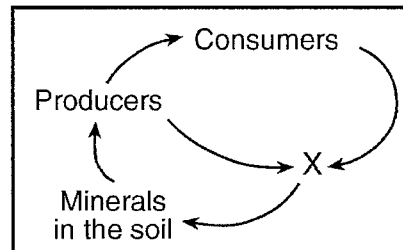
38. Which statement describes a role of fungi in an ecosystem?

- 1) They transfer energy to decaying matter.
- 2) They release oxygen into the ecosystem.
- 3) They recycle chemicals from dead organisms.
- 4) They synthesize organic nutrients from inorganic substances.

39. Because turkey vultures feed mainly on animals that they have not killed, they are known as

- | | |
|---------------|---------------|
| 1) predators | 3) omnivores |
| 2) scavengers | 4) autotrophs |

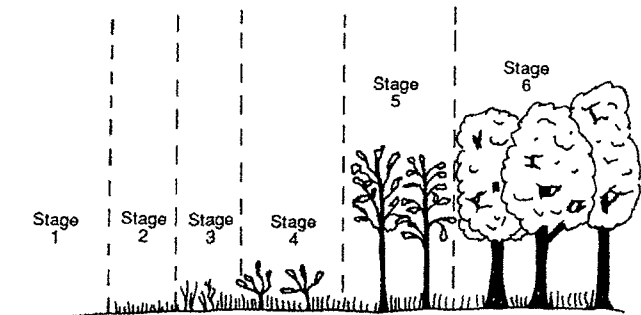
40. In the diagram below, what does X most likely represent?



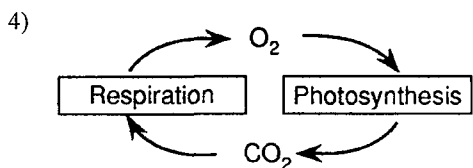
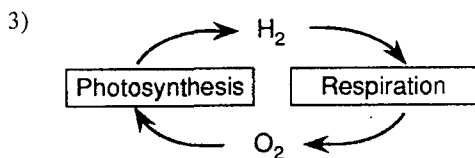
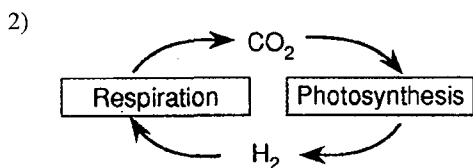
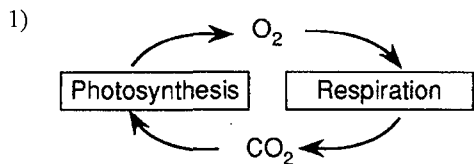
- | | |
|---------------|----------------|
| 1) omnivores | 3) decomposers |
| 2) herbivores | 4) carnivores |

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41. Which statement about the diagram of primary plant succession below is true?

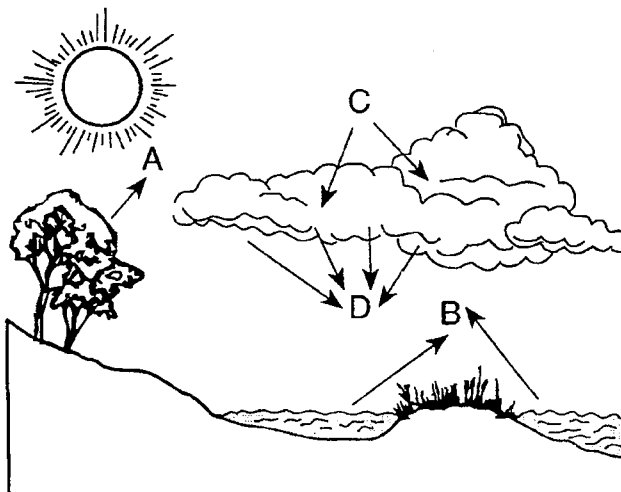


- 1) Stage 1 represents the climax stage.
 - 2) Stage 6 will replace stage 5.
 - 3) Stage 2 will replace stage 3.
 - 4) Stage 4 represents a major New York State biome.
42. Which diagram best represents the cycling of respiratory and photosynthetic gases in green algae?



43. The action of decomposers in the nitrogen cycle most directly aids in the
- 1) synthesis of proteins from nitrates
 - 2) removal of nitrogen compounds from the atmosphere
 - 3) restoration of nitrogen compounds to the soil
 - 4) fixation of atmospheric nitrogen

44. Processes involved in the water cycle are represented by letters in the diagram below.

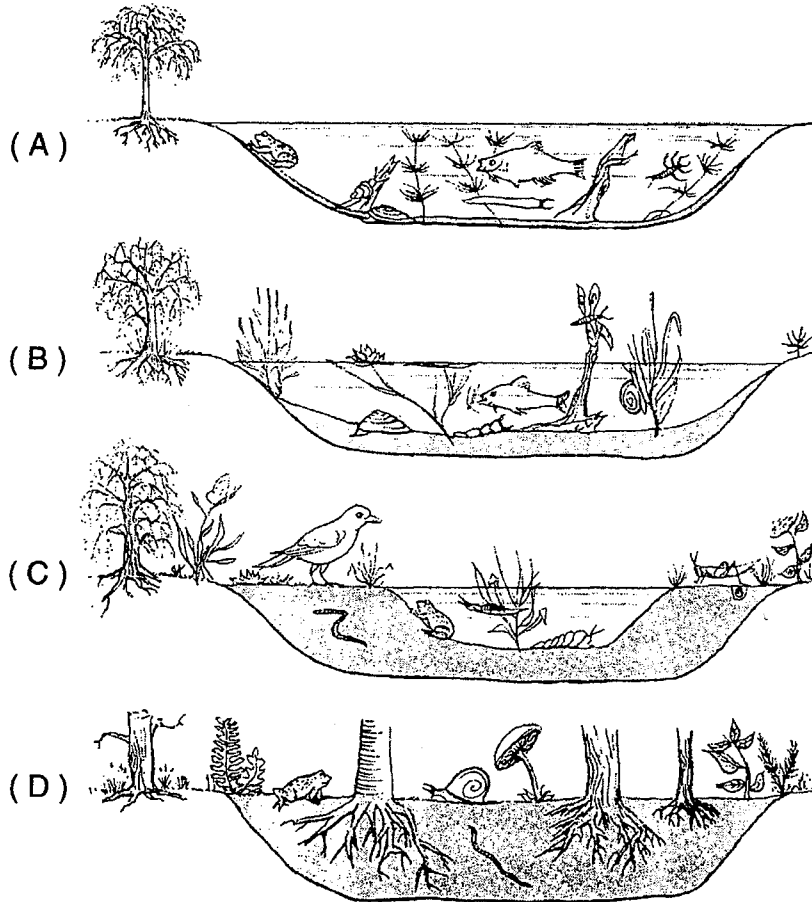


In which group are these processes correctly identified?

- 1) *A*-deamination; *B*-transpiration; *C*-condensation; *D*-evaporation
 - 2) *A*-transpiration; *B*-evaporation; *C*-condensation; *D*-precipitation
 - 3) *A*-condensation; *B*-precipitation; *C*-transpiration; *D*-evaporation
 - 4) *A*-transpiration; *B*-deamination; *C*-condensation; *D*-precipitation
45. During its annual migration, the red knot, a medium-size shorebird, flies the entire length of North and South America. During one critical stop to feed on the eggs of horseshoe crabs, the birds nearly double their body mass. The relationship between the red knot and the horseshoe crab is that of
- 1) parasite–host
 - 2) consumer–producer
 - 3) scavenger–producer
 - 4) predator–prey
46. In the nutritional relationship between heartworms and a dog, the heartworms benefit at the expense of the dog. This relationship is known as
- 1) commensalism
 - 2) mutualism
 - 3) parasitism
 - 4) saprophytism
47. A symbiotic relationship exists between two organisms of different species. If only one organism benefits from the relationship and the other is not harmed, the relationship is known as
- 1) commensalism
 - 2) mutualism
 - 3) parasitism
 - 4) saprophytism
48. Nitrogen-fixing bacteria live on the roots of leguminous plants in swellings called nodules. The bacteria synthesize nitrogen compounds that are used by the plants, and the plants provide moisture and nutrients for the bacteria. The interaction between the nitrogen-fixing bacteria and the leguminous plants is known as
- 1) parasitism
 - 2) mutualism
 - 3) saprophytism
 - 4) commensalism

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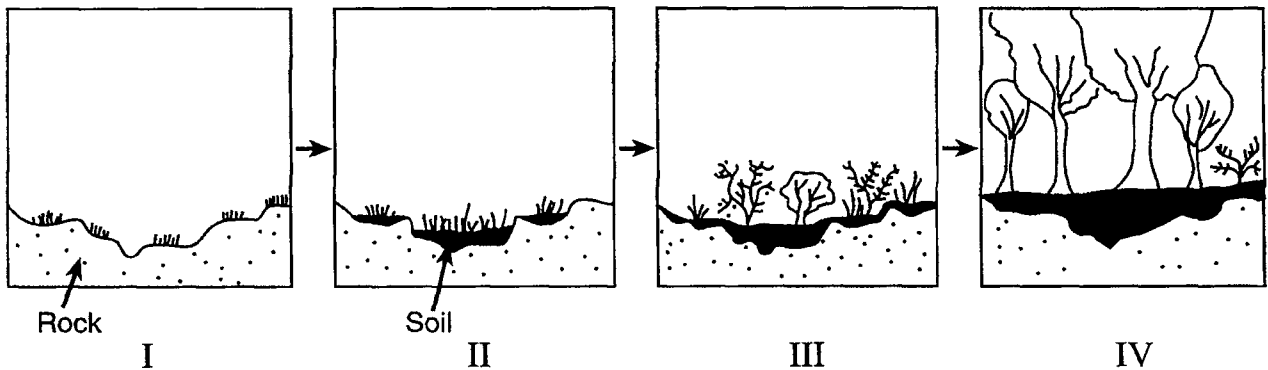
49.



Which phrase best describes this sequence of diagrams?

- 1) the path of energy through a food web in a natural community
- 2) the altering of an ecosystem by a natural disaster
- 3) natural communities replacing each other in an orderly sequence
- 4) similarities between an aquatic ecosystem and a terrestrial ecosystem

50. Base your answer to the following question on the diagrams below of four stages of a biological process and on your knowledge of biology.

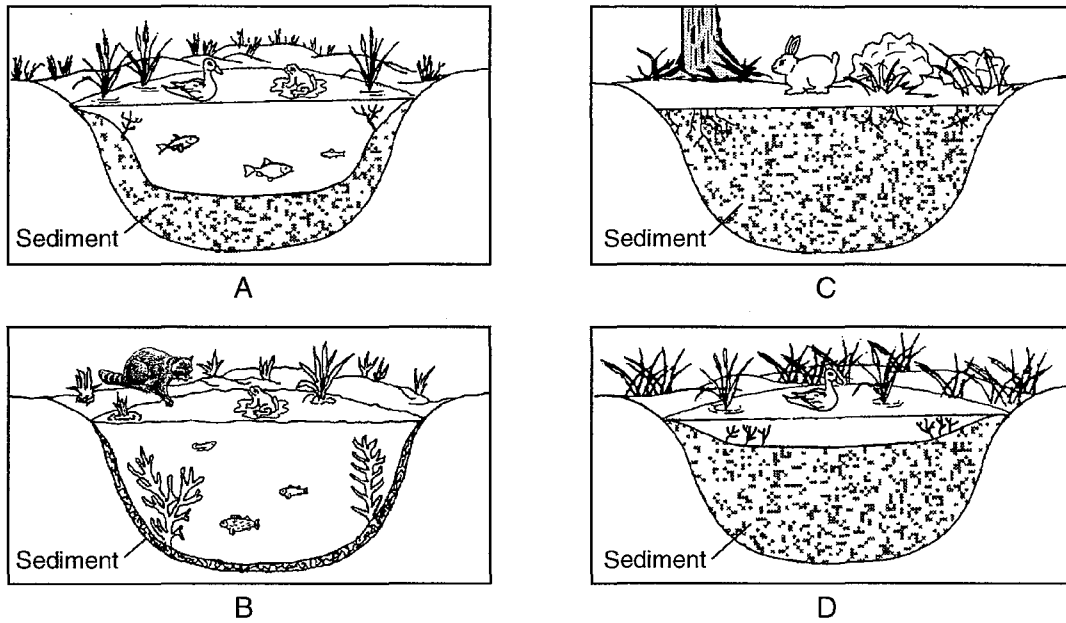


What is a major limiting *biotic* factor for animal succession in each stage?

- 1) plant species
- 2) sunlight
- 3) soil minerals
- 4) moisture

Ecology Exam Review

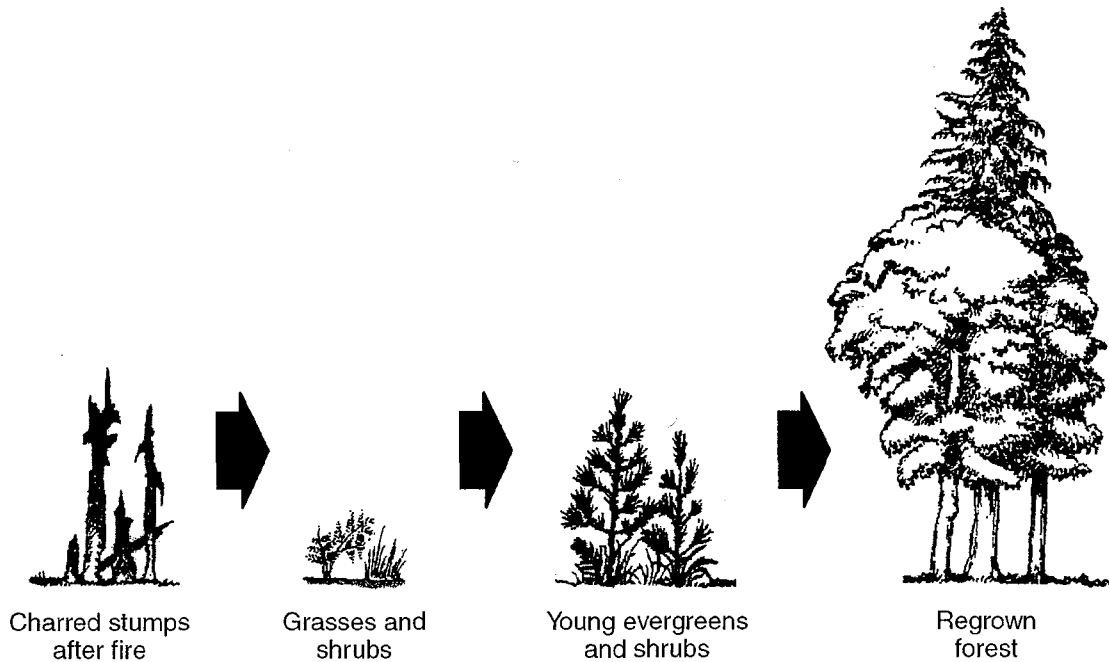
51. Base your answer to the following question on the diagrams of stages of succession below and on your knowledge of biology.



Which organisms would most likely be harmed the most by the changes that occurred between these stages?

- 1) trees 2) raccoons 3) fish 4) rabbits

52. The diagram below shows changes that might occur over time after a fire in a forest area.

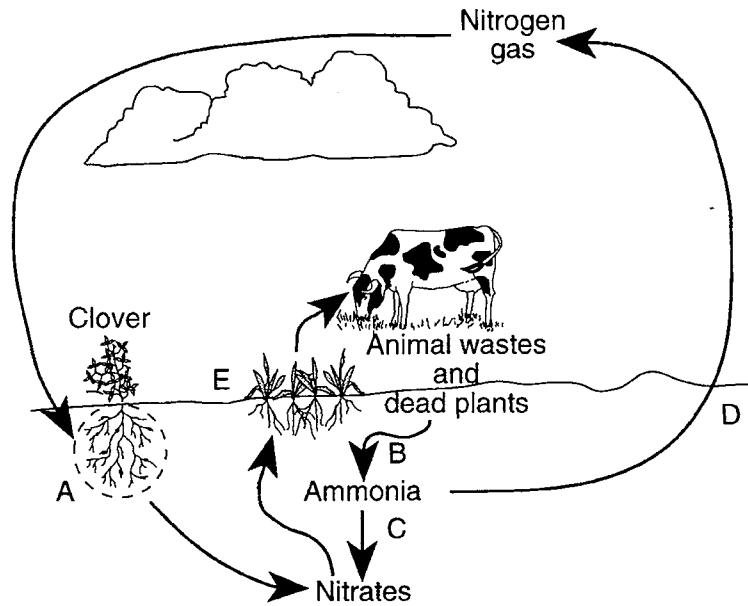


Which statement is most closely related to the events shown in the diagram?

- 1) The lack of animals in an altered ecosystem speeds natural succession.
 2) Abrupt changes in an ecosystem only result from human activities.
 3) Stable ecosystems never become established after a natural disaster.
 4) An abrupt environmental change can cause a long-term gradual change in an ecosystem.

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53. Base your answer to the following question on the diagram of the nitrogen cycle below and on your knowledge of biology. In the diagram, letters *A* through *E* represent organism carrying on a process at that particular point in the cycle.

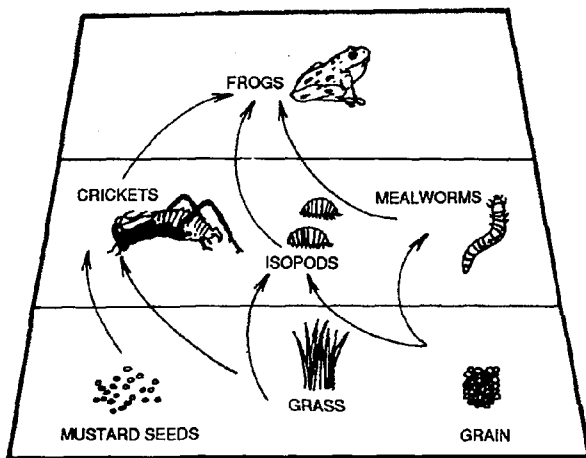


Letter *B* represents

- 1) scavengers 2) decomposers 3) autotrophs 4) carnivores

54. Which would be the most likely effect of a drastic reduction in all the producer organisms in a meadow environment?
- 1) The grasshoppers would multiply rapidly.
 - 2) The rabbit population would decrease.
 - 3) All of the snake populations would increase.
 - 4) All of the decomposers would die.

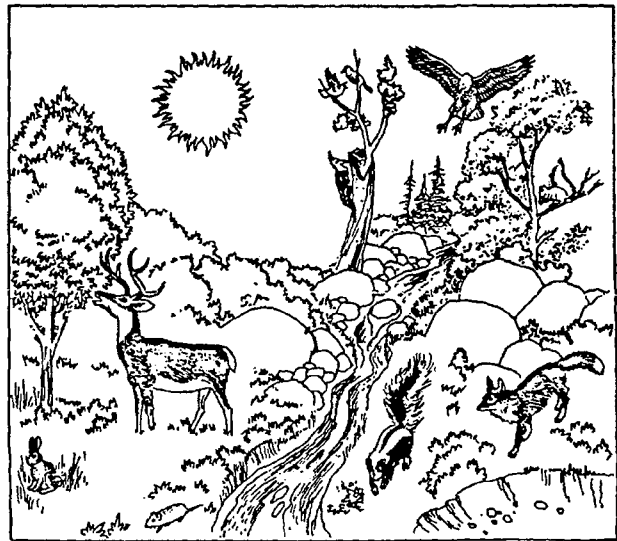
55. Base your answer to the following question on the diagram below and on your knowledge of biology.



Which sequence of organisms represents a food chain?

- 1) mealworms → isopods → grass
- 2) grain → frogs → mealworms
- 3) crickets → isopods → frogs
- 4) mustard seeds → crickets → frogs

56. Base your answer to the following question on the diagram below and on your knowledge of biology. The diagram represents an ecosystem in the temperate deciduous forest biome.



Two herbivores found in this ecosystem are the

- 1) fox and skunk 3) woodpecker and hawk
- 2) grasses and trees 4) deer and rabbit

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57. Base your answer to the following question on the table below, which shows the type of food consumed by various animals in a community, and on your knowledge of biology.

Animals in the Community	Food Consumed in the Community				
	Shrews	Grasshoppers	Hawks	Snakes	Plants
Shrews		X			
Hawks	X			X	
Grasshoppers					X
Spiders		X			
Snakes	X				

Under normal conditions, which organisms in this community would have the greatest amount of stored energy?

- 1) grasshoppers 2) snakes 3) plants 4) hawks

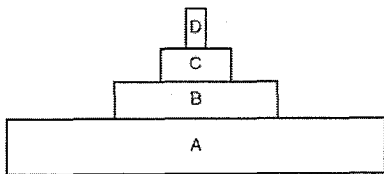
58. The diagram below represents a food chain.



The arrows in the diagram indicate the

- 1) direction in which organisms move in the environment
- 2) direction of energy flow through a series of organisms
- 3) order of importance of the various organisms
- 4) return of chemical substances to the environment

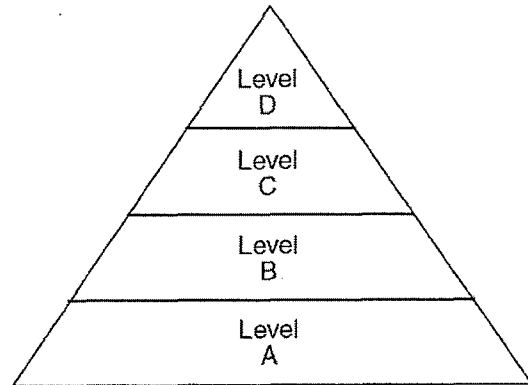
59. An energy pyramid is represented below.



How much energy would be available to the organisms in level C?

- 1) all of the energy in level A, plus the energy in level B
- 2) all of the energy in level A, minus the energy in level B
- 3) a percentage of the energy contained in level B
- 4) a percentage of the energy synthesized in level B and level D

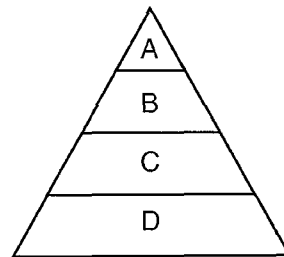
60. An energy pyramid is represented below.



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

- 1) producers
- 2) the Sun
- 3) level B
- 4) level D

61. The diagram below represents a pyramid of energy in an ecosystem.

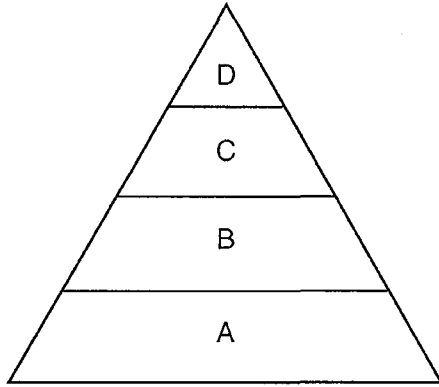


Which level in the pyramid would most likely contain members of the plant kingdom?

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

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62.



Which statement about the pyramid of energy shown above is correct?

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

63. Base your answer to the following question on the information below and on your knowledge of biology.

Analysis of a sample taken from a pond showed variety in both number and type of organisms present. The data collected are shown in the table below.

Data Table

Type of Organisms	Number Present
bass	two
frogs	forty
phytoplankton	thousands
insect larvae	hundreds

Which diagram best represents the organisms arranged as an energy pyramid?

- 1)
- 2)
- 3)
- 4)